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Environmental Friendly Vector Control Potentials of Plant Secondary Metabolites

Parvin, Nayeema

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Environmental Friendly Vector Control Potentials of Plant Secondary Metabolites

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Submitted By

Nayeema Parvin
B.Sc. Ag. (Hons.), M.S., BAU
Student ID No. 11106
Registration No: 0004
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Motihaar Green
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Institute of Environmental Science
University of Rajshahi
Rajshahi-6205
BANGLADESH

Prof. Dr. Md. Nurul Islam
Department of Zoology, University of Rajshahi
Rajshahi 6205, Bangladesh
Telephone: +88 0721 711119 (Off.); +88 0721750097 (Res.), +88 01715324366 (Cell.)
E-mail: n_islamm@yahoo.com; nurulislam@ru.ac.bd

Certificate

It is my pleasure to certify that the thesis entitled, "Environmental friendly vector control potentials of plant secondary metabolites" submitted to the Institute of Environmental Science, University of Rajshahi by Nayeema Parvin in partial fulfillment of the requirements for the degree of Doctor of Philosophy is a dissertation of the perfect study which she carried out in my laboratory with much success. It contains no materials previously published, or submitted for any other purpose, or written by any other person except, wherever, due references are made.

I hereby clarify that the author completed her work under my direct supervision and contributed some new ideas and openings by adding most recent information in this research arena. She also enriched results of screening of the selected plants for biological activity and reintroduced most common test organisms of their 'vector' identity with reasonable references as well.

September, 2015
Motihaar Green
R A J S H A H I

(Dr. Md. Nurul Islam)

Declaration

I hereby declare that the whole work submitted as a entitled "Environmental friendly vector control potentials of plant secondary metabolites" to the Institute of Environmental Science, University of Rajshahi in partial fulfillment of the requirements for the degree of Doctor of Philosophy is the result of my own investigation. The thesis contains no materials previously published or accepted by any institution for the award of any other degree or diploma elsewhere except wherever due references are made.

(Nayeema Parvin)

Dedicated

To

My Beloved

Parents

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The Author

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ABBREVIATIONS OF THE SPECIAL WORDS USED IN THE TEXT

# U	=	Number of insects used	*i.e.*	=	That is
h	=	Hour(s)	% kill	=	Insects killed per cent
Fig.	=	Figure	# Kill	=	Number of insects killed
$CHCl_3$	=	Chloroform	χ^2	=	Chi-square
CH_3OH/ MeOH	=	Methanol	LC_{50}	=	Concentration required to kill 50% of test organisms
PetE	=	Petroleum ether	LD_{50}	=	Dose required to kill 50% of test organisms
DMSO	=	Deuteromethyl sulphoxide	µl	=	Microliter
df	=	Degree of freedom	mg	=	milligram(s)
Cr %	=	Corrected mortality percentage	ml	=	milliliter
Emp Probit	=	Empirical Probit	cm^2	=	Centimeter square
et al.	=	And others (author)	Weight	=	Weighting coefficient
Expt Probit	=	Expected Probit	wp	=	Whole plant
ap	=	Aerial part	r	=	Root
rh	=	Rhizome	IZ	=	Zone of inhibition

ABBREVIATIONS OF THE SPECIAL WORDS USED IN THE TEXT

c	=	corolla	LDose	=	Log dose
NMR	=	Neuclear Magnetic Resonance of proton ^{1}H and ^{13}C	TLC	=	Thin layer chromatography
χ^2	=	Chi-square	ENP	=	*Evolvullus nummularius* petrolium ether
EtOAc	=	Ethyl acetate	POM	=	*Polygonum hydropiper* Methanol
E.	=	*Evolvulus*	*L.*	=	*Lantana*
M.	=	*Mentha*	*Mi.*	=	*Mimosa*
P.	=	*Parthenium*	*Ph.*	=	*Phyllanthus*
Po.	=	*Polygonum*	*Pz.*	=	*Pouzolzia*
S.	=	*Synedrella*	*Z.*	=	*Zingiber*

ABSTRACT

Whole plants (wp) of *Evolvulus nummularius*, *Mentha piperita*, *Mimosa pudica*, *Parthenium hysterophorus*, *Phyllanthus niruri*, *Polygonum hydropiper*, *Pouzolzia zeylanica*, *Synedrella nodiflora*, aerial part (ap) and roots (r) of *Lantana camara*, and aerial part and rhizome (rh) of *Zingiber zerumbet* were extracted in petroleum ether (PetE), chloroform ($CHCl_3$) and methanol (CH_3OH), and were screened against four vectors *i.e.* eggplant aphid, *Aphis gossypii*; larvae of the mosquito, *Culex quinquefasciatus*; red flour beetle, *Tribolium castaneum* and brine shrimp, *Artemia salina* nauplii under laboratory conditions to yield their efficacy through dose-mortality assay and repellent activity against *A. gossypii* and *T. castaneum*; lethality against *A. salina*; larvicidal activity against *C. quinquefasciatus* larvae with much success. Antimicrobial activity tests were carried out in this connection for further justification of efficacy of the extractives. Isolation, purification and characterization of plant component(s) were also done to establish step-forward positive control measure(s) against four selected vectors from the pest control and pharmaceutical points of view.

The mortality of *A. gossypii* were found in the descending order started with the *E. nummularius* (wp/PetE) giving LD_{50} 0.034 mg/cm^2 and ended with *L. camara* (ap/PetE) giving LD_{50} 0.080mg/cm^2.

The larvicidal activity against *C. quinquefasciatus* larvae the descending order of intensity was started with *Ph. niruri* (wp/$CHCl_3$) provided with the LC_{50} 3.220ppm and ended with *Mi. pudica* (wp/PetE) giving LC_{50} 88.187ppm). Methanol extract of *Mi. pudica* (wp), *Pz. zeylanica* (wp) and *Z. zerumbet* (ap) did not show any larvicidal effect.

Brine shrimp lethality against *A. salina* nauplii the efficacy was in the descending order of *Po. hydropiper* (wp/$CHCl_3$) provided with the LC_{50} 1.590ppm and ended with *Ph. niruri* (wp/$CHCl_3$) giving LC_{50} 24.331ppm.

The mortality of *T. castaneum* adults through dose-mortality assay were found in the descending order of *M. piperita* (wp/CH_3OH) provided with the LD_{50} 0.238mg/cm^2 and ended with *L. camara* (r/PetE) giving LD_{50} 2.672mg/cm^2. While, no activity was traced for whole plant of *Mi. pudica*; and the methanol extract of *Pz. zeylanica* (wp);

methanol and $CHCl_3$ extracts of *L. camara* (r) and $CHCl_3$ extract of *S. nodiflora* (wp) didn't show any mortality against the adult beetles of *T. castaneum*.

Against the eggplant aphids CH_3OH extracts of *E. nummularius* (wp), *L. camara* (ap), *Mi. pudica* (wp) and *Pz. zeylanica* (wp) offered repellent activity, while the PetE and $CHCl_3$ extracts of the same didn't show repellency; however PetE, $CHCl_3$ and CH_3OH the extracts of *Ph. niruri* (wp), *S. nodiflora* (wp) and *Z. zerumbet* (ap); PetE extracts of *M. piperita* (wp), *P. hysterophorus* (wp) and *Z. zerumbet* (rh); $CHCl_3$ extracts of *L. camara* (r) and *Po. hydropiper* (wp) and CH_3OH extracts of *P. hysterophorus* (wp) and *Po. hydropiper* (wp) offered no repellent activity at all.

For the repellency against *T. castaneum* adults CH_3OH extracts of *Po. hydropiper* (wp) offered the most promising activity, however except *L. camara* (ap/$CHCl_3$ and CH_3OH); *L. camara* (r/PetE); *M. piperita* (wp/PetE); *Mi. pudica* (wp/PetE and CH_3OH); *P. hysterophorus* (wp/CH_3OH); *Ph. niruri* (wp/$CHCl_3$ and CH_3OH); *Pz. zeylanica* (wp/$CHCl_3$) showed repellent activity of different degree; and aerial and rhizome part of *Z. zerumbet* extracts of all the three solvents showed no repellent activity.

Activity tests of the extracts against eight selected pathogenic bacteria at concentrations of 200μg disc^{-1} and 400μg disc^{-1} compared with the standard antibiotic, Ampicilin 10μg disc^{-1} provided a promising outcome. The chloroform extract was found most effective in comparison to PetE and CH_3OH extracts. Finding potential activity the PetE extract of *E. nummularius* (wp) and CH_3OH extract of *Po. hydropiper* (wp) were attempted for chromatographic fractionation to isolate bioactive compound(s) and as a result two compounds named ENP and POM were isolated, and only the ENP was determined as palmitic acid.

All the selected arthropod test agents are vectors [Aphid (Ng and Perry, 2004), Mosquito larvae (Michigan Mosquito Control Organization, 2013; Wilcox and Ellis, 2006: Janet, 2010), Red flour beetle (Channaiah *et al*., 2009); Brine shrimp (Sudhakaran *et al*., 2006: Hameed *et al*., 2002)] and the data achieved from the bioassays clearly showed the presence of insecticidal properties and vector control potentials in the test plants. Thus, comprehensive phytochemical analyses of the test plants for their insecticidal, insect repellent, cytotoxic and larvicidal leads, as well as the pharmacological studies of the active ingredients are very much to be solicited for their possible use in the future vector control and pharmaceutical endeavors.

INTRODUCTION

Pesticides represent the only group of chemicals that are purposely applied to the environment with an aim to suppress pests of plants and animals and to protect agricultural and industrial products. However, the majority of pesticides are not specifically targeting the pests, they also affect non-target organisms. Thus, repeated application of pesticides leads to loss of biodiversity. Many pesticides do not degrade easily, and they persist in soil, leach to ground and surface water and contaminate the wide environment. Depending on their chemical properties they can enter the organism, bio-accumulate in food chains and consequently influence human health. Therefore, intensive pesticide application results in several negative effects in the environment that cannot be ignored (Pesticide action network, 2010).

The use of pesticides by Bangladeshi farmers increased by 328 percent during the past 10 years, posing a serious health hazards on human being due to its long-term residual effect, according to a study released by Bangladesh Rice Research Institute (Islam, 2010). The survey, studying the use of pesticides in farmland during 1997 to 2008, showed that in 1997 the use of pesticides in Bangladesh was more than 8,000 tons; it doubled to 16,000 tons in 2000; in 2005-06, it increased to nearly 20,000 tons and in 2008 it rose up to 48,690 tons. The insecticides, being the dominant item, account for 76 percent of the pesticides, and per hectare use of pesticides increased around 598.8 percent and its annual import cost stands nearly at 171.43 million US $. According to the study, the intensity of pesticide use was found especially higher in vegetable crops in Bangladesh, compared to other countries in the world. Recently, the use of insecticides has considerably increased in vegetables like eggplant, country bean, cucurbits, yard long bean, etc. particularly in their intensive growing areas. The overuse of pesticides has been identified as one of the reasons for the decline in the overall export of vegetables from Bangladesh, the survey said. The study said the residual effect of these toxic chemicals on vegetables and cereals are likely to create different diseases in humans including cancer, skin diseases, kidney diseases and hypertension as its long term effect (Islam, 2010).

First warning signals about pesticides' danger appeared in 1962, Rachel Carson, an American courageous woman and scientist, wrote down her nature observation and pointed out sudden dying of birds caused by indiscriminate spraying of pesticides

(DDT, half-life of it in soil ranges from 22 to 30 years). Her book, Silent Spring, became a landmark. It changed the existing view on pesticides and has stimulated public concern on pesticides and their impact on health and the environment. Silent Spring facilitated the ban of the DDT in 1972 in the United States. More researches have been done and several dangerous and persistent organic pesticides like Dieldrin, Endosulfan and Lindane have been banned or restricted since early seventies. Environment affects occurs by pesticides in different compartments. Pesticides enter the soil via spray drift during foliage treatment, wash-off from treated foliage, release from granulates or from treated seeds in soil. Some pesticides such as soil fumigants and nematicides are applied directly into soil to control pests and plant diseases presented in soil.

Pesticides can get into water via drift during pesticide spraying, by run-off from treated area, leaching through the soil. In some cases pesticides can be applied directly onto water surface e.g. for control of mosquitoes. Water contamination depends mainly on nature of pesticides (water solubility, hydrophobicity), soil properties, weather conditions, landscape and also on the distance from an application site to a water source. Rapid transport to groundwater may be caused by heavy rainfall shortly after application of the pesticide to wet soils.

Soil microorganisms play a key role in soil. They are essential for the maintenance of soil structure, transformation and mineralization of organic matter, making nutrients available for plants. Soil microorganisms are also able to metabolise and degrade a lot of pollutants and pesticides and thus are of great concern for using in biotechnology. On the other hand, microbial degradation can lead to formation of more toxic and persistent metabolites. Although soil microbial population are characterized by fast flexibility and adaptability to changed environmental condition, the application of pesticides (especially long-term) can cause significant irreversible changes in their population. Inhibition of species, which provide key process, can have a significant impact on function of whole terrestrial ecosystem. Fungicides were found to be toxic to soil fungi and actinomycetes and caused changes in microbial community structure (Liebich *et al*., 2003; Pal *et al*., 2005). Other bacterial species, such as nitrification bacteria, are very sensitive to pesticides influence. Intensive pesticides and fertilizers usage, loss of natural and semi-natural habitats and decreased habitat heterogeneity and all other aspects of agricultural intensification have undoubted impact on biodiversity decline during last few decades.

Plant is a natural source for providing mankind various secondary metabolites with antiviral or vector control activity, which are organic compounds that are not directly involved in the normal growth, development, or reproduction of an organism (Fraenkel, 1959) and often play an important role in plant defense against herbivores (Nancy, 2003; Crozier *et al*., 2006) and other interspecies defenses (Samuni-Blank *et al*., 2012). Secondary metabolites are also of interest because of their use as dyes, fibres, glues, oils, waxes, flavoring agents, drugs and perfumes and they are viewed as potential sources of new natural drugs, antibiotics, insecticides and herbicides.

Secondary metabolites from plants include alkaloids, terpenoids, phenolics, flavonoids, chromenes and other minor chemicals that can affect insect life in several ways. They may disrupt major metabolic pathways and cause rapid death. Essential oils and especially their main compounds monoterpenoids offer promising alternatives to classical fumigants (Papachristos and Stamopoulos, 2003). These compounds may act as contact insecticides (Huang and Ho, 1998; Chun *et al*., 2000; Tripathi *et al*., 2000; Papachristos and Stamopoulos, 2002a), antifeedant or repellent effects (Kim *et al*., 2003a,b; Park *et al*., 2003a,b) and may also affect some biological parameters, such as growth rate, life span and reproduction (Regnault-Roger and Hamaoui, 1995; Gurusubramanian and Krishna, 1996; Pascual-Villalobos, 1996).

Like pests there are vectors that may also cause damage to crops. Vector is an organism, often an invertebrate arthropod that transmits a pathogen from reservoir to host. Viruses that are transmitted between vertebrate or plant hosts by feeding insects (vectors) can replicate within both their host and their vector. Viruses cause many diseases of international importance. Amongst the human vector like mosquitoes, houseflies carry several diseases like malaria, yellow fever, dengue, diarrhea, dysentery, conjunctivitis, typhoid fever, etc.

Viruses also cause many important plant diseases and are responsible for huge losses in crop production and quality in all parts of the world. Infected plants may show a range of symptoms depending on the disease but often there is leaf yellowing (either of the whole leaf or in a pattern of stripes or blotches), leaf distortion (e.g. curling) and/or other growth distortions (e.g. stunting of the whole plant, abnormalities in flower or fruit formation). Plant viruses pose some of the most severe threats to world agriculture. Because they invade the crop's cells and cloak themselves with the plant's normal life processes, they are far more difficult to control than free-living organisms, such as bacteria, protozoa, or fungi. Plant viruses can cause severe yield loses to the cereal, vegetable, fruit and floral industries and substantially lessen the quality of crop products. Due to virus infection, losses of over 1.5 billion $ are reported in rice in South-east Asia (Hull, 2002).

Vectors of plant viruses are taxonomically very diverse and can be found among arthropods, nematodes, fungi and plasmodiophorids (Froissart *et al*., 2002 ; Hull, 2002). Arthropod vectors that transmit most plant viruses are aphids, whiteflies, leafhoppers, thrips, beetles, mealybugs, mirids and mites (Spence, 2001), the most common being aphids with more than 200 vector species identified (Ng and Perry, 2004). More than half of the nearly 550 vector-transmitted virus species recorded so far are disseminated by aphids (55%), 11% by leafhoppers, 11% by beetles, 9% by whiteflies, 7% by nematodes, 5% by fungi and plasmodiophorids and the remaining 2% by thrips, mites, mirids or mealybugs (Astier *et al*., 2001).

Aphids or plant lice are the most destructive insect pests on cultivated plants in temperate regions (McGavin, 1993). The damage they do to plants has made them enemies of farmers and gardeners the world over, though from a zoological standpoint they are a highly successful group of organisms (Piper, 2007). Their success is due in part to the asexual reproductive capabilities of some species. About 4,400 species of 10 families are known. Historically, far fewer families were recognized, as most species were included in the family Aphididae. Around 250 species are serious pests for agriculture and forestry as well as an annoyance for gardeners. They vary in length from 1 to 10mm (0.04 to 0.39 inch). Many of the virus diseases are transmitted by homopterous insects, of which aphids constitute an important group (Miyazaki, 2001).

The mosquitoes are a family of small, midge-like flies: the Culicidae. Although a few species are harmless or even useful to humanity, most are considered a nuisance because they consume blood from living vertebrates, including humans. The females of many species of mosquitoes are blood-sucking pests. In feeding on blood, some of them transmit extremely harmful human and livestock diseases, such as malaria, yellow fever and filariasis. Some authorities argue accordingly that mosquitoes are the most dangerous insects on Earth (Michigan Mosquito Control Organization, 2013). Over 3,500 species of mosquitoes have already been described from various parts of the world (Lesley, 1993). Many scientists have suggested that complete eradication of mosquitoes would not have serious ecological consequences (Wilcox and Ellis, 2006; Janet, 2010).

Enterococcus faecalis can be potentially acquired and transmitted to fresh feed by *Tribolium castaneum* adults. It is a worldwide pest of stored products, particularly food grains, and a model organism for food safety research. These adults can serve as potential vectors of antibiotic-resistant *Enterococci* within the feed manufacturing environment. Therefore, it is important to follow proper pest management practices to reduce potential insect vectors in feeds and in the feed manufacturing environments (Channaiah *et al*., 2009). These disease-bearing organisms are known as vectors.

An investigation of *Artemia salina* (Brine shrimp nauplii) as a possible vector for white spot syndrome virus (WSSV) transmission to *Penaeus indicus* (Indian prawn) and *Macrobrachium rosenbergii* nodavirus (MrNV) and its associated extra small virus (XSV) transmission to *M. rosenbergii* (giant river prawn) post-larvae (Sudhakaran *et al*., 2006; Hameed *et al*., 2002). These diseases are highly lethal and contagious, killing shrimps quickly. Outbreaks of this disease have wiped out within a few days the entire populations of many shrimp farm throughout the world.

Vector control is a method to limit the population of certain mammals, birds, insects or arthropods which transmit disease pathogens. The most frequent type of vector control is mosquito control using a variety of strategies. For diseases where there is no effective cure, such as West Nile Virus and Dengue fever, vector control remains the only way to protect populations. However, even for vector-borne diseases with effective treatments the high cost of treatment remains a huge barrier to large amounts of developing world populations. Despite being treatable, malaria has by far the greatest impact on human health from vectors. In Africa, a child dies every 45 seconds of malaria (World Health Organization, 2010). In countries where malaria is well established the World Health Organization estimates countries lose 1.3% annual economic income due to the disease. Both prevention through vector control and treatment are needed to protect populations.

As the impacts of disease and virus are devastating, the need to control the vectors in which they carried is prioritized. Vector control in many Third World countries can have tremendous impacts as it increases mortality rates, especially among infants (World Health Organization, 2009). Because of the high movement of the population, disease spread is also a greater issue in these areas (Walsh *et al*., 1980).

Curbing population of the vector species can be done in many ways, such as:

i) Habitat control- while removing or reducing areas where the vector species can easily breed, e.g. stagnant water removal, destruction of old tires and cans which were serving as mosquito breeding grounds. Habitat modification includes harbourage alteration and source reduction can be used for mosquito control. Harbourage alteration renders the sites unsuitable for resting of adult mosquitoes and source reduction changes the larval habitat so that mosquito oviposition, hatching and larval development are prevented. Accessibility of water to adult mosquito can be altered or eliminated by ditching, draining, covering and filling. Shredding of disused tires, proper disposal of water containers, alteration of flow rate of water, disturbance of water surface, removal of shelters, such as vegetation and refuse in water bodies etc. can interfere the breeding of mosquitoes. Larval habitats of mosquito vary in size. Some of the water bodies cannot be covered, filled or drained because of ecological or technical reasons. It may be too costly to drain or fill the water bodies. Converting sloping edges of ponds/pools with exposure of muddy areas to almost vertical banks with deepwater can reduce the breeding of *Aedes* mosquitoes. Increase sunlight on water by trimming overhanging vegetation prevents breeding of mosquitoes which prefer shaded habitats. Removal of rooted and floating vegetation also reduces breeding of mosquitoes.

ii) Reducing contact- while limiting exposure to insects or animals that are known disease vectors can reduce infection risks significantly, e.g., bed nets, window screens on homes, or protective clothing can help reduce the likelihood contact with vectors (to be effective, this requires education and promotion of methods amongst the population to raise the awareness of vector threats).

iii) Chemical control- insecticides, larvicides, rodenticides and repellents can be used to control vectors, e.g. larvicides can be used in mosquito breeding zones, insecticides can be applied to house walls or bed nets, and use of repellents can reduce incidence of insect bites and thus curb infection.

iv) Biological control- means the use of natural vector predators, such as bacterial toxins or botanical compounds, can help control vector populations, e.g. using fish that eat mosquito larvae or reducing breeding rates by introducing sterilized male tsetse flies have been shown to control vector populations and reduce infection risks (Vreysen *et al.*,2000). Shreth *et al.*, (2009) suggested use of Neem products and

Lantana products to protect plants against aphids. Ladybugs and their larvae have a voracious appetite for aphids. A single ladybird can eat about 100 aphids a day. Lacewing larvae are also quite fond of eating aphids.

v) Genetic control- this method is usually directed against adult mosquito, while sterile-male release technique is being studied in some countries.

vi) Other methods- giving emphasis on environmental modifications including straightening of watercourse and maintaining a sunlit water surface is made for prevention of malaria vectors breeding. Proper management of small containers, clearing of choked drains, filling of small holes etc. are the methods adopted and promoted for preventing the breeding of dengue fever vectors locally. Draining of water and keeping ditches and ponds free from aquatic vegetation are the methods used for controlling the vectors of Japanese encephalitis breeding in the territory.

Traps may be used for capturing adult mosquitoes. The attractant used could be the carbon dioxide released by breaking down propane into water and carbon dioxide. The warm water vapours with carbon dioxide attract biting insects, such as mosquitoes. Octenol, 1-octen-3-ol, has been used as attractant for attracting mosquitoes over a distance of about 30m down-wind from the trap. This attractant mainly attracts zoophagous mosquitoes. Some traps have a dim light as attractant. As light is not very attractive to mosquitoes, some mosquito traps have a fan to suck the insects flying nearby into some collection chamber or bag. Setting of the traps can, however, be included as one of the protective measures for people against mosquito attacks. Water traps can be used for aphid control. A yellow pan or bowl filled with water and a few drops of liquid dish soap placed in areas where aphid control is required are a good method for killing aphids with wings.

It has been demonstrated that device emitting sonic energy, in the frequency range of 18 to 36 kilohertz, could cause the air in the spaces inside mosquito larvae to resonate violently. The internal membranes and organs of mosquito larvae are disrupted and air bubbles are formed in the bodies of the larvae. The larvae stop moving quickly and die. However, further tests on the effects of the sonic energy on related non-target aquatic insects or other invertebrates have to be conducted.

By the way, amongst the various methods and techniques mentioned above non-hazardous chemical control method would be the most effective way to control the vector population, while non-hazardous chemical refers to the chemical components collected from natural resources, i.e. plants. These natural chemicals have considerable potential for vector management because these chemicals are safer than conventional insecticides (Mann and Kaufman, 2012). At the present time there are a number of botanical insecticides being marketed, which are extracted from neem, grapefruit seeds and garlic, among other plants. Bangladesh has a great treasure of promising plants. More than 500 plants growing or available in Bangladesh have been reported to possess medicinal properties of some description or other and have been enumerated in the literature of indigenous drug (Ghani, 1998). Many plant extracts of terrestrial origin have been reported to suppress mosquito larval population.

In recent years, use of environment friendly and biodegradable natural insecticides of plant origin has received renewed attention as agents for the control of vectors. During a screening program for new agrochemicals from Chinese medicinal herbs and local wild plants, the ethanol extract of *Evodia rutaecarpa* (Rutaceae) unripe fruits were found to possess larvicidal activity against the mosquito larvae of the Culicidae mosquito *Aedes albopictus* (Liu *et al*., 2012). Essential oil from the leaves of *L. camara* was reported to possess adulticidal activity against *Aedes aegypti*, *Culex quinquefasciatus*, *Anopheles culicifacies*, *An*. *fluvialitis* and *An*. *stephensi* mosquitoes (Dua *et al.*, 2010). Kamaraj *et al*., 2011 reported that the ethyl acetate and methanol extract of *Annona squamosa* stem bark, ethyl acetate and methanol extract of *Chrysanthemum indicum* leaf, acetone and ethyl acetate extract of *Tridax procumbens* whole plant have the potential to be used as an eco-friendly approach for the control of *Anopheles subpictus* and *Culex tritaeniorhynchus*.

The larvicidal effect of CH_3OH extracts of *Cleome viscosa* against the mosquito larvae of *Culex* sp. were found promising (Islam *et al*., 2014). Methanol extract of *Azadirachta indica* was found most potential against mosquito larvae and it can be use as alternate potential to synthetic insecticides (Batabyal *et al*., 2007). The acetone, chloroform, ethyl acetate, hexane and methanol extracts of leaf and flower of *Ocimum sanctum* were studied against the fourth instar larvae of *Aedes aegypti* and *Culex quinquefasciatus*. The highest larval mortality was found in case of leaf extract against *A. aegypti* and *C. quinquefasciatus* (Anees, 2008). The effective adult mortality was observed in case of methanol extract of *A. indica*, ethyl acetate extract of *D. biflorus* and ethyl acetate and hexane extract of *Z. zerumbet* against *C. gelidus* and *C. quinquefasciatus.* The promising larval mortality was found in case of hexane extract of *Z. zerumbet*, ethyl acetate extract of *D. biflorus* and methanol extracts of *A. indica* against *C. gelidus* and *C. quinquefasciatus* after 24h of exposures (Kamaraj *et al*., 2010). Crude and ethyl acetate extracts of matured seed coat of *Cassia sophera* was tested against *Culex quinquefaciatus*. All the graded concentration (0.6%, 0.7%, 0.8%, 0.9%, 1%) showed significant larval mortality ($p<0.05$). The results support that the tested plant extract can be used for the control of *Culex quinquefaciatus* (Kundu *et al*., 2013) if treated at the larval stage. Mosquito Larval mortality up to 93.33% and reduction of egg hatchability was observed in case of *Acacia nilotica* extract by Zaitoun *et al*. (2012). The leaf extract of *Ageratina adenophora* was more toxic to both the *Aedes. aegypti* and *Culex quinquefasciatus* and could be effectively used for the control of mosquito (Mohan and Ramaswamy, 2007).

Herbaceous plant like *Polygonum hydropiper* L. is important for antiviral activity due to the presence of some secondary metabolites like alkaloids, glycosides, tannins, volatile oils, minerals and vitamins in their cells and tissues. According to Das *et al*., 2008, aphidicidal activity of hot water extracts of *P. hydropiper* and *A. indica* were found to be effective (87.6–94.5 and 80.47–89.6% mortality respectively, $P < 0.01$). Ethanol and water extracts of five medicinal and ornamental plant species namely, *Aerva lanata*, *Ruta chalepensis*, *Fagonia arabica*, *Malva parviflora* and *Calotropis procera* were evaluated against pomegranate aphid, *Aphis punicae* Passerini under laboratory conditions. Results indicated that the ethanol extract of *R. chalepensis* (wp) showed the highest repellency (75) and mortality (79.5) at 0.015% concentration (Moawad and Barty, 2011).

Insects cause extensive damage to stored grains and their value added products. Among the stored grain pests *Sitophilus oryzae* (L.), *Callosobruchus chinensis* (Fab.) and *Tribolium castaneum* (Herbst) are considered as destructive pests in India. Plants may provide alternatives to currently used insect control agents as they constitute rich source in bioactive molecules. *Lantana camara*, an erect shrub, which grows widely in the tropics, exhibits insecticidal activity against several insects (Rajashekar *et al*., 2012). Plants are the natural factories for the synthesis of variety of bioactive compounds. This diverse chemical setup of the plants speaks their important role as biomedicine. These biomolecules are often toxic to both plants and animals. *Polygonum persicaria* and *Polygonum plebejum* show significant insecticidal activities against *Tribolium castaneum* (Hussain *et al*., 2010). Toxicity, repellency and residual effects of chloroform and ethylalcohol extracts of Bishkatali were evaluated against the red flour beetle and showed strong repellency against *T. castaneum* in which chloroform extract was better than ethyl alcohol extract (Kundu *et al.*, 2007). Three plant species, leaf of *Polygonum hydropiper* Linn. (Bishkatali), *Vitex negundo* Linn. (Nishinda) and *Aphanamixis polystachya* (Pithraj) extracted with water and acetone were evaluated for their repellent and feeding deterrent activity against adult red flour beetle, *Tribolium castaneum* (Herbst). It was observed that Biskatali (Leaf/water extract) have strong repellent and feeding deterrent effect followed by Nishinda and Pithraj (Islam *et al.*, 2000). Gallardo *et al.* (2011) showed that essential oils (EOs) from *Tagetes lucida*, *Lepechinia betonicifolia*, *Lippia alba*, *Cananga odorata*, and *Rosmarinus* were repellent, followed a dose-response relationship and EOs from *C. odorata* and *L. alba* were the most active repellents against *T. castaneum*. The methanolic extract of *Calendula arvensis* was screened for its toxic potential against *Lemna minor*, *Artimia salina* (Brine shrimps) and exhibited moderate level of cytotoxicity (LD_{50} value 9.23μg/ml) (Ullah, 2012). Ethanol extract of *Pouzolzia zeylanica* (L.) Benn possesses significant cytotoxic activity with the LC_{50} value of 6.1 μg/ml and the LC_{90} value of 12.2μg/ml (Saha *et al*., 2012a). Chloroform extracts of the fruit shell, leaves, root bark, root wood, seeds, stem bark and stem wood of *Derris indica* Bennet were tested against the brine shrimp, A*rtemia salina* nauplii. All the test extracts of *D. indica* were found to be effective (Mondal *et al*., 2012b). For brine shrimp lethality bioassay different concentrations (10, 100 and 1000ug/ml) of the methanolic extract of medicinal herb *Ajuga parviflora* were used and toxicity was found (Rahman *et al*., 2013). The Petroleum Ether, chloroform and Methanol extracts of *Cleome viscosa* (root, aerial part and fruit) have been thoroughly screened through residual film assay and repellent activity test against brine shrimp lethality test against *A. salina nauplii*; The cytotoxic effect of *C. viscosa* extracts against the brine shrimp nauplii were found promising reported by Islam (2014). Crude ethanol extracts of the rhizome of *Z. zerumbet* (L) Smith showed the highest cytotoxicity (LC_{50} was 1.24μg/mL) against brine shrimp nauplii (Hossain *et al*., 2012).

Under the shade of some previous works, similar to which are mentioned above, a basic pathway from the plants to the bioactive constituents has been established by Hostettmann and his group in 1995. However, the extensive use of synthetic organic insecticides during the last five decades have resulted in environmental hazards and also in the development of physiological resistance in major pest insect and vector species.

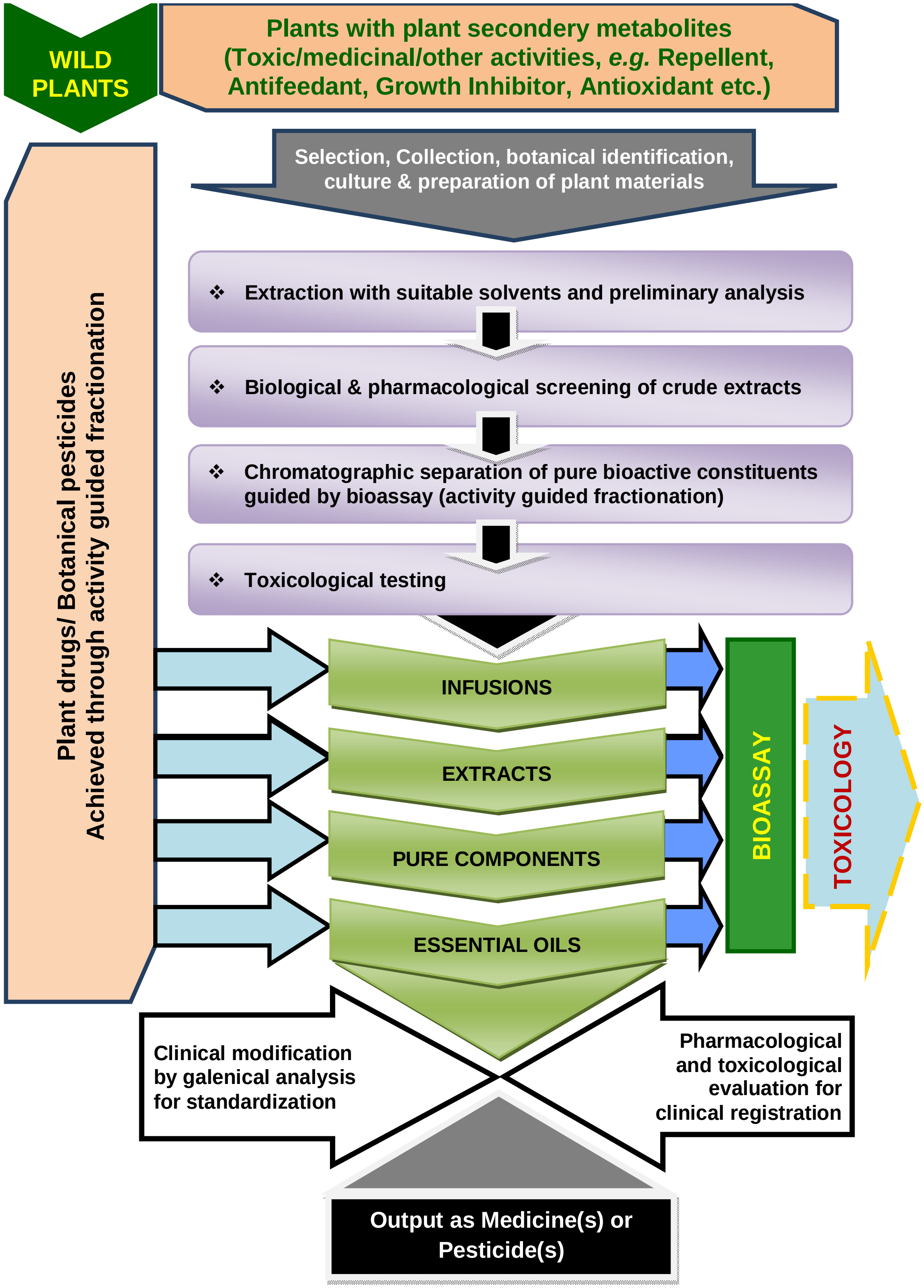


Fig. 1.1: The basic pathway from the plant to the bioactive constituents (Hostettmann *et al.,* 1995)

This has necessitated the need for search and development of environmentally safe, biodegradable, low cost, indigenous methods for vector control, which can be used with minimum care by individual and communities in specific situations.

Being situated in the tropics Bangladesh has a biodiversity rich enough and a huge number of its plants are being used in the traditional system of folk medicine, as well as in the control of crop pests. Thus, in this research endeavor plants of Bangladesh having vector control potential will be selected for the investigation of their bioactive properties as well as of other toxicological aspects used in the pesticide technology. The selected plants will be subjected for extraction with different organic solvents for the isolation, purification (by using chromatographic techniques through activity-guided fractionation) followed by characterization of the bioactive constituents.

However, a primary screening through insecticidal, larvicidal, insect repellency and antibacterial tests will be carried out to trace presence of biologically active components in some selected indigenous plants and the plant(s) found to possess promising bioactive component(s) (especially of vector control potential) given special reference in this dissertation. Thus, through literature search and taking into consideration the results obtained by the *Ad Hoc* experiments done in the Crop Protection and Toxicology Laboratory, University of Rajshahi, Bangladesh the following plants were selected: *Evolvulus nummularius* (wp) [01: 05.07.2012], *Lantana camara* (ap and r) [27: 30.06.2007], *Mentha piperita* (wp) [18: 03.04.2006], *Mimosa pudica* (wp) [37: 10.12.2011], *Parthenium hysterophorus* (wp) [48: 23.07.2008], *Phyllanthus niruri* (wp) [11: 09.07.2010], *Polygonum hydropiper* (wp) [37: 15.04.2013], *Pouzolzia zeylanica* (wp) [70: 07.06.2014], *Synedrella nodiflora* (wp) [27: 01.11.1991], *Zingiber zerumbet* (ap and rh) [not available]. Here, number along with date besides the names of plants are the voucher numbers of specimens and dates of collection which are kept in the herbarium of the Department of Botany, University of Rajshahi; and these collection helped us to identify the test plants through direct comparison.

1.1. Background information on the test plants

1.1.1. *Evolvulus nummularius*

1.1.1.1. Synonym: *Convolvulus nummularius* L.; **English name:** Round leaf Bindweed**; Local name:** Bhui Akra (ভূঁই আকরা).

1.1.1.2. Habitat and geographical distribution: *E. nummularius* can be seen on the hill slopes, edges of fields, roadsides and railway embankments. It is widely distributed in India, Nepal, Bhutan, tropical America and Africa. In Bangladesh, it is found in all districts.

1.1.1.3. Morphology: A perennial herb with prostrate stem, often pilose at the nodes with short tricomes to glabrate. Leaves 0.5-1.3 x 0.5-1.1cm, broadly ovate to orbicular, petioles 1-6mm long, apex rounded to slightly emerginate, base rounded to subcordate, glabrous to puberulent beneath. Flower 1-2 in axils, rarely more, up to 5mm high, pedicels 2-6mm long. Flowers are very tinny, around 0.5-0.7cm size, color is milky white. Sepals elliptic ovate to elliptic-oblong, pubescent, ciliate. Corolla broadly campanulate, up to 10mm wide, white. Fruit a globose capsule, 3-4mm across, often reflexed at maturity. Seeds 1.5mm long, brownish to black, subglobose. Flowering and fruiting throughout the year. It binds the ground while creeping around (Ahmed *et al*., 2009c).

1.1.1.4. Systematic position:

Kingdom: Plantae
Superdivision: Spermatophyta
Division: Magnoliophyta
Class: Magnoliopsida
Order: Solanales
Family: Convolvulaceae
Genus: *Evolvulus* L.
Species: *E. nummularius* (L.)

Plate 1.1: *Evolvulus nummularius*

1.1.1.5. Uses: The whole plant is used as a medicine for hysteria, to cure burns, cuts, wounds and scropion stings (Jain, 1991). In Nepal, the paste of the plant is used to treat scabies (Manandhar, 2002). *E. nummularius* has been pharmacologically reported to possess antihelminthic activity (Dash *et al.*, 2003) wound healing activity (Saini *et al.*, 2007), poor sedative and anticonvulsant properties (Chitralekha *et al.*, 1964). Three new compounds, 1-3 along with β-sitosterol and its glucoside, stigmasterol, *d*-mannitol, ursolic acid and oleanolic acid have been isolated from the aerial parts of *E. nummularius* (Biswanath *et al.*, 2007). Methanol extract of *E. nummularius* has antibacterial activity against *Escherichia coli* and *Bacillus subtilus* (Pavithra *et al.*, 2009).

1.1.2. *Lantana camara*

1.1.2.1. Synonym: *Lantana aculeata* L., *Lantana armata*; **English name:** Lantana; **Local name:** Chotra (চোতরা) .

1.1.2.2. Habitat and geographical distribution: *L. camara* are very much common in the wild and along footpaths, deserted fields and farms. It is distributed in Mexico, Central America, the Greater Antilles, The Bahamas, Colombia and Venezuela, Texas in the United States, tropical and warm regions worldwide.

1.1.2.3. Morphology: *L. camara* is a low erect or subscandent vigorous shrub with tetrangular stem. It has a strong odor of black currents. Plant grows up to 1 to 3m and it can spread to 2.5m in width. Leaves are ovate or ovate oblong, 3-8cm long by 3-6cm wide and green in color. Leaves and stem are covered with rough hairs. Small flower held in clusters (called umbels). Color usually orange, the calyx is small, corolla tube slender, the limb spreading 6 to 7mm wide and divided in to unequal lobes. Stemen four in two pairs, included and ovary two celled, two ovuled. Inflorescences are produced in pairs in the axils of opposite leaves. Inflorescences are compact, dome shaped 2-3cm across. Root system is very strong and it gives out new fresh shoots even after repeated cuttings (Sastri, 1962).

1.1.2.4. Systematic position:

Kingdom: Plantae
Superdivision: Spermatophyta
Division: Magnoliophyta
Class: Magnoliopsida
Order: Lamiales
Family: Verbenaceae
Genus: *Lantana* L.
Species: *L. camara* (L.)

Plate 1.2: *Lantana camara*

1.1.2.5. Uses: Foliage contains pentacyclic triterpenoids cause hepatotoxicity and photosensitivity in grazing animals such as sheep, goats, bovines and horses. The berries are edible when ripe. Ingestion of *L. camara* (including unripe berries) is not associated with significant human toxicity (Carstairs *et al.*, 2010). The methanolic extract of *Lantana camara* leaves shown healing of gastric ulcers and also prevents development of duodenal ulcers in rats (Sathish *et al.*, 2011). Extracts of the fresh leaves are antibacterial and are traditionally used in Brazil as an antipyretic, carminative and in the treatment of respiratory system infections (Barreto, 2010).

1.1.3. *Mentha piperita*

1.1.3.1. Synonym: *Mentha crispa* L.; **English name:** Peppermint, Mint; **Local name:** Pudina (পুদিনা).

1.1.3.2. Habitat and geographical distribution: Peppermint typically occurs in moist habitats including stream sides and drainage ditches. It is native to Europe and Asia. Outside of its native range, areas where peppermint was formerly grown for oil often have an abundance of feral plants and it is considered invasive in Australia, the Galapagos Islands, New Zealand and in the United States in the Great Lakes region, noted since 1843.

1.1.3.3. Morphology: Peppermint is an herbaceous rhizomatous perennial plant growing to 30–90cm (12–35 inch) tall, with smooth stems, square in cross section. The rhizomes are wide-spreading, fleshy and bare fibrous roots. The leaves are from 4–9cm (1.6–3.5 inch) long and 1.5–4cm (0.59–1.6 inch) broad, dark green with reddish veins and with an acute apex and coarsely toothed margins. The leaves and stems are usually slightly fuzzy. The flowers are purple, 6–8mm (0.24–0.31 inch) long, with a four-lobed corolla about 5mm (0.20 inch) diameter; they are produced in whorls (Verticillasters) around the stem, forming thick, blunt spikes. Flowering is from mid- to late summer. Both leaves and flowers have a characteristic, aromatic fragrance. Peppermint is a fast growing plant once it sprouts, it spreads very quickly.

1.1.3.4. Systematic position:

Kingdom: Plantae
Superdivision: Spermatophyta
Division: Magnoliophyta
Class: Magnoliopsida
Order: Lamiales
Family: Lamiaceae
Genus: *Mentha* L.
Species: *M. piperita* (L.)

Plate 1.3: *Mentha piperita*

1.1.3.5. Uses: Peppermint is considered to have astringent, antiseptic, emetic and stimulant qualities. It has a long history of medicinal use, especially in treatment of digestive complaints. Tea made from leaves and flowers can be an excellent remedy for treatment of indigestion, cramps, flatulence, nausea, vomiting and colic. It has a soothing effect on the stomach, and can also be an appetite stimulant. Topical application of peppermint oil can reduce arthritis, rheumatism and chronic joint pain. Due to its antiseptic properties, peppermint can be helpful in the relief of toothache and in treatments of cavities. Peppermint vapors and inhalers are very helpful in cases of nasal and sinus congestions, laryngitis and bronchitis. Peppermint oil has a high concentration of natural pesticides, mainly pulegone (Found in *Mentha arvensis var. piperascens* Cornmint, Field Mint, Japanese Mint and to a lesser extent-6,530 ppm in *Mentha piperita* (Krieger, 2001). The chemical composition of the essential oil from peppermint (*Mentha piperita* L.) was analyzed by GC/FID and GC-MS. The main constituents were menthol (40.7%) and menthone (23.4%). Further components were (+/-)-menthyl acetate, 1,8-cineole, limonene, beta-pinene and beta-caryophyllene (Schmidt *et al.*, 2009).

1.1.4. *Mimosa pudica*

1.1.4.1. Synonyms: *Mimosa tetrandra* Humb. & Bonpl. ex Willd. *Mimosa pudica* L. var. *tetrandra* (Willd.) DC. *Mimosa unijuga* Duch. & Walp. *Mimosa pudica* L. var. U*nijuga* (Duch. &Walp.) Griseb.; **Common name:** The touch-me-not and sensitive plant.; **English name:** Lajjabati (লজ্জাবতী).

1.1.4.2. Habitat and geographical distribution: *M. pudica* are found in the dry open grassy fields, pastures, roadsides and fallow lands. It is pantropical weed of South American origin, distributed to all the tropical countries of the world. In Bangladesh, it is a common weed, growing all over the country.

1.1.4.3. Morphology: A low, spreading and prostrate annual or perennial herb, up to 1m tall, sometimes sub-shrubby herb, erect or scrambling, sometimes rooting at the nodes, branches more or less herbaceous but old stem woody, glandular hairy and prickly, prickles curved, compressed. Leaves sub-digitately pinnately compound, very sensitive to touch, stipulate, stipules linear-lanceolate, 7-8mm long, rachis 2.5-3.0cm long, sometimes up to 5cm long, sulcate, hispid and prickly, without throne at the junctions of the pinnae but sometimes with a few recurved prickles on the internodes, pinnae l-2 pairs, about 2.5-5.0cm long, sessile, at the end of the rachis, leaflets 12-25 pairs, sessile, 5-10×1.5-2.0mm, linear-oblong to sub-falcate, acute, coriaceous, glabrous above, faintly hairy on margin and beneath. In florescence of axillary pedunculate globose heads, solitary or paired in the axils of the distal leaves, peduncles about 2.5-3.5cm long, yellowish-green, densely hirsute, bearing heads 6-8mm across, solitary or in a axillary pair. Flowers small, sessile, tubular, pinkish. Calyx minute, less than 0.lmm long, inconspicuous. Corolla pink, l.5-2.5mm long, narrowly campanulate, lobes 4, oblong-ovate, obtuse or rounded. Stamens 4, much exserted. Ovary 0.3-0.5mm long, glabrous. Fruit a pod, l5-l8×2-4mm, oblong, flat, straight or recurved wavy margin on both sides, dark brown with bright brown prickly bristle margin when dry, develop in cluster from the same head, indehiscent. Seeds 3-5 per pod, light brown, smooth, glossy. Flowering and fruiting: September-December (sometimes throughout the year) (Ahmed *et al*., 2009a).

1.1.4.4. Systematic position:

Kingdom: Plantae
Superdivision: Spermatophyta
Division: Magnoliophyta
Class: Magnoliopsida
Order: Fabales
Family: Fabaceae
Genus: *Mimosa* L.
Species: *Mi. pudica L.*

Plate 1.4: *Mimosa pudica*

1.1.4.5. Uses: *Mimosa pudica* is a good soil binder and it has been tried as green manure. In Thailand, the species was introduced to check soil erosion along embankments (Nielsen, 1985). The roots contain tannin, which is used as medicine in the Philippines; also the plant is used as a cover crop along roadside in Thailand (Nielsen, I992). Due to the sensitivity of leaves it is valued as an interesting ornamental plant. The local people of Orissa, India take extract of powdered roots and leaves to cure fever due to spleen enlargement, the residue is also applied externally for the same purpose over the stomach (Srivastava and Rout, 1994). It is used in the treatment of leprosy, dysentery, vaginal and uterine complaints and inflammations, burning sensation, asthma, leucoderma, fatigue and blood diseases. Decoction of root is used as gargle to reduce toothache. It is very useful in diarrhea, amoebic dysentery, bleeding piles and urinary infections. This review gives a brief compilation of its phytochemical and pharmacological activities (Joseph *et al.*, 2013).

1.1.5. *Parthenium hysterophorus*

1.1.5.1. Synonym: Bastard feverfew; **English name:** Bitter weed, *Parthenium* weed; **Local name:** Gajor Ghash Ful, *Parthenium* (পার্থেনিয়াম) .

1.1.5.2. Habitat and geographical distribution: This noxious weed is often spotted on abandoned lands, developing residential colonies around the towns, railway tracks, roads, drainage and irrigation canals, etc. This weed grows luxuriantly in established gardens, plantations and vegetable crops. This erect, ephemeral herb known for its vigorous growth and high fecundity especially in warmer climates is a native of north-east Mexico and is endemic in America. Within the past century it has found its way to Africa, Australia, Asia and Pacific Islands and has now become one of the world's seven most devastating and hazardous weeds. Due to its high fecundity a single plant can produce 10,000 to 15,000 viable seeds and these seeds can disperse and germinate to cover large areas.

1.1.5.3. Morphology: *Parthenium hysterophorus* is a prolific weed belonging to Asteraceae family. This erect ephemeral herb can grow up to 1.5-2m high and has a deep tap root. It is light green with branching stems, finely lobed leaves, 3-20cm long and 2-10cm wide. Once stem elongation is initiated, smaller leaves are produced and the plant becomes multi-branched in its extremities. Flower heads are small (4mm across) and numerous in open panicles. *P. hysterophorus* reproduces by seeds and is known to be highly prolific, and produces 15,000 seeds (GISD Database, 2010).

1.1.5.4. Systematic position:

Kingdom: Plantae
Superdivision: Spermatophyta
Division: Magnoliophyta
Class: Magnoliopsida
Order: Asterales
Family: Asteraceae
Genus: *Parthenium* L.
Species: *P. hysterophorus* L.

Plate 1.5: *Parthenium hysterophorus*

1.1.5.5. Uses: *P. hysterophorus* is a noxious weed in America, Asia, Africa and Australia. This weed is considered to be a cause of allergic respiratory problems, contact dermatitis, mutagenicity in human and livestock. Crop production is drastically reduced owing to its allelopathy. Also aggressive dominance of this weed threatens biodiversity. Eradication of *P. hysterophorus* by burning, chemical herbicides, eucalyptus oil and biological control by leaf-feeding beetle, stem-galling moth, stem-boring weevil and fungi have been carried out with variable degrees of success. Recently many innovative uses of this hitherto notorious plant have been discovered. *P. hysterophorus* confers many health benefits, *viz* remedy for skin inflammation, rheumatic pain, diarrhoea, urinary tract infections, dysentery, malaria and neuralgia. Its prospect as nano-medicine is being carried out with some preliminary success so far. Removal of heavy metals and dye from the environment, eradication of aquatic weeds, use as substrate for commercial enzyme production, additives in cattle manure for biogas production, as biopesticide, as green manure and compost are to name a few of some other potentials. The active compounds responsible for hazardous properties have been summarized.

Isolation and structural elucidation of the active principles of *P. hysterophorus* is required to determine their chemical properties. Chemical analysis of *P. hysterophorus* has indicated that all its parts including trichomes and pollen contain toxins called sesquiterpene lactones (SQL).

Maishi *et al.*, (1998) reported that *P. hysterophorus* contains a bitter glycoside parthenin, a major sesquiterpene lactone. Other phytotoxic compounds or allelochemicals are hysterin, ambrosin, flavonoids such as quercelagetin 3,7-dimethylether, 6-hydroxyl kaempferol 3-0 arabinoglucoside, fumaric acid. P-hydroxy benzoin and vanillic acid, caffeic acid, p courmaric, anisic acid, p-anisic acid, chlorogenic acid, ferulic acid, sitosterol and some unidentified alcohols. Parthenin, hymenin and ambrosin are found to be the culprits behind the menacing role of this weed in provoking health hazards (Patel, 2011).

1.1.6. *Phyllanthus niruri*

1.1.6.1. Synonyms: *Phyllanthus fraternus* Webster, *Ph*, *sellowianus*, *Ph. carolinianus*, *Ph. kirganella*, *Ph. lathyroides*, *Ph. lonphali, Nymphanthus niruri*; **English name:** Stone-breaker; **Local name:** Bhui-amla (ভুইআমলা)**.**

1.1.6.2. Habitat and geographical distribution: It occurs in Sandy clay soil in moist habitat. It is available in Africa, India, Pakistan, Saudi Arabia and the West Indies. In Bangladesh, this species is found throughout the country.

1.1.6.3. Morphology: A monoecious, erect annual herb, up to 70cm high, branches angular. Leaves stipulate, stipules 1.0-1.2mm long, lanceolate, scarious, acute,, petiolate, petioles very short, leaf blade elliptic-oblong to elliptic-oblanceolate, 5-12 x 2-5mm, obtuse or rounded at the apex and base or sometimes tapering to the base,, membranous, lateral nerves 4-7 pairs, indistinct, dark green above, paler and greyish beneath. Flowers yellowish, very numerous, axillary, the males l-3, the female solitary. Male flowers pedicellate, pedicels l mm long, sepals 6, suborbicular-obovate, c 0.5 x 0.5mm, rounded, midrib yellow, disc glands 6, verruculose, lobulate, stamens 3, filaments united into a short column, anthers more or less horizontal, dehiscing transversely. Female flowers with pedicels 1.4-1.9mm long, sepals 6, unequal, l.0-l.5 x 0.4-0.5mm, oblong-oblanceolate, rounded, white, disk thin, flat, irregularly deeply lobed into 6-l0 segments, some crenate and broad, some triangular and bifid, some others linear and entire, ovary subglobose, c 1mm in diameter, smooth, styles minute, free, adpressed or ascending, the lobes recurved. Fruits trilobate-subglobose, l.5-2.5mm in diameter, smooth, olivaceous or stramineous. Seeds l.0 x 0.6mm, longitudinally 7-8 ridged on the back, ochreous-fulvous (Ahmed *et al*., 2009d).

1.1.6.4. Systematic position:

Kingdom: Plantae
Superdivision: Spermatophyta
Division: Magnoliophyta
Class: Magnoliopsida
Order: Magnoliopsida
Family: Euphorbiales
Genus: *Phyllanthus* L.
Species: *Ph. niruri* L.

Plate 1.6: *Phyllanthus niruri*

1.1.6.5. Uses: The plant is used as diuretic in gonorrhoea and other ailments of genito-urinary tract. The fresh root is administered as a remedy of jaundice. Infusion of young shoots is prescribed in dysentery. A poultice of the leaves is applied to bruises and wounds, and with salt it cures scabby infections. An infusion of root and leaves is a good tonic and diuretic. The milky juice is effective for offensive sores. The bark is applied as a purgative (Kirtikar *et al*., I935). In India, the ethnic people of Lodha use the juice of the plant with curd to cure jaundice. They apply a decoction of root with paste of long peppers in the treatment of dysentery, and stem decoction made with water that is obtained after washing rice is used to treat menorrhagia. The Santal ethnic people prescribe a decoction of plant with black peppers ‘for genital diseases. In Ghana, the pounded leaves are given to cure gonorrhoea. A decoction of the root and leaves is used in stomach-ache in Haiti (Pal and Jain, 1998). Various bioactivities of this medicinal plant such as antidiabetic (Okoli *et al.*, 2011), anti-hepatotoxicity, (Ravikumar *et al.*, 2011) antilithic, anti-hypertensive, anti-HIV and anti-hepatitis B (Bagalkotkar *et al*., 2006; Naik and Juvekar, 2003) have been reported.

1.1.7. *Polygonum hydropiper*

1.1.7.1. Synonyms: *Persicaria fastigiatoramosa*, *Persicaria hydropiper*, *Polygonum fastigiatoramosum*, *Polygonum maximowiczii*; **English name:** Water papper; **Local name:** Bishkatali (বিষকাটালী).

1.1.7.2. Habitat and geographical distribution: It can be seen on shallow water in ponds, ditches etc and in wet places on land. It is distributed in Europe, including Britain, from Norway south and east to N. Africa and temperate Asia. Origin - Native to Eurasia.

1.1.7.3. Morphology: Leaves are alternate, short-petiolate or subsessile, lanceolate to linear-oblong, glabrous, acuminate. Ocrea with ciliate bristles on margin, glabrous to scabrous. Inflorescence are terminal and axillary racemes, loosely arranged, often nodding at tip. Stems are 1m tall, herbaceous, glabrous or with some pubescence above, typically green or reddish, erect to spreading, multiple or single from base, simple to few-branching. The roots are thin and fibrous as the plant is an annual. Flowers are small, sessile in terminal, generally unbranched spikes and blooming in the month of June-July.

Plate 1.7: *Polygonum hydropiper*

1.1.7.4. Systematic position:

Kingdom: Plantae
Superdivision: Spermatophyta
Division: Magnoliophyta
Class: Magnoliopsida
Order: Polygonales
Family: Polygonaceae
Genus: *Polygonum* L.
Species: *Po. hydropiper* L.

1.1.7.5. Uses: Smartweed has a long history of herbal use, both in Eastern and Western herbalism. It is not used very often and is seen more as a domestic remedy being valued especially for its astringent properties which makes it useful in treating bleeding, skin problems, diarrhoea, etc. The leaves are anti-inflammatory, astringent, carminative, diaphoretic, diuretic, emmenagogue, stimulant, stomachic, styptic. They contain rutin, which helps strengthen fragile capillaries and thus helps prevent bleeding. The seed is carminative, diuretic and stimulant. The whole plant, either on its own or mixed with other herbs, is decocted and used in the treatment of a wide range of ailments including diarrhoea, dyspepsia, itching skin, excessive menstrual bleeding and haemorrhoids. A poultice of the plant is used in treating swollen and inflamed areas. In Chinese tests, the plant was ranked 20th in a survey of 250 potential antifertility drugs. A homeopathic remedy is made from the leaves. It is used in the treatment of piles, menstrual pains and other menstrual complaints.

Leaves and stems can be used as raw or cooked. They can also be made into an acid peppery condiment. They are very hot. The leaves contain about 7.5% protein, 1.9% fat, 8% carbohydrate, 2% ash. The leaves are said to contain rutin. Seed can be used as raw or cooked. It is rather small and fiddly to utilize. The seed is used as a condiment - a pepper substitute. The sprouted seeds or young seedlings can be used as a garnish or added to salads, they are commonly sold in Japanese markets. They are very hot. A yellow-gold dye is obtained from the stalks.

1.1.8. *Pouzolzia zeylanica*

1.1.8.1. Synonym: *Pouzolzia arnhemica* F. Muell.; *Pouzolzia indica* Gaud; *Parietaria zeylanica* L.; *Parietaria indica* L; **English name:** Graceful Pouzolz's Bush; **Local name:** *Pouzolzia* (পওজলজিয়া).

1.1.8.2. Habitat and geographical distribution: *Pz. zeylanica* is very much mesophytic (*i.e.*, Mesophytes are terrestrial plants which are adapted to neither a particularly dry nor particularly wet environment). It likes to grow roadsides, old fields, waste places, disturbed areas; grasslands, thickets by streams, wet places, sunny and somewhat moist places by rice fields. *Pz. zeylanica* is available throughout Asia. It also found in Polynesia, Papua New Guinea, Australia and around its Islands; it also recorded from Yemen (Socotra). It introduced in Africa and the New World. In Bangladesh, it found throughout the country in fallow lands.

1.1.8.3. Morphology: Graceful Pouzolz's Bush is a perennial herb, very variable in size and habit; sparsely to moderately cover on all parts with appressed and spreading hairs. Stem is erect to sub-erect, rarely prostrate, almost simple or few branched at base, 12-40cm tall hairy to glabrescent herb, growing up to 12-40cm tall but occasionally grows into a shrub about 1m tall; rootstock often tuberous; branches sometimes with short branchlets, strigillose. Leaves are opposite or rarely alternate, with 4-12mm long stalk. Leaf blade is lanceshaped- rhomboid ovate, 1-2.5cm long, 4-15mm broad, wedge-shaped or flat at the base, entire, pointed. Stipules are broadly ovate, 3-5mm long, 3-4mm broad, acuminate, ciliate, clothed in long white hairs. Leaf blades 1-5 × 0.6-2cm, base rounded to broadly cuneate, apex sub-obtuse, acute or nearly acuminate. Flowering time July to October. Flowers are minute, in small axillary androgynous clusters, covered with hairs, female stalkless, male with 2mm long stalk. Flower colour varies from green to pale green, beige, white. Sepal cup is 4-lobed and gibbous in male; 4-toothed in female flowers. Calyx 4-lobed and gibbous in male; 4-toothed in female flowers. Four stamens. Anthers reniform, about 0.9 x 0.6mm, reflexed in the bud. Filaments about 1-2mm long. Achenes are white, light to dark yellow or light brown, ovate, 1.5 mm long, enveloped by ribbed sepal cup. Fruits enclosed in the persistent, hairy perianth. Fruits pyriform, about 2.5 x 2mm. Seeds about 2 x 1.8mm, testa thin and glabrous. Cotyledons about 1 x 1.5mm, broader than long, slightly cordate at the base. Radicle straight and thick, about 0.6 x 0.5mm.Cotyledons orbicular, about 7-8mm diam. First pair of leaves opposite, leaf blades ovate, upper surface clothed in numerous 'glandular' humps and long, pale hairs. Stipules hairy; at the tenth leaf stage, Midrib and lateral veins depressed on the upper surface. Leaf blade 3-veined at the base.

1.1.8.4. Systematic position:

Kingdom: Plantae
Superdivision: Spermatophyta
Division: Magnoliophyta
Class: Magnoliopsida
Order: Urticales
Family: Urticaceae
Genus: *Pouzolzia* Gaudich.
Species: *Pz. zeylanica* (L.) Benn

Plate 1.8: *Pouzolzia zeylanica*

1.1.8.5. Uses: *Pz. zeylanica* is a perennial herbaceous plant and has a reputation for its folk used as a remedy for diarrhea, indigestion, infantile malnutrition, urination difficulties and injuries from falls. Moreover, it is especially useful in conditions such as acute mastitis and pyogenic infections (Tsao and Deng, 2004). However, no chemical and biochemical information concerning *Pz. zeylanica* has been reported.
This species has been used medicinally in Malaysia and Indonesia. Leaves are anthelmintic and vulnerary; used as a cicatrizant for gangrenous ulcers, in syphilis and gonorrhoea. Leaf juice is used as galactagogue. Poultice of the herb is applied to sores, boils and to relieve stomachache (Yusuf *et al.*, 1994).The aerial part of *Pz. zeylanica* was studied by Paul and Saha (2012) to fix the parameters for pharmacognostical standards and they also ensured the presence of alkaloids, glycosides, tannins and flavonoids. *Pz. zeylanica* has also fluorescence properties (Kokoshi *et al.*, 1958; Chase and Pratt 1949). Recently organoleptic study has been done by Paul and Saha (2012), which offer a scientific basis for the traditional use of *Pz. zeylanica* which possess characters like greenish grey, characteristic odour and mucilaginous and slightly bitter taste. Presence of antitumor or pesticidal compounds in this plant is also suggested by Meyer *et al.* (1982).

Other current studies ensured the Anti-Bacterial activity of *Pz. zeylanica*. The ethanol extracts of *Pz. zeylanica* was showing anti-bacterial activity against both gram positive and gram negative organisms (Saha *et al.*, 2012b; Jenny *et al.*, 2012). The ethanolic extracts of *Pz. zeylanica* possessed antifungal activity against six fungal strains fungal strains (Saha and Paul, 2012a). *Pz. zeylanica* contains flavones, flavonoids, tannin, carotene, carotenoids, ascorbic acid, tartaric, malic and pectic acids, gum, minerals and their salts (Ghani, 2003); alkaloids, glycosides (Paul and Saha, 2012).

1.1.9. *Synedrella nodiflora*

1.1.9.1. Synonym: *Verbesina nodiflora* L.; **English name:** Node weed, Cindrella weed**; Local name:** Cindrella (সিনড্রেলা) **.**

1.1.9.2. Habitat and geographical distribution: *S. nodiflora* originates from the New World tropics, but became naturalized in the Old World in the 19th Century. This plant is found in tropical Africa, tropical and sub-tropical Asia, and introduced in the West Indies. In Bangladesh it is found all over the country.

1.1.9.3. Morphology: A short-lived or long-lived herbaceous plant with weak sprawling stems growing up to 60cm long. Its paired leaves (1-6cm long) are egg-shaped in outline or somewhat triangular in shape with sparsely toothed margins. Its stems and leaves are loosely covered in short close-lying hairs. Its small yellow flower-heads (5-10mm across) are borne singly in the upper leaf forks. Its 'seeds' (2-4mm long) are topped with a pair of spreading awns 1-3mm long. This species reproduces mainly by seed.

1.1.9.4. Systematic position:

Kingdom: Plantae
Superdivision: Spermatophyta
Division: Magnoliophyta
Class: Magnoliopsida
Order: Asterales
Family: Asteraceae
Genus: *Synedrella* Gaertn.
Species: *S. nodiflora* (L) Gaertn.

Plate 1.9: *Synedrella nodiflora*

1.1.9.5. Uses: In Indonesia, the leaves of *S. nodiflora* are used as a poultice for sore legs and rheumatism; in Africa the leaves are applied as an embrocation for different oedemas. In Ghana, an infusion of young leaves is used as a laxative. In Indonesia, the juice of the leaves is used for the treatment of earache, and in Africa for treatment of mouth affections such as infected gums. In Papua New Guinea, the root is chewed against diarrhoea, together with some other herbs. Dislocated bones are massaged daily with sap from the squeezed leaves. In Fiji, a decoction of the leaves is used to treat haemorrhoids and diarrhoea. A decoction of the pounded and cooked roots is drunk as a cough-mixture in Africa and in Barbados. In Colombia, the entire plant is used as an emmenagogue. *S. nodiflora* is not known to be used in Indo-China. In Indonesia tender leaves are used in salad.

Upon steam distillation of the leaves, *S. nodiflora* yields a yellow coloured essential oil (0.02%), with the terpenes 'β'-caryophyllene, 'β'-farnesene, germacrene-D and 'β'-cubebene as major components. From the ethanol extract of the whole plant, the triterpenoid saponin nodifloside A (oleanolic acid-3-O-'β'-D xylopyranosyl-(1forward 4)-'β'-D-glucopyranuronosyl methylate) was isolated, together with the triterpenoid oleanic acid-3-O-'β'-D-glucopyranuronosyl methylate, and the steroids 'β'-sitosterol, stigmasterol, stigmasterol-3-O-'β'-D-glycoside and rosasterol. *S. nodiflora* also contains a high content of estradiol. An orally administered dried leaf extract of *S. nodiflora* was found to be active as an anti-inflammatory against adjuvant-carrageenan-induced inflammation in rats. It inhibited both acute and chronic phases, especially the chronic phase. The ethanol extract of the entire plant showed analgesic and antipyretic activity in rodents. Furthermore, chloroform extracts of the foliage of *S. nodiflora* acted as a deterrent when tested on three pests of stored grain products: larvae and imagos of *Tribolium confusum*, larvae of *Trigoderma granarium*, and imagos of *Sitophilus granarius*.

1.1.10. *Zingiber zerumbet*

1.1.10.1 Synonym: *Cardamomum spurium* (J. Konig) Kuntze, *Zingiber amaricans* Blume; **English name:** Variegated-leaved zerumbet ginger; **Local name:** Bon-ada (বন-আদা).

1.1.10.2. Habitat and geographical distribution: *Z. zerumbet* is found in partial shade in the forests and village thickets. It is distributed in India, Malaysia, Nepal and Sri Lanka. In Bangladesh, it grows all over the country in forests and village thickets.

1.1.10.3. Morphology: A rhizomatous herb with annual aerial leafy stems and underground tuberous rhizome, pale yellow inside. Leafy stem 0.6-2.0m high. Leaves sessile or subsessile, 20-30 × 4-8cm, lanceolate or oblanceolate, acuminate, usually with some hairs on the lower surface, silky when young, ligules 1.5-3.0cm long, membranous, entire, with a few scattered hairs. Inflorescence radical, peduncles 30-70cm long, clothed with sheathing bracts, 4-6cm long, lightly pubescent, rounded at the apex, spikes 7-l2 × 4-6cm, ovate-oblong, often rounded at the tip. Calyx spathaceous, c 2cm long, shortly 3-toothed, hairy at the base and few bristles at the tip, unilaterally split. Corolla tube 2.5-3.0cm long, petals 3, white or yellowish, 2.0-2.3cm long, narrowed at the apex. Labellum light yellow or creamy, 3-lobed, mid-lobe c 1.8cm long, broad, suborbicular, bifid, central portion raised, margin crinkled, lateral lobes (staminodes) rotundate or ovate, c 1cm long. Filaments very short, c 3mm long, anthers c 1cm long, beak c 7mm long, curved. Ovary 4 x 2-3mm, glabrous, epigynous gland yellow, 3-5mm long, linear, free (Ahmed *et al.,* 2009b).

1.1.10.4. Systematic position:

Kingdom: Plantae
Superdivision: Spermatophyta
Division: Magnoliophyta
Class: Magnoliopsida
Order: Zingiberales
Family: Zingiberaceae
Genus: *Zingiber* Mill.
Species: *Z. zirumbet* L. Roscoe

Plate 1.10: *Zingiber zerumbet*

1.1.10.5. Uses: The plant is sold in the market in the trade name “Ekangi”, a traditional drug used in the preparation of Ayurvedic and Unani medicines. In India, the rhizome is used in cough, stomachache, asthma, worm infestation, leprosy and skin diseases. Dried powdered rhizome is used as an antidiarrhoeal agent in the Philippines. Decoction is used in asthma and rheumatism. The plant was tested in India against different pathogens. Rhizome was found antiviral and antiprotozoal and the leaf as diuretic. The rhizome contains volatile oil, main constituent of which is zerumbone 35.48%, other major constituents are humulene 17.29% and camphene 16.04% (Oliveros and Cantoria, 1982; Prakash and Mehrotra, 1996; Riswan and Setyowati, 1996.) Rhizome is used for cough and cold in the Chittagong Hill Tracts by the ethnic people. The plant can be easily propagated through rhizome segments.

1.2. Background information on the test organisms

The whole experiment has been designed to carry on screening of the crude extracts of the test plant species on several test organisms for the detection of biological activity keeping an option to show extent of activity by analyzing the data statistically that read on various parameters during the course of the work. The following test steps have been taken into consideration:

Table 1.1. List of the test agents

Test agents	Types of test
Aphis gossypii	Dose mortality test
	Repellency test
Artemia salina	Brine shrimp lethality test
Culex quinquefasciatus	Larvicidal test
Tribolium castaneum	Dose mortality test
	Repellency test
Gram positive and gram negative bacteria	Microbial (Antibacterial) test

1.2.1. 'Rust-red flour beetle' (*Tribolium castaneum*)

T. castaneum (Hbst.), the red flour beetle is Indo-Australian origin (Smith and Whitman, 1992) and is found in temperate region, but will survive the winter in protected places, especially where there is central heat (Tripathi *et al.*, 2001). In the United States, it is found primarily in the southern states. *T. castaneum* is a worldwide and commonest pest of wheat-flour. It is commonly known as 'Rust-red flour beetle'. It is an insect of the family 'Tenebrionidae' under the order 'Coleoptera'.

It is one of the serious pests of stored products. Mouthparts of this pest insect are not adapted to feed on hard whole grains and they are thus found in almost any kind of flour, cracked grains etc. The specific foods of *T. castaneum*, which include whole-wheat flour, bran, rice flour, cornmeal, barley flour and oat meals. It also feeds upon dried fruits, dried plant roots, nuts, chocolates, drugs, snuff, cayenne pepper, pulses and prepared cereal foods such as corn flakes (Metcalf and Flint, 1962). Not only pulses and millets, but also cereals are also been attacked by this beetle (Purthi and

Singh, 1950). *T. castaneum*, attack meal, crackers, beans, spices, pasta, cake mix, dried pet food, dried flowers and even dried museum specimens (Via, 1999; Weston and Rattlingroud, 2000).

Although small beetles, about $\frac{1}{4}$ of an inch long, the adults are long-lived and may live for more than three years (Walter, 1990). The red flour beetle is reddish brown in color and its antennae end in a three segmented club (Bousquet *et al.*, 1990). The head of the red flour beetle is visible from above, does not have a beak and the thorax has slightly curved sides.

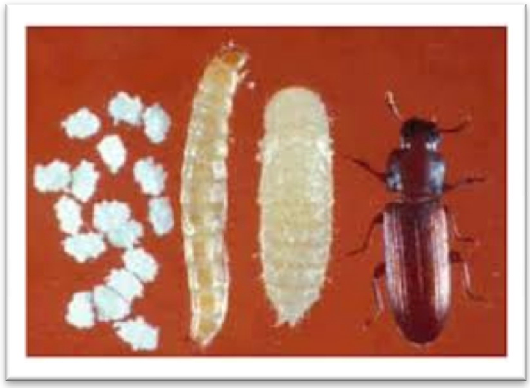


Plate 1.11: Life cycle of *T. castaneum*

Table 1.2. Developmental rates of *T. castaneum*

Rearing temperatures	30˚C	34˚C
Egg	3 days	2 days
Larva	20 days	15 days
Pupa	4 days	3 days
Reproductive maturation	5 days	4 days
Total time from egg to egg	32 days	24 days

The eggs are white, microscopic and often have bits of flour stuck to their surface. The slender larvae are creamy yellow to light brown in color. They have two dark pointed projections on the last body segment. The young larva is yellowish white and measures 1mm in length. As it matures, it turns reddish yellow, becomes hairy and measures over 6mm in length. Its head, appendages and the last abdominal segment are darker. The adult is a small reddish-brown beetle, measuring about 3.5mm in length and 1.2mm in width. Its antennae are bent and bear a distinct club formed by the three enlarged terminal joints. The last antennal segment is transversely rounded. It was commonly found in wild state in rotting wood and in loose bark of trees in India. This insect is now widely distributed all over the world mainly through commerce.

1.2.1.1 Systemic position:

Kingdom: Animalia

Phylum: Arthopoda

Class: Insecta

Order: Coleoptera

Family: Tenebrionidae

Genus: *Tribolium*

Species: *T. castaneum* (Herbst)

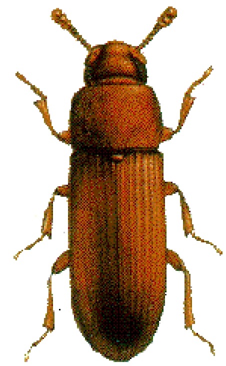


Plate 1.12: *T. castaneum*

The red flour beetle may be present in large numbers in infested grain, but are unable to attack sound or undamaged grain (Walter, 1990). Both the larva and the adults cause damage. They are found in great numbers on infested materials and caused serious losses and considerable damage to flour and grains that have previously been attacked by other pests. Much of the damage done by *T. castaneum* is directly to kernels (germplasm and endoplasm). In case of severe infestation flour or other materials invaded may have a characteristics pungent odor as a result of the gaseous secretion exuded by the beetle. Such flour has an exceedingly low viscosity and its elasticity is markedly affected which may cause gastric disturbance if used as food. In severe infestation, the flour turn grayish and moldy and has a pungent, disagreeable odor making it unfit for human consumption (Good, 1936). Infested material will show many elongate reddish brown beetles, about 1/7 inch long crawling over the material when it is disturbed and brownish white (somewhat flattened) six-legged larval bedding on the inside of the grain kernels and crawling over the infested seeds. They are generally known among millers as "bran bugs". *T. castaneum* contaminates more than they consume.

According to Khan (1981), this contamination results from, the presence of living or dead insects or insect parts; cast exuvae, eggshell and pupal cases; fecal and persistent odor; and webbing of food.

Tribolium species are major pests of stored grains and grain products in the tropics. Control of these insects relies heavily on the use of synthetic insecticides and fumigants, which has led to problems such as disturbances of the environment, increasing costs of application, pest resurgence, pest resistance to pesticides and lethal effects on non-target organisms in addition to direct toxicity to users (Jembere *et al.*, 1995). Thus, repellents, fumigants, feeding deterrents and insecticides of natural origin are rational alternatives to synthetic insecticides.

1.2.2. Brine shrimp (*Artemia salina*) nauplii

Brine shrimp lethality bioassay is a recent development in the bioassay for the bioactive compounds, which indicates cytotoxicity, as well as, a wide range of pharmacological activities (e.g. anticancer, antiviral, pesticidal, anti-AIDS, etc.) of the compounds. Bioactive compounds are almost always toxic in high doses. Pharmacology is simply toxicology at a lower dose or toxicology is simply pharmacology at a higher dose. Brine shrimp lethality bioassay is a bench top bioassay method for evaluating anticancer, anti-microbial and pharmacological activities of natural products. Natural product extracts, fractions or pure compounds can be tested for their bioactivity by this method. Here *in vivo* lethality of a simple monitor for screening a fractionation in the discovery of new bioactive natural products.

The Brine shrimp belongs to a genus of very primordial crustacean (crawfish - crayfish) the *Anostraca* (Fairy shrimp). Crawfish of this genus just have a divided exoskeleton made of Chitin enhanced protein, no usual crust of chitin (escutcheon) as other crawfish have. There are many species within the genus of *Anostraca*, but the *Artemia salina* is very nice to grow, since the rate of successful hatches is very high. To carry on toxicity tests of certain materials these nauplii are very easy to grow from its marketed cysts and to set experiments thereby.

1.2.2.1. Systemic position:

Kingdom: Animalia

Phylum: Arthopoda

Class: Branchiopoda

Order: Anostraca

Family: Artemiidae

Genus: *Artemia*

Species: *A. salina* L.

Plate 1.13: *A. salina* nauplii

1.2.3. Mosquito larvae (*Culex quinquefasciatus*)

There are over 2500 different species of mosquitoes throughout the world. There are four common groups of mosquitoes living in the Bay Area. They are *Aedes*, *Anopheles*, *Culex*, and *Culiseta* (McCafferty, 1983). Mosquitoes are very important to serve as vectors of important diseases, such as West Nile virus, dengue, filariasis, Japanese encephalitis, St. Louis encephalitis and avian malaria.

1.2.3.1. Systemic position:

Kingdom: Animalia

Phylum: Arthropoda

Class: Insecta

Order: Diptera

Family: Culicidae

Genus: *Culex*

Species: *C. quinquefasciatus* Say

Plate 1.14: *C. quinquefasciatus* female

All mosquitoes must have water in which to complete their life cycle. The type of water in which the mosquito larvae is found can be an aid to the identification of which species it may be. Also, the adult mosquitoes show a very distinct preference for the types of sources in which to lay their eggs. They lay their eggs in such places such as tree holes that periodically hold water, tide water pools in salt marshes, sewage effluent ponds, irrigated pastures, rain water ponds, etc. Each species therefore has unique environmental requirements for the maintenance of its life cycle.

The feeding habits of mosquitoes are quite unique in that it is only the adult females that bite man and other animals. The male mosquitoes feed only on plant juices. Some female mosquitoes prefer to feed on only one type of animal or they can feed on a variety of animals. Female mosquitoes feed on man, domesticated animals, such as cattle, horses, goats, etc; all types of birds including chickens; all types of wild animals including deer, rabbits; and they also feed on snakes, lizards, frogs, and toads. Most female mosquitoes have to feed on an animal and get a sufficient blood meal before she can develop eggs. If they do not get this blood meal, then they will die without laying viable eggs. However, some species of mosquitoes have developed the means to lay viable eggs without getting a blood meal.

The flight habits of mosquitoes depend on the species. Most domestic species remain fairly close to their point of origin while some species known for their migration habits are often an annoyance far from their breeding place. The flight range for females is usually longer than that of males. Many times wind is a factor in the dispersal or migration of mosquitoes. Most mosquitoes stay within a mile or two of their source. However, some have been recorded as far as 75 miles from their breeding source (McCafferty, 1983).

Mosquito have complete metamorphosis in their life cycle. The length of life of the adult mosquito usually depends on several factors: temperature, humidity, sex of the mosquito and time of year. Most males live a very short time, about a week; and females live about a month depending on the above factors. The mosquito goes through four separate and distinct stages of its life cycle and they are as follows: Egg, Larva, pupa, and adult. Each of these stages can be easily recognized by their special appearance.

Eggs are laid one at a time and they float on the surface of the water. In the case of *Culex* and *Culiseta* species, the eggs are stuck together in rafts of a hundred or more eggs. *Culex*, *Culiseta*, laid their eggs on water. Most eggs hatch into larvae within 48 hours. Mosquito larvae are commonly referred to as "Wrigglers", these newly hatched insects can be seen wriggling up and down from the surface of the water. The larva lives in the water and come to the surface to breathe. They shed their skin four times growing larger after each molting. Most larvae have siphon tubes for breathing and hang from the water surface. The larva feed on micro-organisms and organic matter in the water. On the fourth molt the larva changes into a pupa. The pupal stage is a resting, non-feeding stage. This is the time the mosquito turns into an adult. It takes about two days before the adult is fully developed. When development is complete, the pupal skin splits and the mosquito emerges as an adult. The newly emerged adult rests on the surface of the water for a short time to allow itself to dry and all its parts to harden. Also, the wings have to spread out and dry properly before it can fly. The adult mosquito can measure from 4–10mm (McCafferty, 1983) and morphologically has the three body parts common to insects: head, thorax, and abdomen.

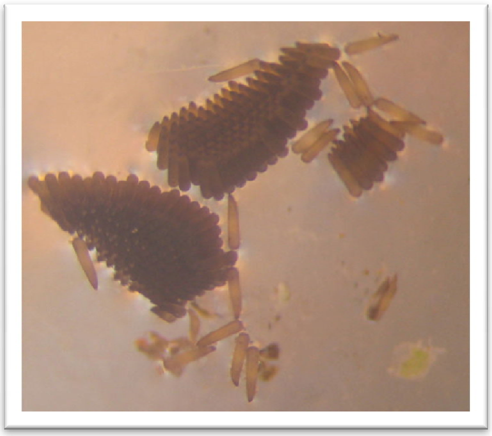



Plate 1.15: Mosquito egg raft (left) and larvae (right) in natural condition

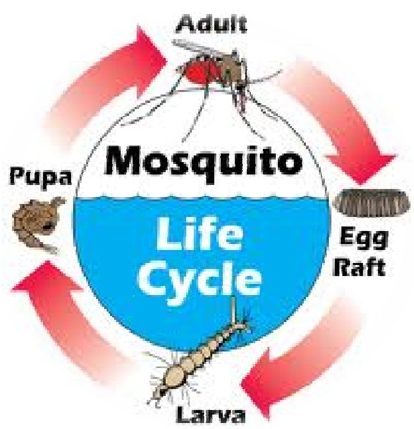


Plate 1.16: Life cycle of mosquito

The egg, larvae and pupae stages depend on temperature and species characteristics as to how long it takes for development. For instance, *Culex tarsalis* might go through its life cycle in 14 days at 70°F and take only 10 days at 80°F (McCafferty, 1983). Also, some species have naturally adapted to go through their entire life cycle in as little as four days or as long as one month.

1.2.4. Eggplant aphids (*Aphis gossypii*)

The aphids constitute a large group of small, soft-bodied insects that are frequently found in large number sucking the sap from the stem or leaves of plants. Melon and green peach aphids attack a number of crops and are vectors of many viruses attacking sweet-potato, brinjal and other crops.

1.2.4.1. Systemic position:

Plate 1.17: *Aphis gossypii* Glover

Kingdom: Animalia
Phylum: Arthropoda
Class: Insecta
Order: Homoptera
Family: Aphididae
Genus: *Aphis*
Species: *A. gossypii* Glover

A. gossypii found in Worldwide. Their host range apart from sweet-potato. This species also damages citrus, cocoa, coffee, cotton, cucurbits, eggplant, okra, pepper, potato and also ornamentals like Hibiscus (Amalin *et al.,* 1993; Ames *et al.,* 1996).

These insects can be recognized by its pear-like shape, a pair of cornicles at the posterior end of the abdomen and fairly long antennae; winged forms can usually be recognized by the venation and relative size of the front and hind wings. The cornicles of aphids are tube-like structures arising from the dorsal side of the fifth or sixth abdominal segment. The nymphs are green to brown and moult four times before reaching the adult stage. The nymphs look like the wingless adults except for their small sizes and softer body. The adults are small to medium sized, 1.2-2.5mm long. They are usually green with darker thorax. The antennae are two-thirds as long as the body.

The cornicles are clavate and fairly long. The face when viewed dorsally has a characteristic shape. This species generally produces little honeydew. The life cycle of aphids is rather unusual and complex.

Plate 1.18: Life cycle of Aphid

The females reproduce parthenogenetically. Several generations may be produced in short period of time. The first generation usually consists of wingless individuals; however, when a colony becomes too crowded, winged individuals appear.

The winged forms migrate to a different host plant and begin new colonies, a generation consisting of both males and females is produced, and the reproductive process continues. Aphids secrete honeydew which is emitted from the anus; the honeydew consists mainly of excess sap ingested by the insect, to which are added excess sugars and waste materials. Aphids usually attack the growing shoots and expanding leaves. They feed on the lower surface of the leaves and injure the plants by sucking the sap. The leaves become deformed as they expand. They may curl down at the edges, and become wrinkled or puckered. Feeding on expanded leaves (more common with green peach aphid) may result in pale stippled areas of feeding damage between the veins. During heavy infestation, the vigour of the plant is greatly reduced, stunting growth of the plants. Leaves of such stunted plants are pale and may have yellow interveinal areas (Vasquez *et al.,* 1990).

Eggplant aphid spends part of the winter on weed hosts and in gardens on cold tolerant plants. During warm periods, they continue feeding until cold weather inactivates them. In spring, winged females fly to suitable host plants and give birth to living young. Each female produces an average of 84 nymphs. Under favorable conditions, a nymph will mature in about 5 days and begin producing its own progeny. Most nymphs develop into wingless female adults. However, when crowding occurs or food becomes scarce, winged adults develop and fly to new host plants. Reproduction continues through the winter as in the summer but at a much slower rate. Many overlapping generation are produced each year.

1.2.5. Agents for antibacterial tests

To carry on screening of pesticidal properties of the extracts of all the test samples eight pathogenic bacteria were selected for the test, five of which were Gram negative and the remaining were Gram positive. These organisms of pure culture were collected from the Department of Biochemistry, University of Rajshahi -6205, Bangladesh.

It is very important to determine whether the crude extracts are active against various types of test organisms or not and thus a preliminary antibacterial screening of the crude extract was very much necessary. Therefore, screening was done against various test pathogenic bacteria by disc diffusion assay (Bauer *et al.*, 1966; Barry *et al.*, 1976) method.

Table 1.3. List of the test pathogenic bacteria

Gram positive bacteria	Gram negative bacteria
i. *Bacillus subtilis*	i. *Escherichia coli*
ii. *Listeria monocytogenes*	ii. *Klebsiella pneumoniae*
iii. *Staphylococcus aureus*	iii. *Salmonella enteritidis*
	iv. *Shigella flexneri*
	v. *Shigella sonnei*

1.3. Hypothesis of this research work

For the control of vectors active ingredients of plants could be used through furnishing their biological activity (against different vectors agents responsible for plant, human and animal diseases); isolation, purification and characterization of the detected promising bioactive compound(s); further bioassay with the purified compound(s) (if a sufficient amount is received) will be done if the laboratory support permit.

1.4. Aim of this study

To promote environmentally safe pesticides to replace chemical ones.

1.5. Objectives of this work

Quite a good number of plants have been identified and utilized for insecticidal and medicinal purpose till to date. But it is true that a large number of plants have still remain untouched or less investigated from which significant results can be obtained to control the pest of crops and disease problems of human beings. In this proposition *Evolvulus nummularius* (wp), *Lantana camara* (ap & r), *Mentha piperita* (wp), *Mimosa pudica* (wp), *Parthenium hysterophorus* (wp), *Phyllanthus niruri* (wp), *Polygonum hydropiper* (wp), *Pouzolzia zeylanica* (wp), *Synedrella nodiflora* (wp), *Zingiber zerumbet* (ap & rh) were attemted since some of these plants have been studied phytochemically, but only a few studies have been done on its medicinal properties, and a very few works have been attempted on its uses for the control of vectors.

Objectives:

1. A thorough screening program will be attempted to trace presence of bioactive potentials (insecticidal, larvicidal, insect repellency, etc.) with the study materials by-
   - using mosquito (human disease vector) larvae for assessing larvicidal activity of the extracts through establishing LC_{50} values;
   - using eggplant aphid (plant disease vector) as a test agent to evaluate the insect repellent and insecticidal activity of the promising extracts through establishing LD_{50} values;
   - using the stored product pest and insect vector, *Tribolium castaneum* to evaluate efficacy of the promising extracts through dose-mortality tests by establishing LD_{50} values through surface film assay and also to evaluate the repellent activity;
   - using *Artemia salina* (a shrimp disease vector), the recognized test agent for cytotoxic effect to evaluate cytotoxicity of the extracts by establishing LC_{50} values;

(For the evaluation of further bioactive potentials of the test plants the following experiment has also been done.)

   - Using pathogenic bacteria to know the presence of antibacterial properties in the study plants.

2. To summarize the potentials of the test materials through searching literature and web information in comparison to the results of the investigation to be carried out on their possible use in the vector control strategy.
3. Isolation, purification and characterization of the promising bioactive compound(s) from the test plants for their possible use in the vector control sector.
   - To comment on the future perspectives of the test plants depending on the achieved results.

MATERIALS AND METHODS

Plants are the most suitable source in the field of pesticide technology while some plants in different parts of the world are considered toxic and some are used in the traditional medicine. A literature search on the title plant offered some essential openings that these species bears repellent and toxicological properties which is subjected to go thorough screening to develop natural non-hazardous biodegradable pesticides. The approach adopted to obtain an exploitable pure plant constituent involves interdisciplinary work in Botany, Zoology, Pharmacognosy, Pharmacology, Phytochemistry, Chemistry and Toxicology as described by Hostettmann *et al.* (1995).

2.1. Selection and collection of plant materials

Evolvulus nummularius (wp), *Lantana camara* (ap and r), *Mentha piperita* (wp), *Mimosa pudica* (wp), *Parthenium hysterophorus* (wp), *Phyllanthus niruri* (wp), *Polygonum hydropiper* (wp), *Pouzolzia zeylanica* (wp), *Synedrella nodiflora* (wp), and *Zingiber zerumbet* (ap and rh) have been collected for the presence of toxic, as well as, bio-active constituents since the plants are well known as medicinal plants and also considered to contain toxic constituents. In case of very small plants, such as herbs, grass, etc. normally the whole plant is subjected for extraction, because the distribution of constituents, generally in different parts of such small plants not varies too much. But, it varies in case of a large timber plants. The distribution of compounds in different parts of higher plants is obviously different. The presence of constituents in the heart-wood may disappear in the leaves; similarly constituents in the roots may not be the same that present there in the fruits.

2.1.1. Preparation of plant materials for extraction

The fresh materials of all test plants excepting *Z. zerumbet* were collected from the RU campus. *Z. zerumbet* was collected from Mirzapur Rajshahi. Whole plants of *E. nummularius*, *M. piperita*, *Mi. pudica*, *P. hysterophorus*, *Ph. niruri*, *Po. hydropiper*, *Pz. zeylanica*, *S. nodiflora* were collected together with roots. In case of *L. camara* aerial part and roots, and in case of *Z. zerumbet* aerial part and rhizome was separated. Excess soils from collected parts were removed, without washing and then cut into small pieces using a knife and spread out to dry without heaping the material together. This was done under shade of the sun (beware of rain) or in well-ventilated room. After drying well the plant materials were powdered in a grinder machine avoiding excess heat during grinding.

L. camara (root)

Ph. niruri (whole plant)

Po. hydropiper (whole plant)

Pz. zeylanica (whole plant)

Plate 2.1: Collection and processing of different parts of test plants after grinding

2.1.1.1. Chemical extraction of the collected materials

There are basically two methods for extracting compounds from plant materials. Which one to choose, depends on whether the aim is to extract the more polar compounds (especially glycosides) that are present in the cell vacuole, or to obtain the less polar aglycones present on the surface of the plant, in aerial parts heartwood or roots. In the present study three solvents were selected to extract. The three solvents were Petroleum ether (PetE), Chloroform ($CHCl_3$) and Methanol (CH_3OH).

The dried ground plant materials were extracted with sufficient amount of solvents (200g x 600ml x 2 times). The extraction was firstly done by PetE and then with $CHCl_3$ and CH_3OH successively. Separate extracts have been collected by the cool method after 72h of plunging for each of the materials. Extracts, thus obtained were filtered and concentrated on a rotary evaporator at 40˚C and only as residues (extracts) left were collected in a glass vial and kept in a cool place after labeling.

Plate 2.2: Samples plunged in different solvents

Plate 2.3: Plunged samples in conical flasks on a shaker

Plate 2.4: Filtration of extracts

Plate 2.5: Storage of different extracts in glass vials after labeling

Extraction procedure (using PetE, $CHCl_3$ and CH_3OH)

EXTRACTION

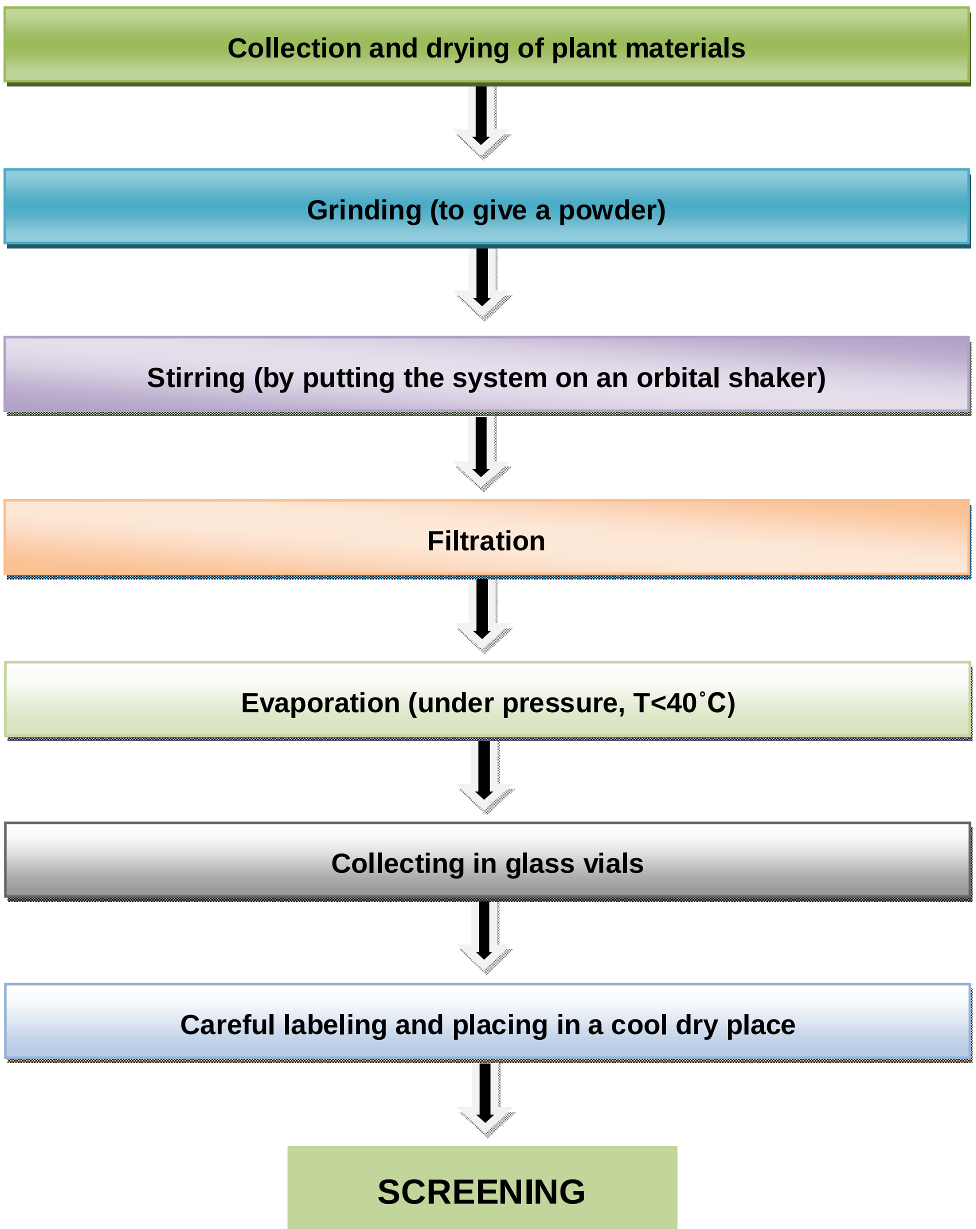


Fig. 2.1: Pathway of extraction before screening

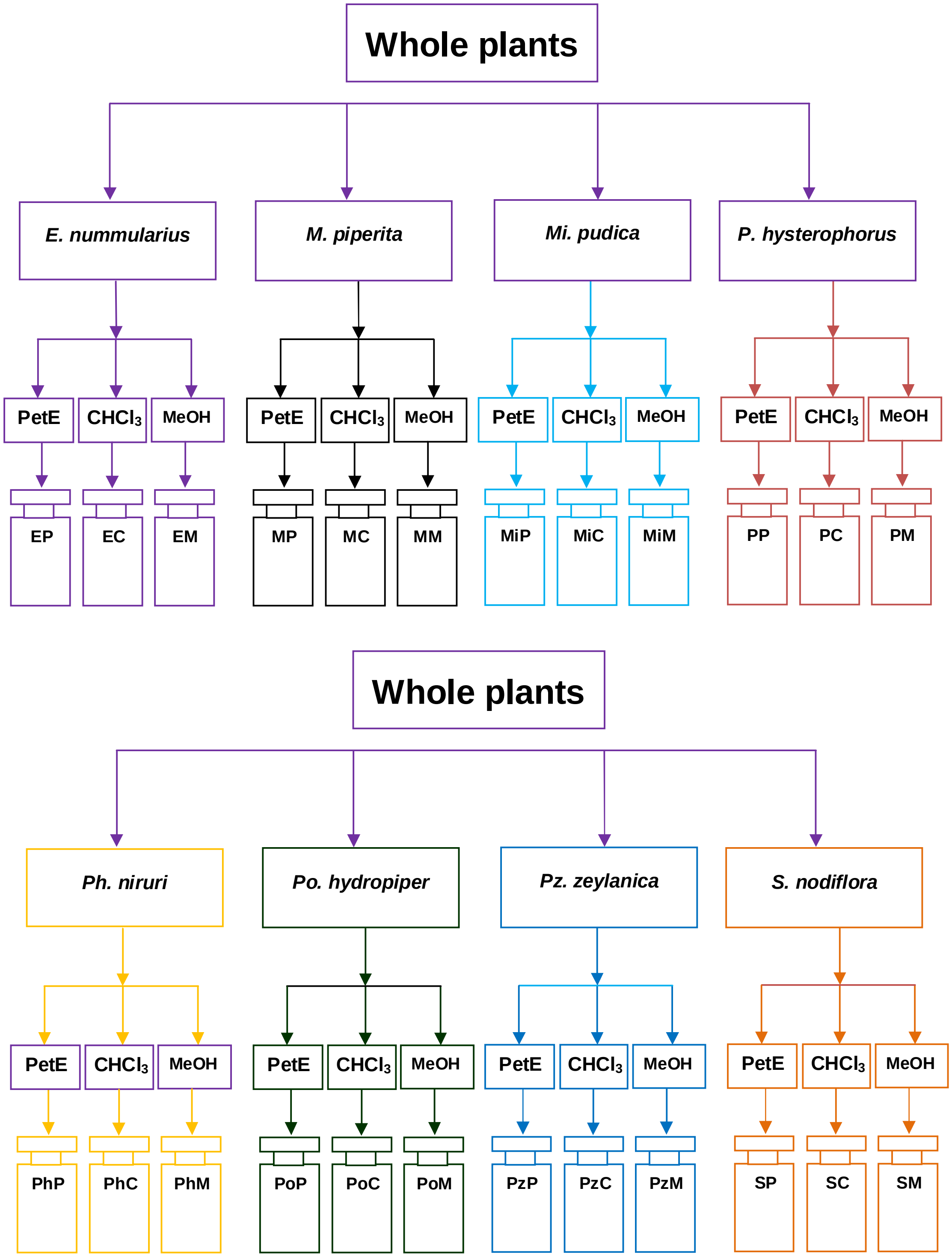


Fig. 2.2: Collection of extracts from the whole plants of *E. nummularius*, *M. piperita, Mi. pudica, P. hysterophorus, Ph. niruri, Po. hydropiper, Pz. zeylanica, S. nodiflora* by different solvents

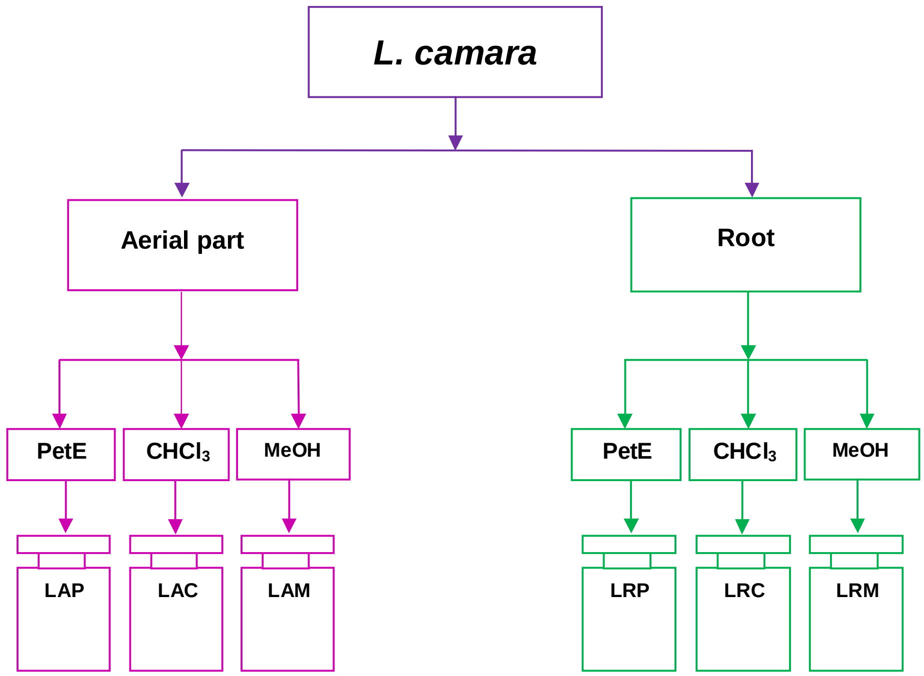


Fig. 2.3: Collection of extracts of *L. camara* (aerial part and root) by different solvents

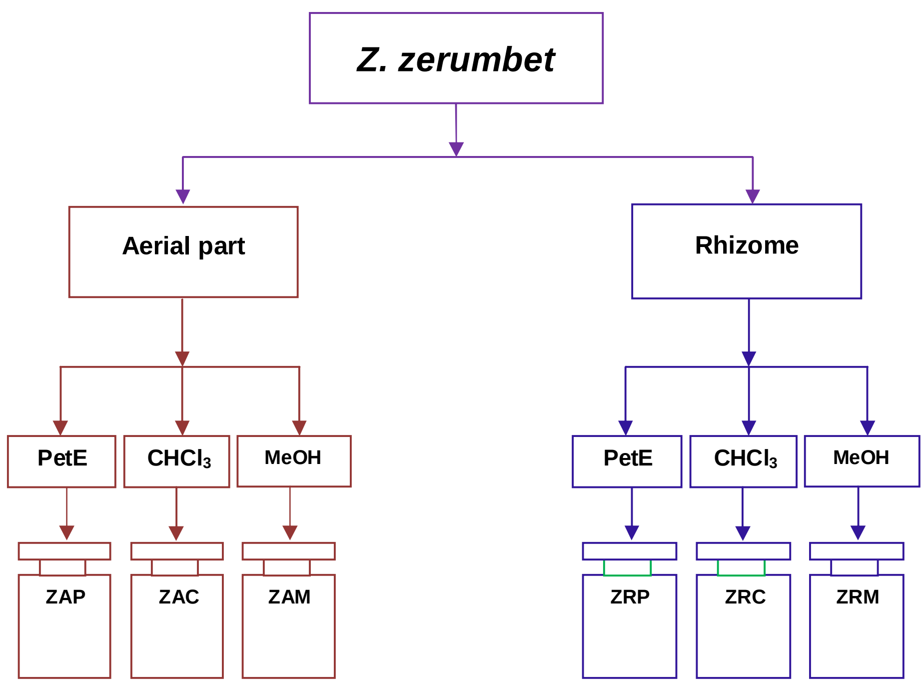


Fig. 2.4: Collection of extracts of *Z. zerumbet* (aerial part and rhizome) by different solvents

2.2. Selection of test organisms

To carry on tests for vector control properties of the extractives of the selected plants the eggplant aphid, *Aphis gossypii* (Homoptera: Aphididae); larvae of the mosquito, *Culex quinquefasciatus* (Diptera: Culicidae); red flour beetle, *Tribolium castaneum* (Hbst.) (Coleoptera: Tenebrionidae); and the brine shrimp, *Artemia salina* nauplii were selected as the test organisms. The life histories made these agents popular choice for the evaluation of biological activitiy of certain test materials. They are also easy to collect, hatch out/ culture in large numbers and require no sophisticated equipment for maintenance. Except these test vectors, pathogenic bacteria were also selected to carry out further efficiency tests of the extractives.

2.3. Collection of test organisms

Source of test insects - *A. gossypii* were collected from cultivated field situated in the Fourth Science Building, University of Rajshahi. Eggs (rafts) of *C. quinquefasciatus* were collected from different drains of University of Rajshahi Campus.*T. castaneum,* used in the present investigation were taken from the stock cultures of the Crop Protection and Toxicology Laboratory, Department of Zoology, University of Rajshahi, Bangladesh; and reared as subcultures to be used in the experimentation. Cysts of *A. salina* were collected from (Different aquarium shops) Dhanmondi, Dhaka, Bangladesh. Bacterial strains were collected from the Department of Botany, University of Rajshahi, Bangladesh.

2.3.1. Eggplant aphids, *Aphis gossypii*

Plate 2.6: Eggplants in the net house

Plate 2.7: Culture of aphid

2.3.1.1. Culture of aphids

Aphids are very soft and tiny creatures. They are highly plant consuming insects. At first some mature aphids were collected from affected plants and then released them on the new fresh eggplants for further production. Aphids are highly reproducing insects. They multiply in a good number within a very short time.

2.3.1.2. Collection of aphids

Aphids were collected from the eggplant leaves with a fine camel hair-brush in a Petridish and used in the experiments.

2.3.2. *Artemia salina* L.

2.3.2.1. Culture of *A. salina*

As the *A. salina* is marine crustacean, this is not easy to culture like *T. castaneum* under lab conditions. But, they can be reared in a short edition by putting cysts in a beaker of sea-water until the nauplii are hatched out. To carry on toxicity tests of certain materials these nauplii are used.

2.3.2.2. Preparation of environment

Since the lethality test involves the use of brine shrimp nauplii, the nauplii should be grown in seawater. Seawater contains 3.8% of NaCl. Accordingly 3.8% sodium chloride solution was made by dissolving sodium chloride (38g) in distilled water (1000ml) and was filtered off. Brine water was taken in a small tank and *A. salina* cysts (1.5g/L) were added to one side of the perforated divided tank with constant oxygen supply. Constant temperature (37°C) and sufficient light were maintained to give the sufficient aeration.

2.3.2.3. Collection of newly hatched nauplii

After 24h, nauplii were collected and used in the experiments.

2.3.3. Mosquito larvae, *Culex quinquefasciatus*

2.3.3.1. Preparation of environment and culture of mosquito larvae

Mosquito eggs are hatched in stagnant water. They are collected from damp drains with special collecting spoon. Collected mosquito egg-rafts are placed into a new beaker containing pond water and kept it in a dark place inside the lab for hatching.

2.3.3.2 Collection of newly hatched larvae

After 24h, hatched larvae were collected from the hatching tank and used in the experiment.

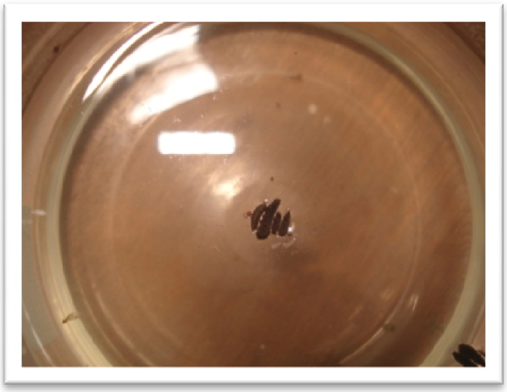


Plate 2.8: Mosquito eggs-rafts

Plate 2.9: Culture of *T. castaneum*

2.3.4. *Tribolium castaneum* Hbst.

2.3.4.1. Culture of test insect *T. castaneum*

In plastic containers (1200ml) mass cultures were maintained and sub-cultures in beakers (1000ml) with the food medium. The beakers were kept in an incubator at 30˚C ± 0.5˚C without light and humidity control. Each container and beaker contained 250g and 150g of food respectively. About 200 adults in each container and 100 adults in each beaker were introduced. The cultures were checked in regular intervals and eggs and larvae were separated to grow up properly. A crumpled filter paper was placed inside each container and beaker for easy movement of the beetles. The containers and beakers were covered with pieces of muslin cloth tightly fixed with the help of rubber bands to avoid possible escape of the beetles.

2.3.4.2. Preparation of food medium

The whole-wheat flour was used as the food medium for the insect species. The flour was sterilized at 60˚C for 24 hours in an oven. A standard mixture of whole wheat flour with powdered dry yeast in a ratio of 19:1 (Park and Frank, 1948; Park., 1962; Zyromska-Rudzka, 1966; Khalequzzaman *et. al*., 1994) was used as food medium throughout the experimental period. Both the flour and the powdered dry yeast were sterilized at 60˚C for six hours in an oven. Food was not used until at least 15 days after sterilization to allow its moisture content to equilibrate with the environment (Khan, 1981).

2.3.4.3. Collection of eggs

About 500 beetles were placed in a 500ml beaker containing food medium. The beaker was covered with a piece of cloth and kept in an incubator at 30˚C ± 5˚C. In regular interval the eggs were collected by sieving the food medium by two sieves of 500 and 250mesh separating the adults and eggs respectively following the methods of Khan and Selman (1981). Eggs were then transferred to Petri dish (90mm diam.) and incubated at the same temperature.

2.3.4.4. Collection of newly hatched larvae

After 3-5 days, larvae hatched out in described conditions. Newly hatched larvae were then collected with a fine pointed camel hair brush and then shifted to the fresh food medium for culture. The larvae were yellowish white in color and long cylindrical in shape. It appears 1mm in length after hatching and become 6-7mm at maturation.

2.3.4.5. Collection of mature larvae

Most larvae had six instars as reported by Good (1936). According to Good, the larval instars were determined by counting the number of exuviae (larval skin) deposited in the food medium. Two days old larvae was considered as first instar larva while second, third, fourth, and fifth instar larvae were considered on fourth, seventh, tenth and thirteenth day from hatching respectively. Depending on these days according to larval instar sixteen days old larva have been considered as a mature larva. Larval cultures were maintained in an incubator in the same procedure at 30˚C± 5˚C without light and humidity control. The food medium was replaced by three days interval to a fresh one to avoid conditioning of the larvae (Park, 1934).

2.3.4.6. Collection of adults

A huge number of beetles were thus reared to get a regular supply of the newly formed adults. When sufficient adults produced in the sub-cultures, they were collected from the food medium. For this purpose some pieces of filter paper were kept on the food inside the beaker. Adults crawled upon the paper and then the paper was taken out with the help of forceps. Beetles were then collected in a small beaker (100ml) with the help of a fine camel-hair brush.

2.4. Bioassays for activity of the collected extracts

Crucial to any investigation of plants with biological activities is the availability of suitable bioassays for monitoring the required effects. In order to cope with the number of extracts a high sample throughput is necessary. The test systems should ideally be simple, rapid, reproducible and less-expensive. If active principles are only present at low concentration in the crude extract then bioassay is to be high enough sensitive for their detection. Another factor of special relevance to plant extracts is the solubility of the sample. Finding a suitable system can pose problems.

For the selection of bioassays to employ in research on plant constituents, the first step is to choose suitable target organisms. The complexity of the bioassay has to be designed as a function of the facilities and resources available. A list of bioassays taken in this investigation is shown in Table 2.1.

Table 2.1. A list of test agents used in different bioassays during investigation

Test types	Organisms used
Mortality activity test for vector control	*A. gossypii*, *A. salina* nauplii, Larvae of *C. quinquefasciatus* and *T. castaneum* adults
Repellent activity test for vector control	*A. gossypii* and *T. castaneum* adults
Microbial test (Antibacterial)	Pathogenic bacteria

2.4.1. Bioassay with residual film/surface film experiments

2.4.1.1. Experiments for surface film test by *T. castaneum* adults

Each of the extracts was diluted with the solvent in which it was extracted and the actual amount of extracted matter in a dose was recorded. The application of dose was carried out by residual film method (Busvine, 1971). For each dose 1ml of mixture was dropped on a Petri dish (50mm) in such a way that it made a uniform film over the Petri dish. Then the Petri dishes were air-dried leaving the extract on it. The actual extract present in 1ml mixture was calculated and dividing the value by the area of the Petri dish the dose per square centimeter was calculated. After drying 10 red flour beetles (3-10 days old) were released in each Petri dish with 3 replicates. A control batch was also maintained with the same number of insects after preparing the Petri dish by applying and evaporating the solvent. The treated beetles were placed in the incubator at the same temperature as reared in stock cultures and the mortality of the beetles was counted after 30min and every 12h up to 48h of exposure.

This is also one basic application method for doses of toxic substances to any insect population. The test material has been dissolved in an organic solvent with a certain concentration to apply to a Petri dish of known surface area. After application the volatile solvent evaporates out immediately simply with the atmospheric temperature. Thus the ingredient goes to make film on the surface of the Petri dish. Released insects within this captivity might have contact with the substance distributed evenly on the floor. However, being covered with the upper lid of the Petri dish there could have a captive environment with the extract distributed even in the air inside and may cause mortality by suffocation. Mortality due to suffocation may cause promptly if there is any volatile bioactive principles in the test material.

2.4.1.2. Preparation of doses with the crude extracts for the surface film test (to be used against *T. castaneum*)

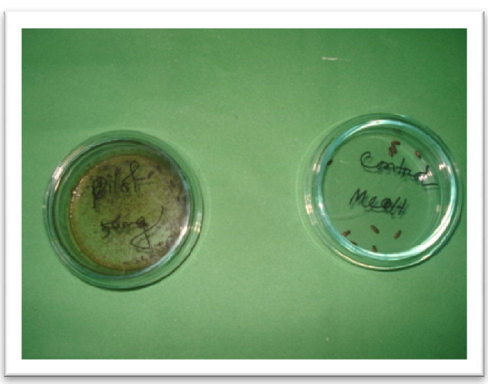
In this investigation dose-mortality efficiency was evaluated through surface film experiment with series of doses applied on *T. castaneum* adults. All the three extracts (PetE, $CHCl_3$, and CH_3OH) of the test plant were applied against *T. castaneum* adults. For each samples, a 'pilot' test was done before final experimentation. A 50mg sample extract was weighed and taken in a small glass vial, and then 1ml of the same chemical (1ml PetE) was added to dissolve it initially to prepare 2.547mg/cm^2 the dose. This process was also maintained during final experimentation. Separate vials were taken for each of the doses. All experiments were done in three replicates. The final doses for surface film application were obtained as follows:

- For *E. nummularius* (wp) in PetE: 1.529, 1.274, 1.019, 0.764, 0.510 and 0.255mg/cm^2; $CHCl_3$: 4.076, 3.567, 3.057, 2.548, 2.038 and 1.529mg/cm^2; CH_3OH: 3.567, 3.057, 2.548, 2.038 and 1.529mg/cm^2;
- For *L. camara* (ap) in PetE: 4.076, 3.567, 3.057, 2.548 and 2.038mg/cm^2; $CHCl_3$: 2.548, 2.038 ,1.529, 1.019 and 0.510mg/cm^2; CH_3OH: 2.038 ,1.529, 1.019 , 0.510 and 0.255mg/cm^2;
- For *L. camara* (r) in PetE: 3.567, 3.057, 2.548, 2.038 and 1.529mg/cm^2;
- For *M. piperita* (wp) in PetE: 1.529, 1.019, 0.510, 0.255 and 0.127mg/cm^2; $CHCl_3$: 2.548, 2.038 ,1.529, 1.019 and 0.510mg/cm^2; CH_3OH: 1.529, 1.019, 0.510, 0.255 and 0.127mg/cm^2;
- For *P. hysterophorus* (wp) in PetE: 3.567, 3.057, 2.548, 2.038 and 1.529mg/cm^2; $CHCl_3$: 4.076, 3.567, 3.057, 2.548 and 2.038mg/cm^2; CH_3OH: 2.548, 2.038, 1.529, 1.019 and 0.510mg/cm^2;
- For *Ph. niruri* (wp) in PetE: 2.037, 1.528, 1.019, 0.509, and 0.255mg/cm^2; $CHCl_3$: 3.565, 3.056, 2.547, 2.037, and 1.528mg/cm^2; CH_3OH: 3.565, 3.056, 2.547, 2.037, 1.528, and 1.019mg/cm^2;

- For *Po. hydropiper* (wp) in PetE: 2.293, 2.038, 1.783, 1.529, 1.274 and 1.019mg/cm^2; $CHCl_3$: 4.586, 4.076, 3.567, 3.057 and 2.548mg/cm^2; CH_3OH: 1.529, 1.019, 0.510, 0.255 and 0.127mg/cm^2;
- For *Pz. zeylanica* (wp) in PetE: 3.056, 2.547, 2.037, 1.528, and 1.019 mg/cm^2; $CHCl_3$: 3.056, 2.547, 2.037, 1.528, and 1.019mg/cm^2;
- For *S. nodiflora* (wp) in PetE: 1.529, 1.274,1.019 and 0.764mg/cm^2; CH_3OH: 3.567, 3.057, 2.548, 2.038 and 1.529mg/cm^2;
- For *Z. zerumbet* (ap) in PetE: 2.548, 2.038, 1.529, 1.019 and 0.510mg/cm^2; $CHCl_3$: 3.567, 3.057, 2.548, 2.038 and 1.529mg/cm^2; CH_3OH: 2.548, 2.038, 1.529, 1.019 and 0.510mg/cm^2;
- For *Z. zerumbet* (rh) in PetE: 2.038 ,1.529, 1.019, 0.510 and 0.255mg/cm^2; $CHCl_3$: 3.567, 3.057, 2.548, 2.038 and 1.529mg/cm^2; CH_3OH: 2.038, 1.529, 1.019, 0.510 and 0.255mg/cm^2

2.4.1.3. Application of doses in the surface film test

To conduct surface film activity test 50mm Petri dishes were taken for all doses and their replicates, 1ml of each of the doses were poured into the lower part of the Petri dishes and allowed them to dry out. Being volatile the solvent was evaporated out within a few minutes. Ten insects were released in each of the treated Petri dish. A control experiment by applying the only solvent into the Petri dish was also set at the same time under the same condition.



(A) Pilot test

(B) Final experiment

Plate 2.10: Bioassay with plant extract on *T. castaneum* adults by surface film methods

2.4.1.4. Observation of mortality in surface film tests

After completing all the arrangements of the experiment treated Petri dishes were placed in a secure place at room temperature. The whole experiment was observed from time to time and mortality was observed by after 30min and every 12h and the data was recorded up to 48h. A simple microscope was used to check each and every beetle by tracing natural movement of its organs. In some cases hot needle was taken closer to the bodies (without movement) to confirm death. Attention was also paid to recovery of the insects (if occurred).

2.4.2. Experiments for surface film test by *A. gossypii*

Fresh eggplant leaves were collected from net house and placed on a Petri dish. Stalks of each of the leaves were wetted with water and cotton to keep fresh. With the help of a permanent marker a round mark (3.6cm diam.) drawn on the leaves surrounding the open edge of the 10ml plastic cup (3.6cm diam. normally used for measuring liquid medicines) and were cut into round shapes by a pair of scissors keeping the stalks attached. Extracts were applied on both the sides of the round shaped pieces of leaves with the help of a 1ml syringe. Three replicates for each of the doses were maintained and allowed to dry out as exposed in the air for 30 to 45min. Then ten insects were released in the middle of each of the leaf circles.

2.4.2.1. Preparation of doses with the crude extracts for the surface film test (to be used against *A. gossypii*)

In this investigation dose-mortality efficiency was evaluated through surface film experiment with series of doses applied on *A. gossypii*. All the three extracts (PetE, $CHCl_3$, and CH_3OH) of the test plant were applied. For each samples, a 'pilot' test was set before final experimentation. About 4mg sample extract was weighed and taken in a small glass vial. Dimethyl sulfoxide (DMSO) was used to make the extracts hydrophilic and 0.1ml of distilled water was added to dissolve initially for preparation of a 0.196mg/cm^2 dose. This process was also maintained in the final experiment. Separate vials were taken for each of the doses, while the doses were maintained in three replicates. The final doses for surface film application were obtained as follows:

- For *E. nummularius* (wp) in PetE: 0.196, 0.147, 0.098, 0.049 and 0.025mg/cm^2; $CHCl_3$: 0.196, 0.147, 0.098, 0.049 and 0.025mg/cm^2; CH_3OH: 0.196, 0.147, 0.098, 0.049 and 0.025mg/cm^2;

- For *L. camara* (ap) in PetE: 0.196, 0.147, 0.098, 0.049 and 0.025mg/cm^2; $CHCl_3$: 0.196, 0.147, 0.098, 0.049 and 0.025mg/cm^2; CH_3OH: 0.246, 0.196, 0.147, 0.098 and 0.049mg/cm^2;
- For *L. camara* (r) in PetE: 0.196, 0.147, 0.098, 0.049 and 0.025mg/cm^2; $CHCl_3$: 0.196, 0.147, 0.098, 0.049 and 0.025mg/cm^2; CH_3OH: 0.246, 0.196, 0.147, 0.098 and 0.049mg/cm^2;
- For *M. piperita* (wp) in PetE: 0.196, 0.147, 0.098, 0.049 and 0.025mg/cm^2; $CHCl_3$: 0.246, 0.196, 0.147, 0.098 and 0.049mg/cm^2; CH_3OH: 0.246, 0.196, 0.147, 0.098 and 0.049mg/cm^2;
- For *Mi. pudica* (wp) in PetE: 0.246, 0.196, 0.147, 0.098 and 0.049mg/cm^2; $CHCl_3$: 0.196, 0.147, 0.098, 0.049 and 0.025mg/cm^2; CH_3OH: 0.196, 0.147, 0.098, 0.049 and 0.025mg/cm^2;
- For *P. hysterophorus* (wp) in PetE: 0.196, 0.147, 0.098, 0.049 and 0.025mg/cm^2; $CHCl_3$: 0.196, 0.147, 0.098, 0.049 and 0.025mg/cm^2; CH_3OH: 0.246, 0.196, 0.147, 0.098 and 0.049mg/cm^2;
- For *Ph. niruri* (wp) in PetE: 0.196, 0.147, 0.098, 0.049 and 0.025mg/cm^2; $CHCl_3$: 0.393, 0.344, 0.295, 0.246 and 0.196mg/cm^2; CH_3OH: 0.246, 0.196, 0.147, 0.098 and 0.049mg/cm^2;
- For *Po. hydropiper* (wp) in PetE: 0.196, 0.147, 0.098, 0.049 and 0.025 mg/cm^2; $CHCl_3$: 0.246, 0.196, 0.147 and 0.098mg/cm^2; CH_3OH: 0.246, 0.196, 0.147, 0.098 and 0.049mg/cm^2;
- For *Pz. zeylanica* (wp) in PetE: 0.196, 0.147, 0.098, 0.049 and 0.025 mg/cm^2; $CHCl_3$: 0.246, 0.196, 0.147, 0.098, 0.049 and 0.025mg/cm^2; CH_3OH: 0.295, 0.246, 0.196, 0.147 and 0.098mg/cm^2;
- For *S. nodiflora* (wp) in PetE: 0.196, 0.147, 0.098, 0.049 and 0.025mg/cm^2; $CHCl_3$: 0.196, 0.147, 0.098, 0.049 and 0.025mg/cm^2; CH_3OH: 0.246, 0.196, 0.147, 0.098 and 0.049mg/cm^2;
- For *Z. zerumbet* (ap) in PetE: 0.147, 0.098, 0.049, 0.025 and 0.012mg/cm^2; $CHCl_3$: 0.196, 0.147, 0.098, 0.049 and 0.025mg/cm^2; CH_3OH: 0.246, 0.196, 0.147, 0.098 and 0.049mg/cm^2;

- For *Z. zerumbet* (rh) in PetE: 0.147, 0.098, 0.049, 0.025 and 0.012mg/cm^2; $CHCl_3$: 0.196, 0.147, 0.098, 0.049 and 0.025mg/cm^2; CH_3OH: 0.246, 0.196, 0.147, 0.098 and 0.049mg/cm^2

2.4.2.2. Application of doses in the surface film test against eggplant aphids

An amount of 0.1ml of each of the doses were poured onto both sides of the leaves and allowed them to dry out. Distilled water was considered as the solvent and DMSO (Dimethyl sulfoxide) was used to make the extract hydrophilic. The water was evaporated out within 45 minutes. Ten adult aphids were released on either side of each of the treated round shaped leaves with a fine camel hair-brush. A control experiment by applying the only DMSO in water applied onto either side of the leaf circle was also set at the same time under the same condition as a control.

Plate 2.11: Bioassay through dose-mortality assay against eggplant aphids

2.4.2.3. Observation of mortality in the surface film tests in case of eggplant aphids

After completing all the arrangements the treated leaves were placed in a 50mm Petri dish where stalks of the leaf circles were covered with water soaked cotton to keep it fresh for a long time and placed on a Petri dish at room temperature. The whole experiment was observed from time to time and the mortality was observed every 3h and the data was recorded up to 24h. A magnifying glass was used to check each and every adult by tracing natural movement of their limbs.

2.4.2.4. Statistical analysis

The recorded mortality data of the dose-mortality assay done against *T. castaneum* adults and on *A. gossypii* were corrected by the Abbott's (1925) formula:

$$P_r = \frac{P_o - P_c}{100 - P_c} \times 100$$

Where,

P_r = Corrected mortality (%)

P_o = Observed mortality (%)

P_c = Control mortality (%), sometimes called natural mortality (%).

Then mortality percentages were subjected to statistical analysis according to Finney (1947) and Busvine (1971) by using a 'computer software'. The dose-mortality relationship was expressed as a median lethal dose (LD_{50}).

2.4.3. Experiment for repellent activity of the extracts

The technique of the repellency test used in this investigation was adopted from the method (No.3) of McDonald *et al*., (1970) with some modifications by Talukder and Howse (1993, 1994). No significant difference was detected between the repellency of the only solvent impregnated and untreated filter papers/areas in tests designed to check for any possible influence of different solvents. The average of the counts was converted to per cent repellency (PR) using the formula of Talukder and Howse (1993, 1995):

A general concentration for each of the plant extracts was selected as a stock dose for repellency test against adult beetles of *T. castaneum*, while other successive doses 0.314, 0.157, 0.079, 0.039 and 0.019mg/cm^2 were made by serial dilution. Similarly 0.393, 0.197, 0.098, 0.049 and 0.025mg/cm^2 were made doses for the application against *A. gossypii*.

2.4.3.1. Application of doses in the repellency test

2.4.3.1.1. Application of doses against *T. castaneum* adults

Half filter paper discs (Whatman No. 40, 9cm diam.) were prepared and selected doses of all the extracts separately applied onto each of the half-discs and allowed to dry out as exposed in the air for 10 minutes. Each treated half-disc was then attached lengthwise, edge-to-edge, to a control half-disc with adhesive tape and placed in a Petri dish (9cm diam.). The experiments were set in triplicates. Being volatile the solvent was evaporated out within a few minutes.

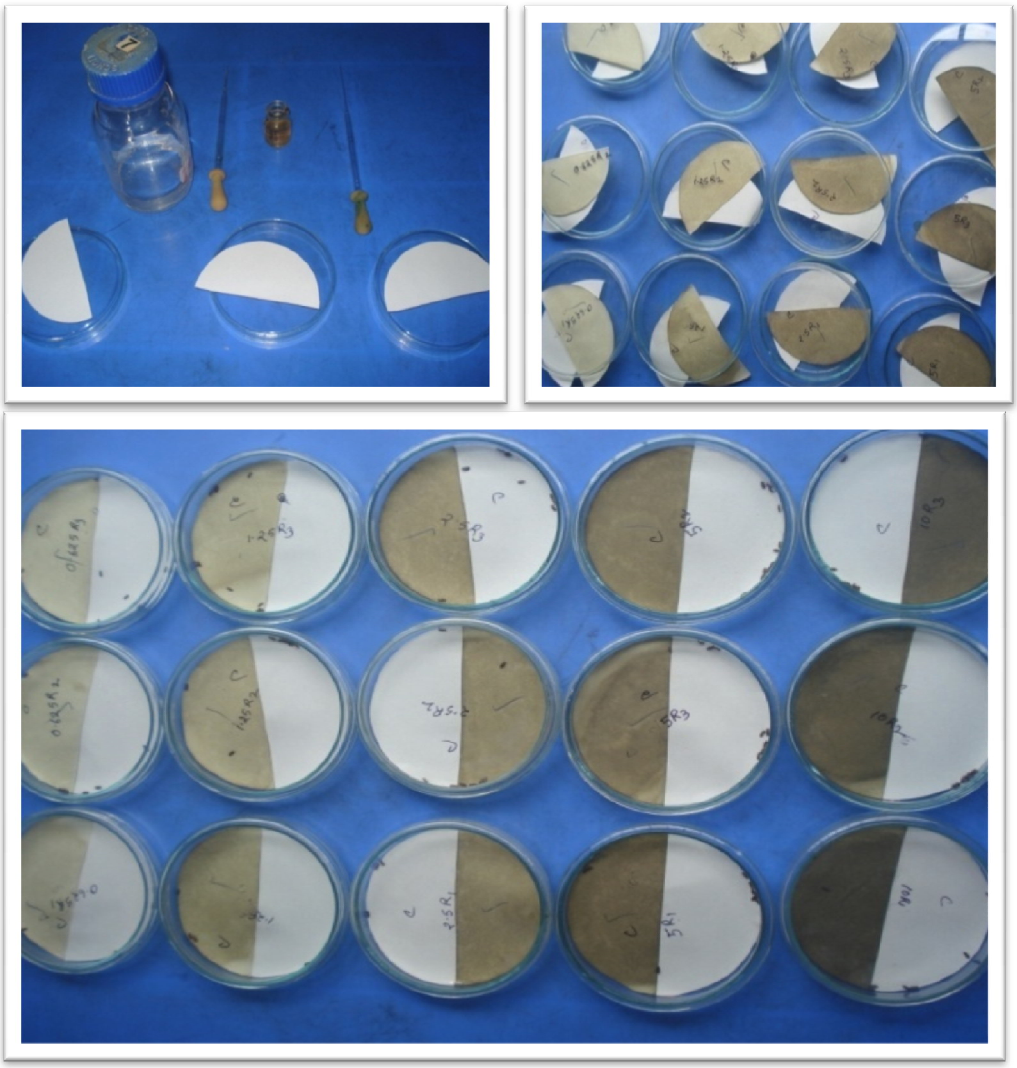


Plate 2.12: Photographs showing setting up of repellency test with the test extracts against *T. castaneum* adults by filter paper disc method

Then ten insects were released in the middle of each of the filter paper circles. The orientation of the same was changed in the replica to avoid the effects of any external directional stimulus affecting the distribution of the test insects. Each concentration was tested five times. Insects that settled on each non treated half of the filter paper discs were counted after 1h and then at hourly intervals up to 5h.

2.4.3.1.2. Application of doses against eggplant aphids

Fresh eggplant leaves were collected from net house and placed on a Petri dish. Stalks of each of the leaves were wetted with water soaked in cotton to keep the leaf fresh. With the help of a permanent marker a round mark (3.6cm diam.) was drawn on the leaves surrounding the open edge of the 10ml plastic cup (3.6cm diam., normally used for measuring liquid medicines) and were cut into a round shape by a pair of scissors keeping the stalks attached. The permanent marker was again used to demark two halves of the leaf circles. Extracts were applied on one half of the round shaped pieces of leaves with the help of a 1ml syringe. Three replicates for each of the doses were maintained and allowed to dry out as exposed in the air for 30 to 45min. Then ten insects were released in the middle of each of the circles and covered by the plastic cups. A small stone piece was used as load for each of the cup to prevent escaping of the insects from the restricted circle. Insects that settled on each of the non-treated half of the circles were counted after 1h and then at hourly intervals up to 5h.

Plate 2.13: Photographs of repellency test of the plant extracts against *A. gossypii*

2.4.3.2. Observation and analyses of repellency data

Repellency was observed for one-hour interval and up to five successive hours of exposure, just by counting the number of insects from the non-treated part of the filter paper spread on the floor of the 90mm Petri dish (for *T. castaneum*) and non-treated part of the restricted circle (36mm) on the eggplant leaves (for *A. gossypii*). The values in the recorded data were then calculated for percent repellency, which was again developed by arcsine transformation for the calculation of analysis of variance (ANOVA).

2.4.3.3. Statistical analysis

The values in the recorded data were calculated for percent repellency (PR).

$$PR = (Nc - 5) \times 20$$

Where, Nc is the average hourly observation of insects on the untreated half of the disc. Positive and negative values expressed for repellent and attractant activity respectively.

PR data were again developed by arcsine transformation for the calculation of ANOVA.

2.4.4. Lethality test against the brine shrimp nauplii

2.4.4.1. Experimental design for lethality test

Brine shrimp cysts were hatched in simulated seawater to get fresh nauplii for the experimentation. Test samples were prepared by the addition of calculated amount of DMSO (Dimethyl sulfoxide) for obtaining desired concentration of test sample. The nauplii were counted by visual inspection and were taken in test-tubes containing 5ml of simulated seawater. Then samples of different concentrations were added to the pre-marked test-tubes using a pipette. The test-tubes were left for 30h and then the dead nauplii were counted to find out cytotoxicity of the test material and compared the results with the control.

Test materials:

- *A. salina* (Brine shrimp) cysts;
- Sea salt (Non-ionized NaCl);
- Small tank/beaker to hatch the shrimp;
- Pipette (1ml and 5ml);
- Test tubes (20ml);
- Magnifying glass.

2.4.4.2. Preparation of simulated seawater (brine water) and hatching of brine shrimp nauplii

Since the lethality test involves the culture of brine shrimp nauplii, the nauplii should be grown in the seawater. Seawater contains 3.8% of NaCl. Accordingly 3.8% sodium chloride solution was made by dissolving sodium chloride (38g) in normal pond water (1000ml) and was filtered off.

Brine water was taken in a small tank and *A. salina* cysts (1.5g/L) were added. Constant temperature (37°C) and sufficient light were maintained to give the sufficient aeration. After 24h, shrimp nauplii were appeared, which were then collected and used in the experiments.

2.4.4.3. Experimentation of lethality test

All the three (PetE, $CHCl_3$, and CH_3OH) extract samples were applied against brine shrimp nauplii. For each samples, a 'pilot' test was done before final experimentation. 2mg sample extract was weighed and taken in a small glass vial, and then 1-2 drops of pure Dimethyl sulfoxide (DMSO) added to dissolve initially before adding 1ml of pond water to mix up the sample extract with water to prepare a 200ppm dose. When it mixed up completely, 1ml more water added to the test-tube (10ml marked) for giving a concentration of 100ppm.Half of it was used as the Dose A, and in the rest 1ml of water was added to give 2ml in amount with a concentration of 50ppm. This process was also maintained during final experiment. Separate vials were taken for each of the doses. For each and every dose 3 replicates were maintained. The final doses for cytotoxicity test were obtained as follows:

- For *E. nummularius* (wp) in PetE: 100, 50, 25, 12.5, 6.25 and 3.125ppm; $CHCl_3$; 400, 200, 100, 50 and 25ppm; CH_3OH: 400, 200, 100, 50, 25 and 12.5ppm;
- For *L. camara* (ap) in PetE: 100, 50, 25, 12.5 and 6.25ppm; $CHCl_3$: 100, 50, 25, 12.5 and 6.25ppm; CH_3OH: 200, 100, 50, 25 and 12.5ppm;
- For *L. camara* (r) in PetE: 100, 50, 25, 12.5 and 6.25ppm; $CHCl_3$: 200, 100, 50, 25 and 12.5ppm; CH_3OH: 200, 100, 50, 25 and 12.5ppm;
- For *M. piperita* (wp) in PetE: 100, 50, 25, 12.5, 6.25 and 3.125ppm; $CHCl_3$: 100, 50, 25, 12.5 and 6.25ppm; CH_3OH: 400, 200, 100, 50 and 25ppm;
- For *Mi. pudica* (wp) in PetE: 100, 50, 25, 12.5 and 6.25ppm; $CHCl_3$: 200, 100, 50, 25 and 12.5ppm; CH_3OH: 400, 200, 100, 50 and 25ppm;

- For *P. hysterophorus* (wp) in PetE: 200, 100, 50, 25 and 12.5ppm; $CHCl_3$: 200, 100, 50, 25 and 12.5ppm; CH_3OH: 200, 100, 50, 25 and 12.5ppm;
- For *Ph. niruri* (wp) in PetE: 400, 200, 100, 50, 25 and 12.5ppm; $CHCl_3$: 200, 100, 50, 25, 12.5 and 6.25ppm; CH_3OH: 800, 400, 200, 100, 50 and 25ppm;
- For *Po. hydropiper* (wp) in PetE: 200, 100, 50, 25, 12.5 and 6.25ppm; $CHCl_3$: 100, 50, 25, 12.5, 6.25 and 3.125ppm; CH_3OH: 200, 100, 50, 25 and 12.5ppm;
- For *Pz. zeylanica* (wp) in PetE: 100, 50, 25, 12.5, 6.25 and 3.125ppm; $CHCl_3$: 200, 100, 50, 25 and 12.5ppm; CH_3OH: 200, 100, 50, 25 and 12.5ppm;
- For *S. nodiflora* (wp) in PetE: 200, 100, 50, 25, 12.5 and 6.25ppm; $CHCl_3$: 400, 200, 100, 50, 25 and 12.5ppm; CH_3OH: 800, 400, 200, 100 and 50ppm;
- For *Z. zerumbet* (ap) in PetE: 100, 50, 25, 12.5, 6.25 and 3.125ppm; $CHCl_3$: 200, 100, 50, 25 and 12.5ppm; CH_3OH: 400, 200, 100, 50 and 25ppm;
- For *Z. zerumbet* (rh) in PetE: 100, 50, 25,12.5 and 6.25ppm; $CHCl_3$: 100, 50, 25,12.5 and 6.25ppm; CH_3OH: 400, 200, 100, 50 and 25ppm

Plate 2.14: Cyst of brine shrimp Nauplii

Plate 2.15: Bioassay with plant extracts on *A. salina* nauplii by brine shrimp lethality test

2.4.5. Larvicidal test against mosquito larvae

2.4.5.1. Experimental design for larvicidal test

Mosquito eggs are hatched in stagnant water. Test samples were prepared by the addition of calculated amount of DMSO (Dimethyl sulfoxide) to obtain desired concentration of the test samples. The larvae were counted by visual inspection and were taken in test-tubes containing 5ml of pond water. Then samples of different concentrations were added up to the pre-marked test-tubes by using a pipette. The test-tubes were left for 30h and then the larvae were counted again after 6h intervals to find out the lethality of the test materials.

Test materials:

- Mosquito eggs in rafts;
- Small beaker with pond water to hatch the eggs;
- Pipette (1ml and 10ml); and
- Test tubes (20ml).

2.4.5.2. Preparation of environment for the hatching of eggs

Collected mosquito egg-rafts were placed in a beaker containing pond water and kept in a dark place in the lab for hatching out of the larvae. After 24 hours, hatched larvae were collected and used in the experiments.

2.4.5.3. Experimentation for larvicidal test

All the three (PetE, $CHCl_3$ and CH_3OH) of the test plants extracts samples were applied against mosquito larvae. 'Pilot' test was done before final experimentation. For each sample, 2mg extract sample was weighted and taken in a small glass vial, and then 1-2 drops of pure Dimethyl sulfoxide (DMSO) added to dissolve initially.

One ml of pond water was taken into the vial to mix up the sample extract with water to prepare 200ppm dose. When it mixed up completely added to the test-tube (10ml marked) for conducting tests. This process was also maintained during final experiment. Separate vials were taken for each dose. For each dose three replications were made.

Plate 2.16: Bioassay with plant extracts on mosquito larvae by larvicidall activity test

The final doses for larvicidal test were obtained as follows:

- For *E. nummularius* (wp) in PetE: 200, 100, 50, 25, 12.5 and 6.25ppm; $CHCl_3$; 400, 200, 100, 50, 25 and 12.5ppm; CH_3OH: 800, 400, 200, 100, 50 and 25ppm;

- For *L. camara* (ap) in PetE: 100, 50, 25, 12.5 and 6.25ppm; $CHCl_3$: 400, 200, 100, 50 and 25ppm; CH_3OH: 200, 100, 50, 25 and 12.5ppm;
- For root part of *L. camara* (r) in PetE: 100, 50, 25, 12.5 and 6.25ppm; $CHCl_3$: 800, 400, 200, 100 and 50ppm; CH_3OH: 200, 100, 50, 25 and 12.5ppm;
- For *M. piperita* (wp) in PetE: 200, 100, 50, 25 and 12.5ppm; $CHCl_3$: 400, 200, 100, 50 and 25ppm; CH_3OH: 800, 400, 200, 100 and 50ppm;
- For *Mi. pudica* (wp) in PetE: 400, 200, 100, 50 and 25ppm; $CHCl_3$: 800, 400, 200, 100 and 50ppm;
- For *P. hysterophorus* (wp) in PetE: 200, 100, 50, 25 and 12.5ppm; $CHCl_3$: 800, 400, 200, 100 and 50ppm; CH_3OH: 200, 100, 50, 25 and 12.5ppm;
- For *Ph. niruri* (wp) in PetE: 100, 50, 25,12.5, 6.25 and 3.125ppm; $CHCl_3$: 200, 100, 50, 25, 12.5 and 6.25ppm; CH_3OH: 800, 600, 400, 200, 100 and 50ppm;
- For *Po. hydropiper* (wp) in PetE: 100, 50, 25, 12.5 and 6.25ppm; $CHCl_3$: 200, 100, 50, 25, 12.5 and 6.25ppm; CH_3OH: 200, 100, 50, 25, 12.5 and 6.25ppm;
- For *Pz. zeylanica* (wp) in PetE: 200, 100, 50, 25, 12.5 and 6.25ppm; $CHCl_3$: 400, 200, 100, 50, 25 and 12.5ppm;
- For *S. nodiflora* (wp) in PetE: 200, 100, 50, 25, 12.5 and 6.25ppm; $CHCl_3$: 400, 200, 100, 50 and 25ppm; CH_3OH: 400, 200, 100, 50, 25 and 12.5ppm;
- For *Z. zerumbet* (ap) in PetE: 400, 200, 100, 50 and 25ppm; $CHCl_3$: 800, 400, 200, 100 and 50ppm;
- For *Z. zerumbet* (rh) in PetE: 50, 25, 12.5, 6.25 and 3.125ppm; $CHCl_3$: 800, 400, 200, 100 and 50ppm; CH_3OH: 800, 400, 200, 100 and 50ppm

2.4.5.4. Analysis of data

The mortality records of the cytotoxicity test done on the nauplii of *A. salina* and mosquito larvae were corrected by the Abbott's (1925) formula:

$$P_r = \frac{P_o - P_c}{100 - P_c} \times 100$$

Where,

P_r = Corrected mortality (%)

P_o = Observed mortality (%)

P_c = Control mortality (%), sometimes called natural mortality (%).

Then mortality percentages were subjected to statistical analysis according to Finney (1947) and Busvine (1971) by using 'computer software'. The dose-mortality relationship was expressed as a median lethal concentration (LC_{50}).

2.4.6. Antimicrobial tests

The antimicrobial screening of an agent is essential to as certain its spectrum of activity against various types of pathogenic organisms. Antimicrobial activity of all the three (PetE, $CHCl_3$ and CH_3OH) of the test plants extracts samples can be detected by observing the growth response of various microorganisms to the test plants extracts.

2.4.6.1. *In vitro* antibacterial screening

In general antimicrobial screening *in vitro* is undertaken in the following two steps:

(i) Primary assay: It is essentially a qualitative or semiqualitative test that indicates the sensitivity or resistance of microorganisms to the compound. However, this technique cannot be used to distinguish between bacteriostatic and bactericidal agents (Reiner, 1980). The primary assay can be done in three ways, such as-

A. Diffusion method

B. Dilution method and

C. Bioautographic method.

Among these methods the disc diffusion method (Bauer *et al.* 1966; Reiner, 1982) is widely acceptable for the preliminary evaluation of antimicrobial activity. It uses different concentrations of the agents absorbed on sterile filter paper discs. There is no standardized method for expressing the results of antimicrobial screening (Ayafar *et al.* 1982). Some investigators use the diameter of the zone of inhibition or the minimum weight of extract that inhibits the growth of a microorganism. Disc diffusion is essentially a qualitative or semiquantitative test indicating the sensitivity or resistance of microorganisms to the test material. No distinction between bacteriostatic and bactericidal activity can be made by this method (Reiner, 1982). However *in vitro* antibacterial activity tests were done by disc diffusion method.

(ii) Secondary assay: It quantifies the relative potency such as minimum inhibitory concentration (MIC). The lowest concentration of an antimicrobial agent required to inhibit the growth of the microorganisms *in vitro* is referred to as minimum inhibitory concentration (MIC). It is done by serial dilution technique (Reiner, 1980). The MIC measurement was done by dilution technique in this experimentation.

Principle of the diffusion method

Diffusion assay (Barry, 1976) is based on the ability of antibiotics to diffuse from a confined source through the nutrient agar gel and create a concentration gradient. If the agar is seeded or streaked with a sensitive organism, a zone of inhibition will result where the concentration exceeds the minimum inhibitory concentration (MIC) for the particular organism.

In this method, measured amount of the test samples are dissolved in definite volumes of solvent to give solutions of known concentrations (μg/ml). The sterile (BBL, Cocksville, USA) filter paper (diameter 5mm) disc are impregnated with known amounts of the test substances and dried. These test material discs are placed on plates containing a suitable medium (nutrient agar) seeded with the test organisms. These plates are kept at low temperature (4°C) for 24h to allow maximum diffusion. A number of events take place simultaneously which includes-

i) the dried discs absorb water from the agar medium and the material under test is dissolved,

ii) the test material diffuses from the discs to the surrounding medium according to the physical law that controls the diffusion of molecules through agar gel,

iii) there is a gradual change of test material concentration in the agar surrounding each disc.

In this study, sterile 5mm filter paper disks were treated with 200μl solvent only (used as a control), and 200μl and 400μl of each test plant extracts. The bacteria were inoculated on full-strength Nutrient Agar (Qualigens Fine Chemicals Prod # 58673) by suspending loops of bacteria in sterile de-ionized water. The bacterial suspension was then smeared on agar plates with a sterile glass-rod to ensure the entire surface of the agar had an even coating of the bacterial suspension. Plates were divided into several areas and one filter paper disk was placed in each area so that each plate had one disk of each treatment. Effects of the extracts on bacterial growth were quantified by measuring the diameter of the zones of inhibition less the size of the treated filter paper disks.

The plates are then kept in an incubator (37°C) for 12-18h to allow the growth of the organisms. If the test material has antimicrobial activity, it will inhibit the growth of microorganisms, giving a clear, distinct zone called 'Zone of Inhibition'. Effects of the different plant extracts on bacterial growth were quantified by measuring the diameter of the zones of inhibition in term of mm. The size of the inhibitory zones depends principally on the following factors:

i) Intrinsic antimicrobial sensitivity of the test sample
ii) Growth rate of the test microorganisms
iii) Diffusion rate of the freshly seeded test organisms
iv) Concentration of the freshly seeded test organisms
v) Amount of test sample on disc
vi) Thickness of the test medium in the Petri dishes
vii) Composition of the culture medium
viii) Inoculums size
ix) Incubation time
x) Temperature of incubation

Test materials used for the study

i) PetE, $CHCl_3$ and CH_3OH extract of test plant
ii) Ampicillin (10μg/disc) as standard discs

Apparatus and reagents

i) Blank sterilized filter paper discs (diameter 5mm)
ii) Petri dishes (diameter 90mm)
iii) Test tubes
iv) Inoculating loop
v) Spirit burner and a match box
vi) Sterile forceps
vii) Sterile cotton
viii) Laminar air flow unit (BIOCRAFT and SCIENTIFIC INDUSTRIES, INDIA)

ix) Micropipette (10μl-100μl)

x) Autoclave (ALP Co. Ltd. KT- 30L, JAPAN)

xi) Incubator (OSK- 9639A, Japan)

xii) Refrigerator (ARISTON, ITALY)

xiii) Punch machine

xiv) Beaker

xv) Nutrient agar media (DIFCO)

xvi) Solvents (PetE, $CHCl_3$ and CH_3OH)

xvii) Vials

xviii) Rectified spirit and

xix) Alcohol (95%)

2.4.6.2. Test organisms used for the antibacterial activity test

Eight pathogenic bacteria were selected for the test, five of which were Gram negative and the remaining were Gram positive. These organisms of pure culture were collected from the Department of Biochemistry, University of Rajshahi. The bacterial strains used for this investigation are listed in Table 2.2.

Table 2.2. List of the test pathogenic bacteria

Gram positive bacteria	Gram negative bacteria
i. *Bacillus subtilis*	i. *Escherichia coli*
ii. *Listeria monocytogenes*	ii. *Klebsiella pneumoniae*
iii. *Staphylococcus aureus*	iii. *Salmonella enteritidis*
	iv. *Shigella flexneri*
	v. *Shigella sonnei*

2.4.6.3. Sterilization procedures

The antibacterial screening was carried out in a laminar airflow unit and all types of precautions were highly maintained to avoid any type of contamination during the test. UV light was switched on for half an hour before working in the laminar hood to avoid any accidental contamination. Petri dishes and other glass-wares were sterilized in the autoclave at 121°C temperatures and a pressure of 15lbs. /sq. inch for 15 minutes. Micropipette tips, culture media, cotton, forceps, blank discs, etc were also sterilized.

2.4.6.4. Culture media

A number of culture media are available to demonstrate the antibacterial activity. These are:

i) Nutrient agar medium

ii) Nutrient broth medium

iii) Mueller-Hinton medium

iv) Tryptic Soy broth (TSB) medium

v) Trypticase Soy agar medium

vi) Staphylococcus defined medium

vii) Adams and Roe medium

viii) NTH agar or broth medium.

Table 2.3. Composition of nutrient agar medium (for preparation of 100ml media)

Ingredients	Amount
Bactopeptone	0.5gm
Sodium chloride	0.5gm
Bactoyeast extract	1.0gm
Bactoagar	2.0gm
Distilled water	100ml
*p*H	7.2±0.1 at 25°C

For demonstrating the antibacterial activity and subculture of the test organisms the nutrient agar media (DIFCO) was used.

2.4.6.5. Preparation of the nutrient agar (DIFCO) medium

The instant nutrient agar (DIFCO) medium was weighed and then reconstituted with distilled water in a conical flask according to specification (2.3% w/v). It was then heated in a water bath to dissolve the agar until a transparent solution was obtained.

2.4.6.6. Preparation of fresh culture of the pathogenic organisms

The nutrient agar medium was prepared and dispersed in a number of clean test tubes to prepare slants (5ml in each test tube). The test tubes were plugged with cotton and sterilized in an autoclave at 121°C and 15lbs. /sq. inch pressure for 15min. After sterilization, the test tubes were kept in an inclined position for solidification. These were then incubated at 37.5°C to ensure sterilization. The test organisms were transferred to the agar slants from the supplied pure cultures with the help of an inoculating loop in an aseptic condition. Burning the loop after each transfer of microorganism was done to avoid contamination very carefully. The inoculated slants were then incubated at 37.5°C for 24h to assure the growth of test organisms. These fresh cultures were used for the sensitivity test.

2.4.6.7. Preparation of the test plates

The test plates were prepared according to the following procedure:

(i) The nutrient agar medium prepared in the previous section was poured in 15ml quantity in each in the clean test tubes and plugged with cotton.

(ii) The test tubes and a number of Petri dishes were sterilized in an autoclave at 121°C and 15Ibs/sq. inch pressure for 15min and were transferred into laminar airflow unit and then allowed to cool to about 45°C to 50°C.

(iii) The test organism was transferred from the fresh subculture to the test tube containing 15ml autoclaved medium with the help of an inoculating loop in an aseptic condition. Then the test tube was shaken by rotation to get a uniform suspension of the organism.

(iv) The bacterial suspensions were immediately transferred to the sterile Petri dishes in an aseptic area. The petri dishes were rotated several times, first clockwise and then anticlockwise to assure homogenous distribution of the test organisms. The media were poured into petri dishes in such a way as to give a uniform depth of approximately 4mm.

(v) Finally, after medium was cooled to room temperature in laminar airflow unit, it was stored in a refrigerator (4°C).

2.4.6.8. Preparation of discs containing samples

For the preparation of discs containing samples, following procedure was utilized:

(a) Sample discs: Sterilized filter paper discs (5mm in diameter) were taken by the forceps in to the plates. Sample solutions of desired concentrations were applied on the discs with the help of a micropipette in an aseptic condition. These discs were left for a few minutes in aseptic condition for complete removal of the solvent.

(b) Standard discs: These were used to compare the antibacterial activity of the test material. In the present study, Ampicillin discs containing 10μg/disc of antibiotic Ampicillin were used as standard discs for comparison purpose.

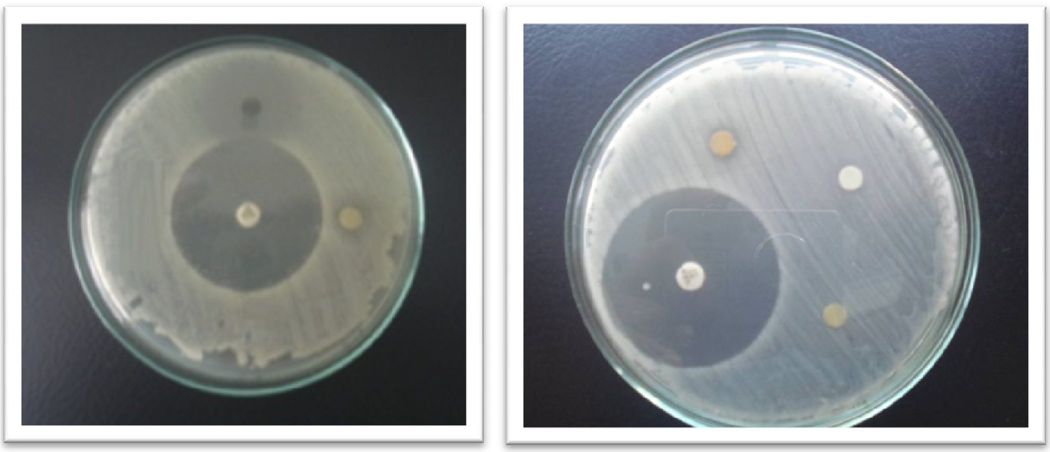


Plate 2.17: Antibacterial activity by disc diffusion method

2.4.6.9. Placement of the discs and incubation

For the placement of the discs, the following procedure was utilized:

(i) By means of a pair of sterile forceps, the sample impregnated discs were placed gently on the solidified agar plates seeded with the test organisms to ensure contact with the medium.

(ii) The plates were then kept in a refrigerator at 4°C for 24h in order to provide sufficient time to diffuse the antibiotics into the medium.

(iii) Finally, the plates were incubated at 37.5°C for 24h in an incubator.

[Precaution: The discs were placed in such a way that they were not closer than 15mm to the edge of the plate and far enough apart to prevent overlapping the zones of inhibition].

2.4.6.10. Measurement of the zones of inhibition

After incubation, the antibacterial activities of the test samples were determined by measuring the diameter of inhibitory zones in term of millimeter (mm) with a transparent scale.

2.5. Chromatographic techniques used in this investigation

2.5.1. Chromatography on TLC plates

Thin layer chromatography is a very convenient technique for finding the separation slurry along with its stationary phase. The mixtures of the compounds were well separated from each other and resolved by preparative thin layer chromatographic technique. This tool is considered to be one of the most helpful methods of the detection of organic compounds, which involves an adsorbent (using silica gel) as stationary phase and a solvent system as a mobile phase. Due to the differential rate of adsorption on the adsorbent, the components in a mixture migrate differentially along with the TLC plate. In other words due to the difference in mobility of the components often depend on their polarity and that of the solvents used.

To select the solvent system for the run of the open column separation was made on the preparative thin layer chromatographic plates. For the normal phase chromatography silica gel G60 F_{254} on Al sheets (Merck) were used. Ten mg/ml of the sample in the solvent extraction offered 100μl/spot by spotting 10μl for each of the sample extracts. The chromatograms then developed within a conventional chamber with the following solvent systems: CH_3OH - $CHCl_3$ (1:1), $CHCl_3$ - EtOAc (ethyl acetate) (15:1) for PetE extract of *E. nummularius* (wp) and CH_3OH - $CHCl_3$ (1:1) for MeOH extract of *Po. hydropiper* (wp). All chromatograms were observed on TLC by Godin revelation and marked with a pencil.

2.5.2. Detection of the compound on TLC by Godin revelation

The properly developed plates were dried and sprayed with Godin reagent (Godin, 1954) to reveal the bands.

Visual detection: The development chromatogram was examined visually to detect the presence of colored compound.

Godin reagent spray: Equal volume of 1% ethanolic solution of vanillin and 3% aqueous solution of percloric acid was mixed sprayed on to the prepared chromatogram and 10% ethanolic solution of H_2SO_4 was also sprayed afterwards and allowed the plate to dry out at 100°C by using a hair dryer. Revelation was observed in different colors for different compounds (Godin, 1954).

Measurement of *Rf* values: The *Rf* values of he separated compounds were calculated on the developed chromatogram using the pre-established solvent system. The *Rf* values were calculated by the following formula:

$$Rf = \frac{\text{Distance traveled by the compound}}{\text{Distance traveled by the solvent}}$$

2.5.3. Open column chromatography

Of the methods in the solid phase category, column chromatography is very popular and used extensively. It can include non-exchange resins, polymeric columns, gel-filtration and chromatography over silica gel or chemically modified silica gel. Open column chromatography has a high load capacity but the separation time is long and the resolution is respectively low.

Column running

Fraction

Plate 2.18: Open column used in the experiment

The stationary phase for the open column chromatography was silica gel Si60 [200-400 mesh for PetE extract of *E. nummularius* (wp) and *Po. hydropiper* (wp)] (Merck), and glass column of different size (4.8×36cm, 4.0×27cm etc.) were used. Cotton pads washed with relevant solvent system was used at the base of the gel column. A similar cotton cloud was used at the top of the column (after application of the sample and the solvent) to protect destruction of the sample layer. Selected solvent systems were used as eluents and the elution rate was 1ml/min. Fractions were collected carefully.

2.5.4. Gel filtration

Open column for gel filtration generally used to apply sephadex LH-20 (Pharmacia) for the chromatography of exclusion. For methanol soluble samples MeOH (100%) and for $CHCl_3$ soluble samples $CHCl_3$-MeOH (1:1) systems were used. The eluent allowed about 0.5ml/min.

2.5.5. Preparative separation techniques

Chromatography is an analytical technique for separating compounds on the basis of differences in affinity for a stationary and mobile phase. The separation of pure constituents from plant materials chromatography is a popular technique. The aim of choice any technique for separation is to have maximum yield with minimum effort to reduce the time and cost of the separation procedure. Preparative separation techniques can be tedious and time consuming, especially when complex mixtures, such as crude plant extracts have to be resolved. In the present study for isolation of pure compounds from PetE extract of *E. nummularius* (wp) and from MeOH extract of *Po. hydropiper* (wp) were done mainly by open column chromatography, while thin layer chromatography (TLC) and gel filtration were used as supporting tools.

2.5.6. Selection of extracts for fractionation

For fractionation of the extraction with a view to isolate biologically active compounds all the extracts were subjected to biological assay. Repetition of the same assay is required until the purification of the target compound, and thus a suitable bioassay technique was selected.

2.5.7. Selection of slurry (solvent system) for respective extracts

Aluminiun backed precoated preparative thin layer chromatographic (TLC) plates (20×20cm) with silica gel GF_{254} with 0.5mm thickness and active in the usual manner (Merck, Germany) were used. The sample was applied on the activated plates with the help of a gradient micropipette as a narrow band at 1cm above the lower edge of the plate to make sure that the sample was washed away when the plates were placed inside the TLC chamber with the solvent system. The plates were developed in the usual manner.

After development, the chromatograms were air dried and observed sprayed with Godin reagent (Godin, 1954). The distinct bands were expected and by changing the solvent system with increase of either the polar or the apolar one. After having a better separation the selected solvent system was applied on the open column for isolation the compounds by fractionation. Small pieces of aluminum backed TLC plate was taken to spot the target extracts and run with a mixture of a relatively polar and relatively apolar solvent (1:1). For the better separation on the TLC with a known stationary phase the amount of both solvents were increased or decreased and applied accordingly. The combination given a better separation was selected for that extract for fractionation on the open column.

2.6. Isolation of the compounds

2.6.1. Isolation of *E. nummularius* (wp) compound (ENP) from the PetE extract

For the first fractionation of the PetE extract of *E. nummularius* (wp) LH_{20} (Pharmacia) was used as the stationary phase and $CHCl_3$-MeOH (1:1) was the eluent on a glass column of 4.8 $\times$ 36cm for 500mg of the extract. Elution time was adjusted to yield 1ml/min. It gave 71 tubes, which were then spotted on TLC to run and reveal the compounds by reagent spray. Three fractions were made for tubes 1-22 (Fr. I), 23-55 (Fr. II), 56-71 (Fr. III). The 2nd fraction was targeted compound and subjected fractionation on selecting a solvent system by TLC, $CHCl_3$ and EtOAc ($CHCl_3$-EtOAc, 15:1) was applied on a glass column of 4.0 $\times$ 27cm was packed with silica gel (200-400 mesh, 85gm) (Sigma). The elution was kept similar to that of the previous one. This fractionation yielded 151 tubes and TLC was made for all of them to get 6 fractions as Sfr. I (T/ 1-65), Sfr. II (T/ 66-78) and Sfr. III (T/ 79-94) Sfr. IV (T/ 95-103) Sfr. V (T/ 104-117) Sfr. VI (T/ 118-151). The Fr. III was tested on TLC under UV and Godin reagent spray to give Light blue color with a single spot compare to the crude. The compound was named as ENP (Fig 2.5).

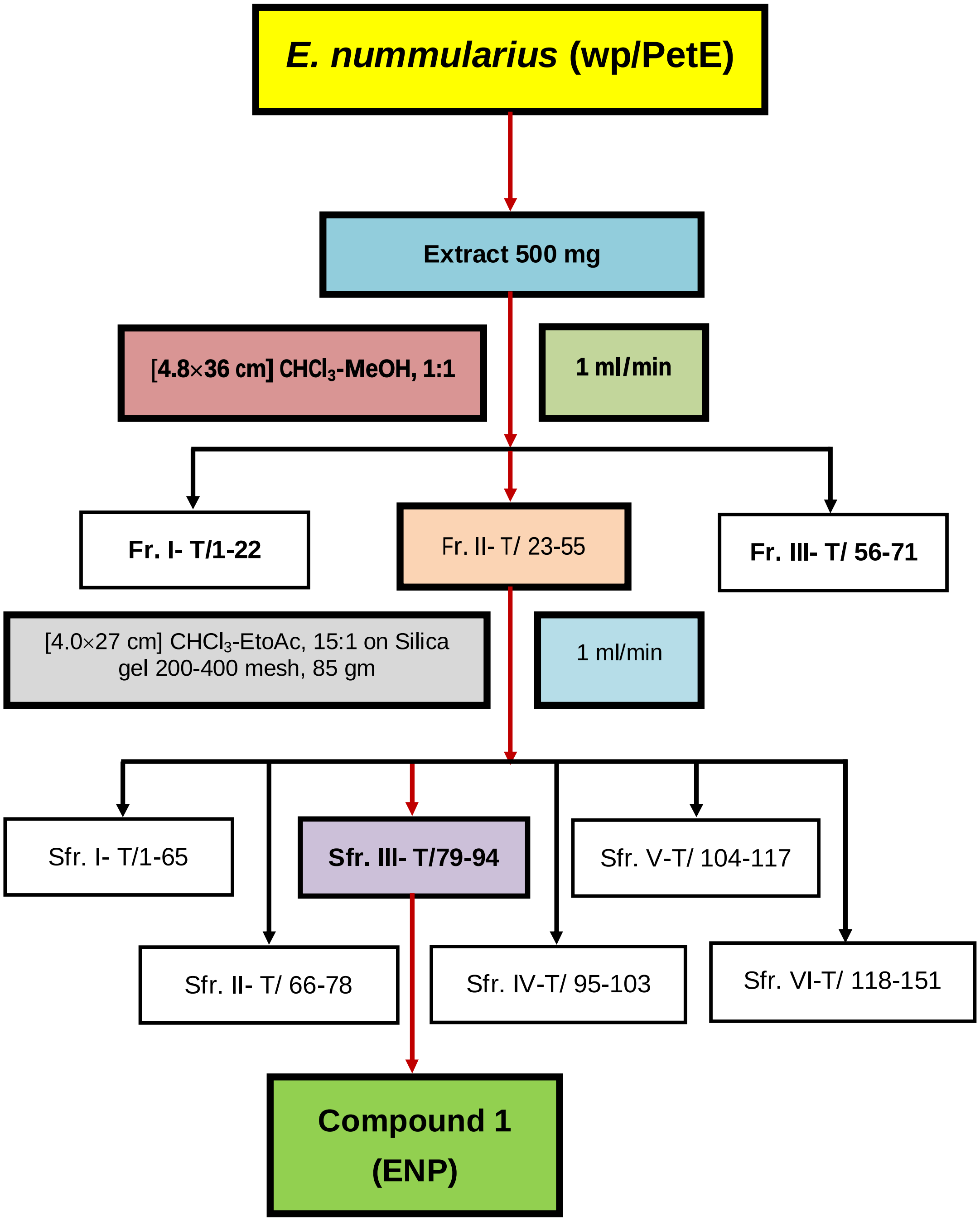


Fig 2.5: Isolation pathway of *E. nummularius* (wp/PetE) compounds

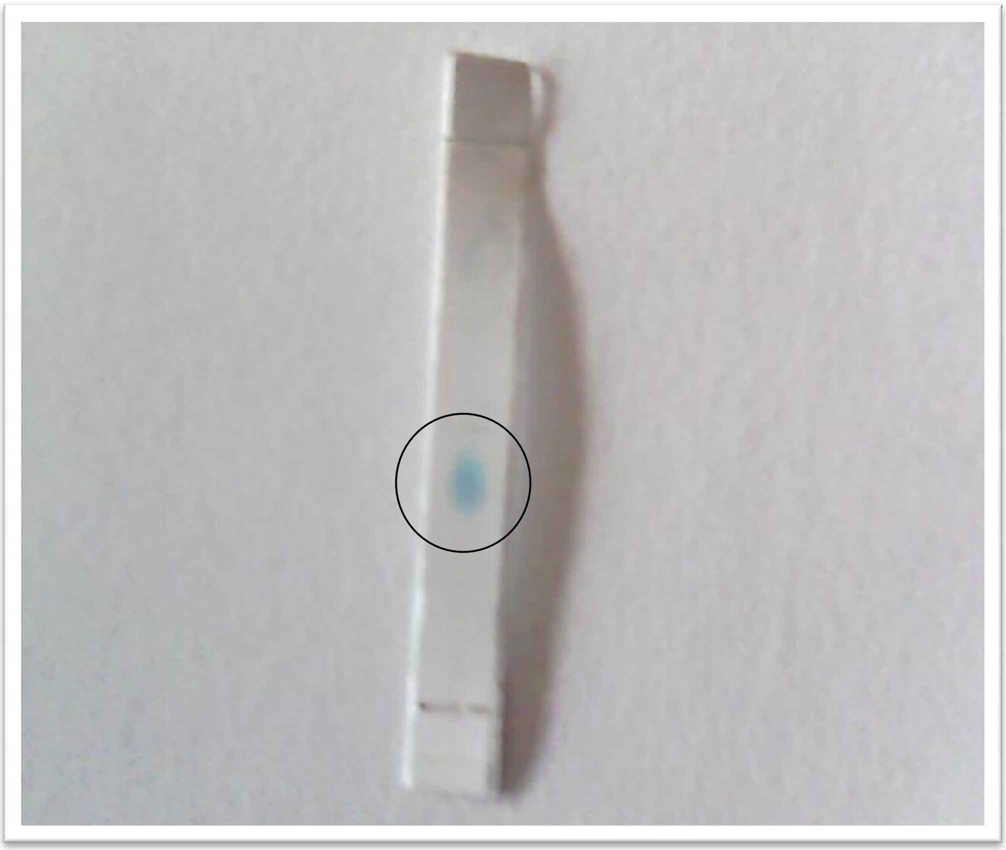


Plate 2.19: Revelation of compound 1 (ENP) spots by Godin reagent spray

2.6.2. Isolation of *Po. hydropiper* (wp) compound (POM) from the MeOH extract

For the first fractionation of the MeOH extract of the *Po. hydropiper* (wp) LH_{20} (Pharmacia) was used as the stationary phase and $CHCl_3$ - MeOH (1:1) was the eluent on a glass column of 4.8 × 36cm for 500mg of the extract. Elution time was adjusted to yield 1ml/min. It gave 59 tubes, which were then spotted on TLC to run and reveal the compounds by reagent spray. Four fractions were made for test tubes 1-22 (Fr. I), 23-48 (Fr. II), 49-56 (Fr. III) and 57-59 (Fr. IV). The Fr. III was tested on TLC under Godin reagent spray to give light brownish color with a single spot compare to the crude. The compound was named as POM (Fig 2.6).

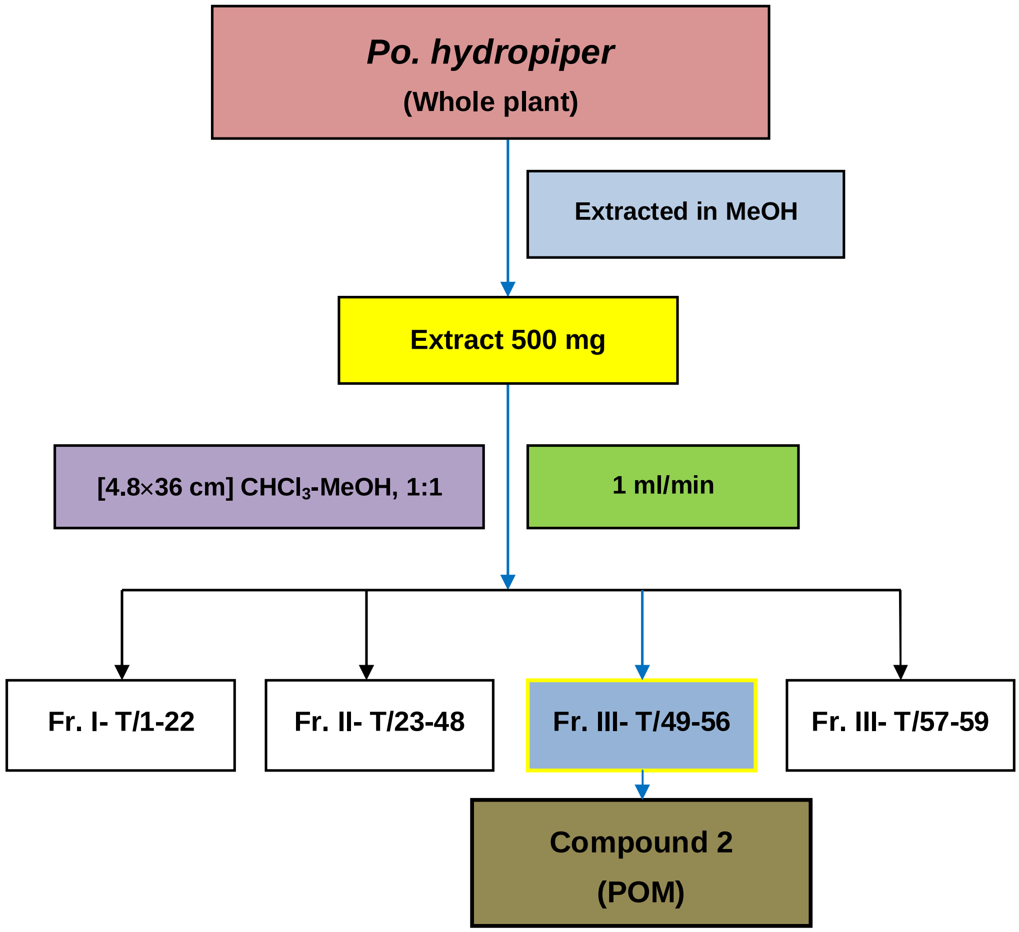


Fig 2.6: Isolation pathway of *Po. hydropiper* (wp/MeOH) compounds

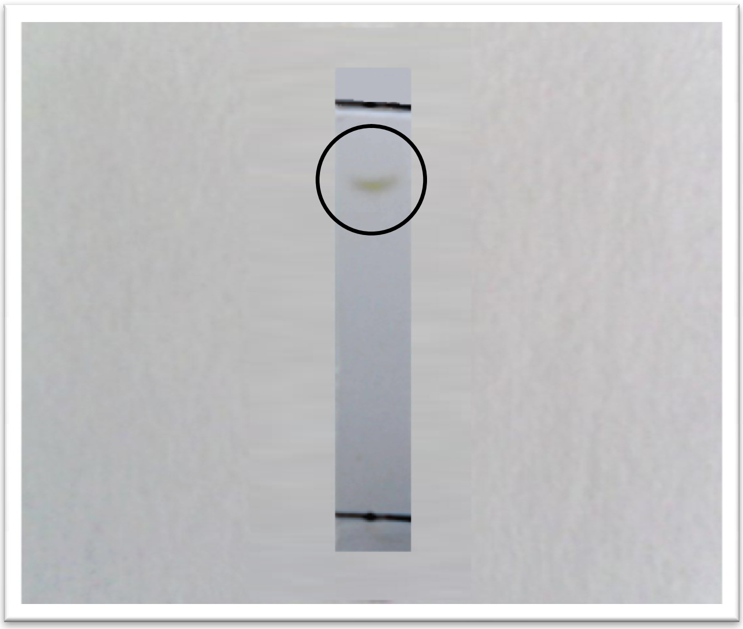


Plate 2.20: Revelation of compound 2 (POM) spots by Godin reagent spray

RESULTS

3.1. Bioassay on eggplant aphid, *A. gossypii*

3.1.1. Dose mortality effect of the test extracts against *A. gossypii* through residual film assay

All the extracts (PetE, $CHCl_3$ and CH_3OH) of the *E. nummularius* (wp), aerial and root part of *L. camara*, *M. piperita* (wp), *Mi. pudica* (wp), *P. hysterophorus* (wp), *Ph. niruri* (wp), *Po. hydropiper* (wp), *Pz. zeylanica* (wp), *S. nodiflora* (wp), aerial and rhizome part of *Z. zerumbet* were tested against the eggplant aphid, *A. gossypii* with doses (mentioned in Chapter 2/2.4.2.1.) established through *Ad Hoc* experiments done prior to go through final experimentation. The respective doses for each of the extracts were applied on both the sides of treated leaves (taken as a part round in shape of 3.6cm diam.) and the test insects were released there to observe mortality or to find any sort of abnormality due to the efficacy of extracts compared to the controls (where no extracts were used). The results have been presented in Tables 3.1a - 3.1b, and Appendix Tables I - CCLXXVII.

The highest mortality was observed in case of PetE extracts of *E. nummularius* (wp) [LD_{50} 0.034mg/cm^2] followed by the PetE extracts of *Z. zerumbet* (rh) [LD_{50} 0.035mg/cm^2] after 24h of exposure against the eggplant aphid. The lowest mortality was observed in case of $CHCl_3$ extract of *Ph. niruri* (wp) [LD_{50} 0.298mg/cm^2] after 24h of exposure. According to the intensity of activity the extracts could be arranged in a descending order: *E. nummularius* (wp/PetE) > *Z. zerumbet* (rh/PetE) > *Z. zerumbet* (ap/PetE) > *L. camara* (r/PetE) > *E. nummularius* (wp/CH_3OH) > *Ph. niruri* (wp/PetE) > *Z. zerumbet* (rh/$CHCl_3$) > *S. nodiflora* (wp/CH_3OH) > *Pz. zeylanica* (wp/PetE) > *P. hysterophorus* (wp/PetE) > *Pz. zeylanica* (wp/$CHCl_3$) > *M. piperita* (wp/PetE) > *Z. zerumbet* (ap/$CHCl_3$) > *Mi. pudica* (wp/$CHCl_3$) > *P. hysterophorus* (wp/$CHCl_3$) > *S. nodiflora* (wp/$CHCl_3$) > *E. nummularius* (wp/$CHCl_3$) > *Po. hydropiper* (wp /$CHCl_3$) > *L. camara* (ap/PetE) > *S. nodiflora* (wp/PetE) > *L. camara* (ap/$CHCl_3$) > *Po. hydropiper* (wp/Pet.E) > *L. camara* (r/$CHCl_3$) > *M. piperita* (wp/$CHCl_3$) > *Z. zerumbet* (rh/CH_3OH) > *Mi. pudica* (wp/CH_3OH) > *M. piperita* (wp/CH_3OH) > *L. camara* (ap/CH_3OH) > *Po. hydropiper* (wp/CH_3OH) > *L. camara* (r/CH_3OH) > *Mi. pudica* (wp/PetE) > *Z. zerumbet* (ap/CH_3OH) > *P. hysterophorus* (wp/CH_3OH) > *Ph. niruri* (wp/CH_3OH) > *Pz. zeylanica* (wp/CH_3OH) > *Ph. niruri* (wp/$CHCl_3$).

Table 3.1a. LD_{50} values established through dose-mortality assay against *A. gossypii*

Test plant	Extract type	LD_{50} value (mg/cm^2)							
		Duration of exposures							
		3h	6h	9h	12h	15h	18h	21h	24h
***E. nummularius* (wp)**	PetE	0.673	0.167	0.120	0.093	0.069	0.044	0.035	0.034
	$CHCl_3$	0.238	0.203	0.182	0.160	0.136*	0.110*	0.093	0.078
	CH_3OH	0.461	0.264	0.179	0.151	0.116	0.087	0.070	0.055
***L. camara* (ap)**	PetE	-	-	0.182	0.155*	0.135	0.094*	0.083*	0.080
	$CHCl_3$	0.194	0.155	0.142	0.124	0.110	0.099	0.087	0.084
	CH_3OH	0.263	0.256	0.246	0.202	0.183	0.153	0.135*	0.129
***L. camara* (r)**	PetE	0.221	0.168	0.152	0.120	0.098	0.074	0.064	0.053
	$CHCl_3$	0.161	0.150	0.148	0.127	0.120	0.099	0.087*	0.092
	CH_3OH	0.358	0.301	0.310	0.228	0.198	0.159	0.135*	0.131
***M. piperita* (wp)**	PetE	0.235	0.189	0.158	0.136	0.111	0.093	0.083	0.070
	$CHCl_3$	0.252	0.198	0.189*	0.156*	0.130	0.107	0.103	0.095
	CH_3OH	0.412	0.332	0.345	0.328	0.258	0.208	0.156	0.126
***Mi. pudica* (wp)**	PetE	0.351	0.336	0.268	0.237	0.196	0.158	0.142	0.134
	$CHCl_3$	0.312	0.339	0.209	0.164	0.131	0.097	0.080	0.071
	CH_3OH	-	-	0.198*	0.233	0.184*	0.131	0.102*	0.101
***P. hysterophorus* (wp)**	PetE	0.216	0.202	0.185	0.154	0.130	0.094	0.077*	0.068
	$CHCl_3$	0.321	0.328	0.221	0.151	0.121	0.105	0.084	0.074
	CH_3OH	-	-	-	0.354	0.398	0.250	0.177	0.144

*** Variance has been adjusted for heterogeneity**

Table 3.1b. LD_{50} values established through dose mortality assay against *A. gossypii*

Test plant	Extract type	LD_{50} value (mg/cm^2)							
		Duration of exposures							
		3h	6h	9h	12h	15h	18h	21h	24h
***Ph. niruri* (wp)**	PetE	0.350	0.286	0.233	0.162	0.130	0.095	0.072	0.060
	$CHCl_3$	-	-	0.429	0.422	0.391	0.363	0.340	0.298
	CH_3OH	-	0.505	0.331	0.252	0.234	0.189	0.174	0.145
***Po. hydropiper* (wp)**	PetE	0.314	0.200	0.162	0.149	0.125*	0.107	0.110	0.090
	$CHCl_3$	0.331	0.231	0.184	0.135	0.110	0.090	0.082	0.079
	CH_3OH	0.412	0.307	0.321	0.251	0.204	0.179	0.156	0.130
***Pz. zeylanica* (wp)**	PetE	0.251	0.232	0.181	0.147	0.119	0.095	0.078	0.067
	$CHCl_3$	0.281	0.218	0.193*	0.170*	0.144*	0.110*	0.085*	0.068*
	CH_3OH	-	0.313	0.315	0.294	0.268	0.238	0.212	0.187
***S. nodiflora* (wp)**	PetE	0.200	0.168	0.157	0.136	0.130	0.105	0.087*	0.083*
	$CHCl_3$	0.218	0.229	0.191	0.164	0.118	0.106	0.095	0.076
	CH_3OH	0.261	0.224	0.161	0.134	0.110	0.091	0.078	0.065
***Z. zerumbet* (ap)**	PetE	0.230	0.193	0.138	0.100	0.082	0.064	0.051	0.043
	$CHCl_3$	0.309	0.344	0.274	0.181	0.123	0.091	0.076	0.071
	CH_3OH	0.277	0.255	0.272*	0.235*	0.193*	0.168*	0.143*	0.140
***Z. zerumbet* (rh)**	PetE	0.213	0.163	0.137	0.102	0.070	0.055	0.041	0.035
	$CHCl_3$	0.224	0.195	0.159	0.124	0.104	0.081	0.074	0.062
	CH_3OH	0.313	0.290	0.232	0.187	0.165	0.130	0.113	0.097

*** Variance has been adjusted for heterogeneity**

3.1.2. Repellent activity of the test extracts against *A. gossypii*

The PetE, $CHCl_3$ and CH_3OH extracts of test plants offered repellent activity against the eggplant aphids even for a concentration ranges between 0.393mg/cm^2 to as less as 0.025mg/cm^2 [0.393, 0.197, 0.098, 0.049 and 0.025mg/cm^2 for ½ of treated area (3.6cm diam.) for all the plant extracts]. The data was read with 1h interval for up to 5h of exposure and was subjected to ANOVA after transforming them into arcsine percentage values which are given in Tables 3.2a - 3.2b and Appendix Tables DCCLII - DCCLXXXVII.

The extracts of *E. nummularius* (wp/CH_3OH), *L. camara* (ap/CH_3OH), *L. camara* (r/PetE & CH_3OH), *M. piperita* (wp/$CHCl_3$,), *Mi. pudica* (wp/CH_3OH), *P. hysterophorus* (wp/$CHCl_3$), *Po. hydropiper* (wp/PetE), *Pz. zeylanica* (wp/CH_3OH) and *Z. zerumbet* (rh/$CHCl_3$ & CH_3OH) were found mildly active ($P<0.05$) but, the extracts of *M. piperita* (wp/CH_3OH) was found moderately active ($P<0.01$) against the eggplant aphids. The PetE and $CHCl_3$ extracts of *E. nummularius* (wp), *L. camara* (ap), *Mi. pudica* (wp) and *Pz. zeylanica* (wp); all the solvent extracts of *Ph. niruri* (wp), *S. nodiflora* (wp) and *Z. zerumbet* (ap); PetE extracts of *M. piperita* (wp), *P. hysterophorus* (wp) and *Z. zerumbet* (rh); $CHCl_3$ extracts of *L. camara* (r) and *Po. hydropiper* (wp) and CH_3OH extracts of *P. hysterophorus* (wp) and *Po. hydropiper* (wp) gave no repellent activity against the eggplant aphids.

According to the intensity of repellency the result could be arranged in a descending order: *M. piperita* (wp/CH_3OH) > *Po. hydropiper* (wp/PetE) > *Pz. zeylanica* (wp/CH_3OH) > *L. camara* (r/PetE) > *L. camara* (r/CH_3OH) > *P. hysterophorus* (wp/$CHCl_3$) > *L. camara* (ap/CH_3OH) > *Mi. pudica* (wp/CH_3OH) > *Z. zerumbet* (rh/CH_3OH) > *E. nummularius* (wp/CH_3OH) > *M. piperita* (wp/$CHCl_3$) > *Z. zerumbet* (rh/$CHCl_3$).

Table 3.2a. ANOVA results of repellency by test extracts against *A. gossypii*

Types of extract		Sources of variation (df)			F-ratio with level of significance		P-value	
		Between doses	Between time intervals	Error	Between doses	Between time intervals	Between doses	Between time intervals
***E. nummularius* (wp)**	PetE	4	4	16	5.756$^{(NS)}$	0.767	0.005	0.562
	$CHCl_3$	4	4	16	5.028$^{(NS)}$	1.745	0.008	0.189
	CH_3OH	4	4	16	10.252*	3.538	0.0002	0.030
***L. camara* (ap)**	PetE	4	4	16	2.070$^{(NS)}$	1.502	0.133	0.249
	$CHCl_3$	4	4	16	3.264$^{(NS)}$	2.787	0.039	0.062
	CH_3OH	4	4	16	11.784*	0.361	0.000	0.833
***L. camara* (r)**	PetE	4	4	16	15.037*	1.705	2.78E-05	0.198
	$CHCl_3$	4	4	16	4.351$^{(NS)}$	7.378	0.014	0.001
	CH_3OH	4	4	16	14.739*	2.294	3.14E-05	0.104
***M. piperita* (wp)**	PetE	4	4	16	2.183$^{(NS)}$	1.800	0.117	0.178
	$CHCl_3$	4	4	16	10.063*	2.691	0.000	0.069
	CH_3OH	4	4	16	28.191**	1.377	4.55E-07	0.286
***Mi. pudica* (wp)**	PetE	4	4	16	3.872$^{(NS)}$	1.005	0.022	0.434
	$CHCl_3$	4	4	16	8.141$^{(NS)}$	2.498	0.000	0.084
	CH_3OH	4	4	16	11.545*	5.780	0.000	0.004
***P. hysterophorus* (wp)**	PetE	4	4	16	5.825$^{(NS)}$	0.700	0.004	0.603
	$CHCl_3$	4	4	16	13.194*	2.680	6.12E-05	0.070
	CH_3OH	4	4	16	2.453$^{(NS)}$	0.625	0.088	0.652

*** = (P <0.05), ** = (P <0.01) and *** = (P <0.001), NS = not significant**

Table 3.2b. ANOVA results of repellency by test extracts against *A. gossypii*

Types of extract		Sources of variation (df)			F-ratio with level of significance		P-value	
		Between doses	Between time intervals	Error	Between doses	Between time intervals	Between doses	Between time intervals
***Ph. niruri* (wp)**	PetE	4	4	16	2.943(NS)	6.410	0.053	0.003
	$CHCl_3$	4	4	16	6.086(NS)	1.604	0.004	0.222
	CH_3OH	4	4	16	4.417(NS)	4.013	0.014	0.019
***Po. hydropiper* (wp)**	PetE	4	4	16	19.419*	4.339	5.53E-06	0.014
	$CHCl_3$	4	4	16	7.421(NS)	0.360	0.001	0.834
	CH_3OH	4	4	16	3.701(NS)	0.880	0.026	0.498
***Pz. zeylanica* (wp)**	PetE	4	4	16	6.197(NS)	5.187	0.003	0.007
	$CHCl_3$	4	4	16	6.136(NS)	0.068	0.003	0.991
	CH_3OH	4	4	16	15.082*	2.265	2.73E-05	0.108
***S. nodiflora* (wp)**	PetE	4	4	16	4.753(NS)	4.002	0.010	0.019
	$CHCl_3$	4	4	16	4.019(NS)	0.666	0.019	0.624
	CH_3OH	4	4	16	7.734(NS)	2.514	0.001	0.083
***Z. zerumbet* (ap)**	PetE	4	4	16	5.197(NS)	0.180	0.007	0.945
	$CHCl_3$	4	4	16	3.384(NS)	3.402	0.035	0.034
	CH_3OH	4	4	16	2.909(NS)	2.455	0.055	0.088
***Z. zerumbet* (rh)**	PetE	4	4	16	3.740(NS)	0.509	0.025	0.730
	$CHCl_3$	4	4	16	9.502*	2.946	0.000	0.053
	CH_3OH	4	4	16	10.505*	0.933	0.000	0.470

*** = (P <0.05), ** = (P <0.01) and *** = (P <0.001), NS = not significant**

3.2. Bioassay on *A. salina* nauplii

3.2.1. Lethal effect of the test extracts against *A. salina* nauplii through brine shrimp lethality assay

All the extracts (PetE, $CHCl_3$ and CH_3OH) of the *E. nummularius* (wp), aerial and root part of *L. camara*, *M. piperita* (wp), *Mi. pudica* (wp), *P. hysterophorus* (wp), *Ph. niruri* (wp), *Po. hydropiper* (wp), *Pz. zeylanica* (wp), *S. nodiflora* (wp), aerial and rhizome part of *Z. zerumbet* were tested against the 1 day aged brine shrimp *A. salina* nauplii through lethality test with doses (mentioned in Chapter 2/2.4.4.3.) established through *Ad Hoc* experiments prior to set final experiments. The doses were applied in test-tubes, where the test organisms were released to observe lethality or any sort of abnormality caused due to efficacy of the extracts compared to the controls (where no extracts were used). Observation of mortality was made after 6h of application with 6h interval up to 30h. The data were then subjected to Probit analysis and the results have been presented in Tables 3.3a - 3.3b, and Appendix Tables CCLXXVIII - CDLV.

The highest lethality has been observed for the $CHCl_3$ extracts of *Po. hydropiper* (wp) [LC_{50} 1.590ppm] followed by the PetE extracts of same plant [LC_{50} 8.901ppm] after 30h of exposure against the brine shrimp nauplii. The lowest mortality was observed for the CH_3OH extracts of *S. nodiflora* (wp) [LC_{50} 197.230ppm] after 30h of exposure.

According to the intensity of activity the extracts could be arranged in a descending order: *Po. hydropiper* (wp/$CHCl_3$) > *Po. hydropiper* (wp/PetE) > *M. piperita* (wp/PetE) > *L. camara* (ap/$CHCl_3$) > *Z. zerumbet* (ap/PetE) > *Z. zerumbet* (rh/$CHCl_3$) > *S. nodiflora* (wp/PetE) > *L. camara* (ap/PetE) > *Pz. zeylanica* (wp/PetE) > *L. camara* (r/PetE) > *M. piperita* (wp/$CHCl_3$) > *E. nummularius* (wp/PetE) > *Z. zerumbet* (rh/PetE) > *L. camara* (r/$CHCl_3$) > *L. camara* (r/CH_3OH) > *E. nummularius* (wp/$CHCl_3$) > *Po. hydropiper* (wp/CH_3OH) > *Z. zerumbet* (ap/$CHCl_3$) > *Mi. pudica* (wp/PetE) > *Ph. niruri* (wp/$CHCl_3$) > *P. hysterophorus* (wp/PetE) > *P. hysterophorus* (wp/CH_3OH) > *Pz. zeylanica* (wp/CH_3OH) > *Mi. pudica* (wp/$CHCl_3$) > *P. hysterophorus* (wp/$CHCl_3$) > *Ph. niruri* (wp/PetE) > *L. camara* (ap/CH_3OH) > *Pz. zeylanica* (wp/$CHCl_3$) > *S. nodiflora* (wp/$CHCl_3$) > *M. piperita* (wp/CH_3OH) > *E. nummularius* (wp/CH_3OH) > *Mi. pudica* (wp/CH_3OH) > *Z. zerumbet* (ap/CH_3OH) > *Z. zerumbet* (rh/CH_3OH) > *Ph. niruri* (wp/CH_3OH) > *S. nodiflora* (wp/CH_3OH).

Table 3.3a. LC_{50} values of the test extracts established through brine shrimp lethality assay against *A. salina* nauplii

Types of extract		LC_{50} value (ppm)				
		Duration of exposures				
		6h	12h	18h	24h	30h
E. nummularius (wp)	PetE	29991.140	594.987	207.889	32.328	13.601
	$CHCl_3$	961.694	291.519	109.120	28.035	20.485
	CH_3OH	4716.815	1029.678	213.030	146.837	80.432
L. camara (ap)	PetE	324.814	45.819	28.415	13.748	11.515
	$CHCl_3$	508.798	46.466	22.178	13.802	10.481
	CH_3OH	432.490	238.550	132.535	85.608	56.523
L. camara (r)	PetE	1595.095	111.786	27.467	15.254	12.497
	$CHCl_3$	129.074	37.045	26.716	21.630	17.035
	CH_3OH	225.929	52.056	39.515	26.555	17.761
M. piperita (wp)	PetE	329.968	36.670*	24.011	16.253	9.573
	$CHCl_3$	58.807	28.980	22.295	19.830	13.573
	CH_3OH	525.030	238.022	162.029	129.544	78.572
Mi. pudica (wp)	PetE	228.574	59.827	46.757	38.768	23.815
	$CHCl_3$	178.222	76.568	55.318	48.650	34.767
	CH_3OH	-	1282.236	395.636	142.187	86.651
P. hysterophorus (wp)	PetE	418.086	76.099	52.790	40.454	27.782
	$CHCl_3$	233.829	86.089	81.277	58.931	47.061
	CH_3OH	224.663	62.016	47.302	44.060	32.513

*** Variance has been adjusted for heterogeneity**

Table 3.3b. LC$_{50}$ values of the test extracts established through brine shrimp lethality assay against *A. salina* nauplii

Types of extract		**LC$_{50}$ value (ppm)**				
		Duration of exposures				
		6h	**12h**	**18h**	**24h**	**30h**
***Ph. niruri* (wp)**	PetE	4845.618	955.244	329.020	109.640	48.604
	$CHCl_3$	1617.613	115.700	34.150	25.543*	24.331
	CH_3OH	1557.524	743.490	384.977	301.357	152.499
***Po. hydropiper* (wp)**	PetE	4175.449	141.108	15.102	10.831	8.901
	$CHCl_3$	69.464	19.208	5.400	2.892	1.590
	CH_3OH	4852.087	53.895*	29.110*	25.398*	20.995*
***Pz. zeylanica* (wp)**	PetE	265.189	125.528	64.177	31.359	11.648
	$CHCl_3$	101415.100	608.430	400.674	175.094	57.682
	CH_3OH	682.599	257.960	87.372	42.562	32.749
***S. nodiflora* (wp)**	PetE	754.710	219.824	30.223	12.179	11.380
	$CHCl_3$	1372.014	192.840*	146.676*	76.688*	58.268*
	CH_3OH	-	3548.378	977.604	543.606	197.230
***Z. zerumbet* (ap)**	PetE	211.379	26.447	19.114	12.968	10.938
	$CHCl_3$	682.473	72.906	30.866	24.701	21.121
	CH_3OH	410.045	284.761	145.906	114.558	88.715
***Z. zerumbet* (rh)**	PetE	114.818	39.290	25.115	17.403	13.608
	$CHCl_3$	103.476	29.198	16.212	12.963	11.172
	CH_3OH	482.507	338.584	210.761	121.463	98.301

*** Variance has been adjusted for heterogeneity**

3.3. Bioassay on mosquito larvae

3.3.1. Effect of test extracts against *C. quinquefasciatus* larvae through larvicidal assay

All the extracts (PetE, $CHCl_3$ and CH_3OH) of the *E. nummularius* (wp), aerial and root part of *L. camara*, *M. piperita* (wp), *Mi. pudica* (wp), *P. hysterophorus* (wp), *Ph. niruri* (wp), *Po. hydropiper* (wp), *Pz. zeylanica* (wp), *S. nodiflora* (wp), aerial and rhizome part of *Z. zerumbet* were tested against the 1 day aged *C. quinquefasciatus* larvae through larvicidal activity test with doses (mentioned in Chapter 2/2.4.5.3.) established through *Ad Hoc* experiments done prior to set final experiments. The doses were applied in test-tubes, where the test organisms were released to observe lethality or any sort of abnormality took place due to efficacy of the extracts compared to the controls (where no extracts were used). Observation of mortality was made after 6h of application with 6h intervals up to 30h. The data were then subjected to Probit analysis and the results have been presented in Tables 3.4a - 3.4b, and Appendix Tables CDLVI - DCXX.

The highest lethality has been observed for the $CHCl_3$ extracts of *Ph. niruri* (wp) [LC_{50} 3.220ppm] followed by the PetE extracts of same plant [LC_{50} 3.390ppm] after 30h of exposure against the *C. quinquefasciatus* larvae. The lowest mortality was observed for the CH_3OH extracts of *M. piperita* (wp) [LC_{50} 309.859ppm] after 30h of exposure. Methanol extract of *Mi. pudica* (wp), *Pz. zeylanica* (wp) and *Z. zerumbet* (ap) did not show any larvicidal effects.

According to the intensity of activity the extracts could be arranged in a descending order: *Ph. niruri* (wp/$CHCl_3$) > *Ph. niruri* (wp/PetE) > *Z. zerumbet* (rh/PetE) > *Po. hydropiper* (wp/CH_3OH) > *L. camara* (ap/PetE) > *Po. hydropiper* (wp/PetE) > *Pz. zeylanica* (wp/PetE) > *L. camara* (r/PetE) > *L. camara* (ap/CH_3OH) > *P. hysterophorus* (wp/PetE) > *P. hysterophorus* (wp/CH_3OH) > *L. camara* (r/CH_3OH) > *Po. hydropiper* (wp/$CHCl_3$) > *E. nummularius* (wp/PetE) > *M. piperita* (wp/PetE) > *S. nodiflora* (wp/PetE) > *Z. zerumbet* (ap/PetE) > *L. camara* (ap/$CHCl_3$) > *E. nummularius* (wp/$CHCl_3$) > *Pz. zeylanica* (wp/$CHCl_3$) > *Mi. pudica* (wp/PetE) > *M. piperita* (wp/$CHCl_3$) > *S. nodiflora* (wp/$CHCl_3$) > *S. nodiflora* (wp/CH_3OH) > *P. hysterophorus* (wp/$CHCl_3$) > *E. nummularius* (wp/CH_3OH.) > *Z. zerumbet* (ap/$CHCl_3$) > *Z. zerumbet* (rh/$CHCl_3$) > *Z. zerumbet* (rh/CH_3OH) > *L. camara* (r/$CHCl_3$) > *Ph. niruri* (wp/CH_3OH) > *Mi. pudica* (wp/$CHCl_3$) > *M. piperita* (wp/CH_3OH).

Table 3.4a. LC_{50} values of the test extracts established through larvicidal assay against *C. quinquefasciatus* larvae

Types of extract		LC_{50} value (ppm)				
Test plants	Solvents	Duration of exposures				
		6h	12h	18h	24h	30h
***E. nummularius* (wp)**	PetE	229.552	127.677	74.044	64.412	45.345
	$CHCl_3$	587.413	199.652	87.868	73.468	59.492
	CH_3OH	8322.446	973.453	529.690	226.776	143.461
***L. camara* (ap)**	PetE	132.032	62.076	43.208	29.608	22.950
	$CHCl_3$	797.276	525.043	194.735	72.554	57.024
	CH_3OH	251.201	171.323	79.484	41.211	36.658
***L. camara* (r)**	PetE	92.666	73.666	42.835	32.517	28.532
	$CHCl_3$	2238.424	565.086	438.020	318.277	198.309
	CH_3OH	1146.454	162.446	89.496	54.335	42.811
***M. piperita* (wp)**	PetE	174.072	114.399	79.776	60.519	46.065
	$CHCl_3$	418.844	229.226	183.390	130.911	97.375
	CH_3OH	1195.342	1075.135	696.966	516.804	309.859
***Mi. pudica* (wp)**	PetE	352.364	243.844	185.822	118.721	88.187
	$CHCl_3$	1159.022	1356.547	739.454	452.226	277.609
	CH_3OH	-	-	-	-	-
***P. hysterophorus* (wp)**	PetE	106.419	71.013	69.907	46.054	37.858
	$CHCl_3$	593.445	343.456	303.972	211.057	131.807
	CH_3OH	237.973	134.598	87.056	50.229	38.287

Table 3.4b. LC$_{50}$ values of the test extracts established through larvicidal assay against *C. quinquefasciatus* larvae

Types of extract		LC$_{50}$ value (ppm) Duration of exposures 6h	12h	18h	24h	30h
***Ph. niruri* (wp)**	PetE	162.346	60.402	24.680	8.707	3.390
	$CHCl_3$	344.236	115.823	39.697	10.284	3.220
	CH_3OH	1603.863	1262.913	928.145	577.739	259.864
***Po. hydropiper* (wp)**	PetE	172.630	74.608	60.534	42.100	23.246
	$CHCl_3$	1851.189	240.028	153.594	84.288	44.154
	CH_3OH	388.521	320.718	408.946	143.576	21.432
***Pz. zeylanica* (wp)**	PetE	4175.449	620.466	256.030	78.121	24.226
	$CHCl_3$	2878.285	323.224	126.241	98.301	73.680
	CH_3OH	-	-	-	-	-
***S. nodiflora* (wp)**	PetE	303.296	158.823	122.058	117.128	50.361
	$CHCl_3$	2793.540	446.388	193.416	119.114	99.141
	CH_3OH	1686.443	441.278	196.477	154.247	114.765
***Z. zerumbet* (ap)**	PetE	406.664	172.488	87.267	70.661	55.681
	$CHCl_3$	1553.064	532.872	423.255	274.740	162.143
	CH_3OH	-	-	-	-	-
***Z . zerumbet* (rh)**	PetE	46.592	16.216	10.475	7.717	5.389
	$CHCl_3$	830.202	569.500	430.237	218.993	172.985
	CH_3OH	949.989	447.359	277.516	193.248	175.940

3.4. Bioassay on *T. castaneum* adults

3.4.1. Effect of the test extracts against *T. castaneum* adults through residual film assay

All the extracts (PetE, $CHCl_3$ and CH_3OH) of the *E. nummularius* (wp), aerial and root part of *L. camara*, *M. piperita* (wp), *Mi. pudica* (wp), *P. hysterophorus* (wp), *Ph. niruri* (wp), *Po. hydropiper* (wp), *Pz. zeylanica* (wp), *S. nodiflora* (wp), aerial and rhizome part of *Z. zerumbet* were tested against the *T. castaneum* adults through residual film assay with doses (mentioned in Chapter 2/2.4.1.2) established (through *Ad Hoc* experiment) doses were applied on the inner surface of the petridishes, where the test insects were released to observe mortality or any sort of abnormality due to efficacy of the extracts compared to the controls (where no extracts were used). To trace acute toxicity an observation of mortality was made after 30min of application of the doses and followed by 12h intervals up to 48h. The data were subjected to probit analysis and the results have been presented in Table 3.5a - 3.5b and Appendix Table DCXXI - DCCLI.

The highest mortality has been observed for the CH_3OH extracts of *M. piperita* (wp) [LD_{50} 0.238mg/cm^2] and the lowest mortality was observed for the $CHCl_3$ extracts of *Po. hydropiper* (wp) [LD_{50} 4.019mg/cm^2] after 48h of exposure respectively; while the $CHCl_3$ and CH_3OH extracts of *L. camara* (r); all the solvent extracts of *Mi. pudica* (wp); CH_3OH extracts of *Pz. zeylanica* (wp); CH_3OH and $CHCl_3$ extracts of *L. camara* (root) and $CHCl_3$ extract of *S. nodiflora* didn't show any mortality against the adult beetles of *T. castaneum*.

According to the intensity of activity the extracts could be arranged in a descending order: *M. piperita* (wp/CH_3OH) > *M. piperita* (wp/PetE) > *Po. hydropiper* (wp/CH_3OH) > *Ph. niruri* (wp/PetE) > *Z. zerumbet* (rh/CH_3OH) > *L. camara* (ap/CH_3OH) > *Pz. zeylanica* (wp/PetE) > *Pz. zeylanica* (wp/$CHCl_3$) > *E. nummularius* (wp/PetE) > *Z. zerumbet* (rh/PetE) > *S. nodiflora* (wp/PetE) > *M. piperita* (wp/$CHCl_3$) > *Z. zerumbet* (ap/CH_3OH) > *L. camara* (ap/$CHCl_3$) > *Po. hydropiper* (wp/PetE) > *Z. zerumbet* (ap/PetE) > *P. hysterophorus* (wp/CH_3OH) > *Ph. niruri* (wp/CH_3OH) > *E. nummularius* (wp/CH_3OH) > *E. nummularius* (wp/$CHCl_3$) > *Ph. niruri* (wp/$CHCl_3$) > *Z. zerumbet* (ap/$CHCl_3$) > *Z. zerumbet* (rh/$CHCl_3$) > *P. hysterophorus* (wp/PetE) > *L. camara* (r/PetE) > *S. nodiflora* (wp/CH_3OH) > *P. hysterophorus* (wp/$CHCl_3$) > *L. camara* (ap/PetE) > *Po. hydropiper* (wp/$CHCl_3$).

Table 3.5a. LD_{50} values of the test extracts established through residual film assay against *T. castaneum* adults

Types of extract		LD_{50} value (mg/cm^2)				
		Duration of exposures				
		30min	12h	24h	36h	48h
***E. nummularius* (wp)**	PetE	4.022	1.280*	1.220*	1.096*	1.031*
	$CHCl_3$	2.185	3.248	2.990	2.526	2.204
	CH_3OH	10.876	2.925	1.899*	1.875	1.789
***L. camara* (ap)**	PetE	-	4.539	4.125	3.583	3.052
	$CHCl_3$	-	2.731	2.370	1.975	1.533
	CH_3OH	-	2.668	2.765	1.105	0.797
***L. camara* (r)**	PetE	-	-	3.483	3.148	2.672
	$CHCl_3$	-	-	-	-	-
	CH_3OH	-	-	-	-	-
***M. piperita* (wp)**	PetE	1.923	0.888	0.567*	0.483	0.305
	$CHCl_3$	-	2.647	2.135	1.567	1.257
	CH_3OH	0.995	0.631	0.427	0.380	0.238
***Mi. pudica* (wp)**	PetE	-	-	-	-	-
	$CHCl_3$	-	-	-	-	-
	CH_3OH	-		-	-	-
***P. hysterophorus* (wp)**	PetE	-	3.546	3.206	2.963	2.642
	$CHCl_3$	-	5.063	3.991	3.268	2.934
	CH_3OH	2.927	2.493	2.174	1.814	1.631

*** Variance has been adjusted for heterogeneity**

Table 3.5b. LD_{50} values of the test extracts established through residual film assay against *T. castaneum adults*

Types of extract		LD_{50} value (mg/cm^2)				
		Duration of exposures				
		30min	12h	24h	36h	48h
***Ph. niruri* (wp)**	PetE	3.174	1.595	1.233	0.967*	0.508
	$CHCl_3$	5.585	4.747	3.571	3.037	2.425
	CH_3OH	3.781	3.541	2.369	1.983	1.783
***Po. hydropiper* (wp)**	PetE	10.282	2.288	1.750	1.685	1.573
	$CHCl_3$	-	4.540	4.478	4.288*	4.019*
	CH_3OH	2.137	0.629	0.493	0.416	0.342
***Pz. zeylanica* (wp)**	PetE	3.457	1.872	1.400	1.090	0.799
	$CHCl_3$	10.073	3.089	1.659	1.236	0.888
	CH_3OH	-	-	-	-	-
***S. nodiflora* (wp)**	PetE	-	1.539	1.420	1.329	1.248*
	$CHCl_3$	-	-	-	-	-
	CH_3OH	-	-	4.021	3.277	2.780
***Z. zerumbet* (ap)**	PetE	2.399	2.198*	1.914*	1.827	1.612
	$CHCl_3$	-	3.657	3.355	2.682	2.527
	CH_3OH	3.280	2.201	1.883	1.499	1.316
***Z. zerumbet* (rh)**	PetE	2.753	1.947	1.398	1.079	1.064
	$CHCl_3$	-	4.038	3.308	3.038	2.571
	CH_3OH	1.732	1.368	1.086	1.017	0.793

*** Variance has been adjusted for heterogeneity**

3.4.2. Repellent effect of the test extracts against *T. castaneum* adults

The PetE, $CHCl_3$ and CH_3OH extracts of the test plants offered repellent activity against *T. castaneum* adults for a concentration ranges from 0.314mg/cm^2 to as less as 0.025mg/cm^2 [0.314, 0.157, 0.079, 0.039 and 0.019mg/cm^2 for ½ of filter paper (9cm diam.) for all the extracts]. The data was read with 1h interval for up to 5h of exposure and was subjected to ANOVA after transforming them into arcsine percentage values which were presented in Tables 3.6a - 3.6b and the Appendix Tables DCCLXXXVIII - DCCCXXIII.

The extracts of *L. camara* (ap/ PetE); *L. camara* (r/CH_3OH); *M. piperita* (wp/$CHCl_3$ & CH_3OH); *Mi. pudica* (wp/ $CHCl_3$); *P. hysterophorus* (wp/ PetE); *Ph. niruri* (wp/PetE) and *S. nodiflora* (wp/ PetE & CH_3OH) were weakly active ($P<0.05$) and extract of *E. nummularius* (wp/ PetE, $CHCl_3$ & CH_3OH); *L. camara* (r/ $CHCl_3$); *P. hysterophorus* (wp/ $CHCl_3$); *Po. hydropiper* (wp/PetE, $CHCl_3$); *Pz. zeylanica* (wp/PetE & CH_3OH) and *S. nodiflora* (wp/$CHCl_3$) were found moderately active ($P<0.01$) but, the extracts of *Po. hydropiper* (wp/CH_3OH) were found highly active ($P<0.001$) against the *T. castaneum* adults. The extracts of *L. camara* (ap/ $CHCl_3$ & CH_3OH); *L. camara* (r/PetE); *M. piperita* (wp/PetE); *Mi. pudica* (wp/PetE & CH_3OH); *P. hysterophorus* (wp/CH_3OH); *Ph. niruri* (wp/$CHCl_3$ & CH_3OH); *Pz. zeylanica* (wp/$CHCl_3$) and all solvent extracts of aerial and rhizome part of *Z. zerumbet* gave no repellent activity against the adult beetles of *T. castaneum*.

According to the intensity of repellency the result could be arranged in a descending order:

Po. hydropiper (wp/CH_3OH) > *Po. hydropiper* (wp/PetE) > *L. camara* (r/$CHCl_3$) > *E. nummularius* (wp/PetE) > *S. nodiflora* (wp/$CHCl_3$) > *Pz. zeylanica* (wp/PetE) > *P. hysterophorus* (wp/$CHCl_3$) > *Po. hydropiper* (wp/$CHCl_3$) > *E. nummularius* (wp/CH_3OH) > *Pz. zeylanica* (wp/CH_3OH) > *E. nummularius* (wp/$CHCl_3$) > *P. hysterophorus* (wp/PetE) > *Mi. pudica* (wp/$CHCl_3$) > *L. camara* (ap/PetE) > *M. piperita* (wp/$CHCl_3$) > *S. nodiflora* (wp/CH_3OH) > *L. camara* (r/CH_3OH) > *S. nodiflora* (wp/PetE) > *Ph. niruri* (wp/PetE) > *M. piperita* (wp/CH_3OH)

Table 3.6a. ANOVA results of repellency by selected plant extracts against *T. castaneum* adults

Types of extract		Sources of variation (df)			F-ratio with level of significance		P-value	
		Between doses	Between time intervals	Error	Between doses	Between time intervals	Between doses	Between time intervals
***E. nummularius* (wp)**	PetE	4	4	16	41.809**	3.863	2.81E-08	0.022
	$CHCl_3$	4	4	16	20.924**	4.893	3.4E-06	0.009
	CH_3OH	4	4	16	23.128**	2.263	1.75E-06	0.108
***L. camara* (ap)**	PetE	4	4	16	13.223*	2.313	6.04E-05	0.102
	$CHCl_3$	4	4	16	3.253$^{(NS)}$	2.145	0.039	0.122
	CH_3OH	4	4	16	0.709$^{(NS)}$	1.595	0.597	0.224
***L. camara* (r)**	PetE	4	4	16	5.708$^{(NS)}$	0.329	0.005	0.854
	$CHCl_3$	4	4	16	42.320**	8.661	2.5E-08	0.001
	CH_3OH	4	4	16	11.182*	1.705	0.000	0.198
***M. piperita* (wp)**	PetE	4	4	16	0.971$^{(NS)}$	0.722	0.450	0.589
	$CHCl_3$	4	4	16	12.100*	0.775	0.000	0.558
	CH_3OH	4	4	16	10.368*	2.961	0.000	0.052
***Mi. pudica* (wp)**	PetE	4	4	16	3.670$^{(NS)}$	1.314	0.026	0.307
	$CHCl_3$	4	4	16	14.500*	0.776	3.47E-05	0.557
	CH_3OH	4	4	16	6.034$^{(NS)}$	3.440	0.004	0.033
***P. hysterophorus* (wp)**	PetE	4	4	16	16.206*	0.856	1.75E-05	0.511
	$CHCl_3$	4	4	16	30.367**	0.972	2.72E-07	0.450
	CH_3OH	4	4	16	5.124$^{(NS)}$	0.963	0.007	0.454

*** = (P <0.05), ** = (P <0.01) and *** = (P <0.001), NS = not significant**

Table 3.6b. **ANOVA results of repellency by selected plant extracts against *T. castaneum***

Types of extract		Sources of variation (df)			F-ratio with level of significance		P-value	
		Between doses	Between time intervals	Error	Between doses	Between time intervals	Between doses	Between time intervals
***Ph. niruri* (wp)**	PetE	4	4	16	10.442*	1.669	0.0002	0.206
	$CHCl_3$	4	4	16	6.619(NS)	2.584	0.002	0.077
	CH_3OH	4	4	16	1.098(NS)	3.965	0.391	0.020
***Po. hydropiper* (wp)**	PetE	4	4	16	48.039**	1.460	1.02E-08	0.260
	$CHCl_3$	4	4	16	29.498**	0.308	3.33E-07	0.869
	CH_3OH	4	4	16	422.554***	2.877	5.34E-16	0.057
***Pz. zeylanica* (wp)**	PetE	4	4	16	30.617**	4.435	2.57E-07	0.013
	$CHCl_3$	4	4	16	5.101(NS)	16.019	0.008	1.88E-05
	CH_3OH	4	4	16	22.728**	1.403	1.96E-06	0.278
***S. nodiflora* (wp)**	PetE	4	4	16	10.887*	3.392	0.0002	0.034
	$CHCl_3$	4	4	16	32.227**	1.805	1.79E-07	0.177
	CH_3OH	4	4	16	11.675*	0.593	0.0001	0.673
***Z. zerumbet* (ap)**	PetE	4	4	16	6.220(NS)	1.924	0.003	0.155
	$CHCl_3$	4	4	16	5.598(NS)	1.576	0.005	0.229
	CH_3OH	4	4	16	0.204(NS)	1.045	0.933	0.415
***Z. zerumbet* (rh)**	PetE	4	4	16	1.237(NS)	2.509	0.335	0.083
	$CHCl_3$	4	4	16	6.802(NS)	3.231	0.002	0.040
	CH_3OH	4	4	16	5.506(NS)	0.406	0.006	0.801

*** = (P <0.05), ** = (P <0.01) and *** = (P <0.001), NS = not significant**

3.5. Antibacterial activity of the test extracts

The PetE, $CHCl_3$ and CH_3OH extracts of the selected plants were tested against 8 selected bacteria (3 gram-positive bacteria- *Bacillus subtilis*, *Listeria monocytogenes*, *Staphylococcus aureus* and 5 gram-negative bacteria- *Escherichia coli*, *Klebsiella pneumoniae*, *Salmonella enteritidis*, *Shigella flexneri* and *Shigella sonnei*) to evaluate their antibacterial potential at concentrations of 200µg disc^{-1} and 400µg disc^{-1} along with a standard antibiotic, Ampicillin 10µg disc^{-1}.The results obtained are shown in Tables 3.7a - 3.7c.

3.5.1. Antibacterial activity of the test extracts against some selected bacteria

3.5.1.1. Antibacterial activity of *E. nummularius* (wp) extracts

Among the collection $CHCl_3$ extracts of *E. nummularius* (wp) showed the highest antibacterial activity. Among the selected test bacteria *B. subtilis*, *L. monocytogenes*, *Sa. enteritidis* and *St. aureus* were responsive. *B. subtilis* was most susceptible against $CHCl_3$ and CH_3OH extracts and gave inhibition zones 14mm ($CHCl_3$) and 16mm ($CHCl_3$) at concentrations of 200µg disc^{-1} and 400µg disc^{-1} respectively; 09mm (CH_3OH) at concentrations of 400µg disc^{-1}. While *L. monocytogenes*, *St. aureus* and *Sa. enteritidis* were responsive against the $CHCl_3$ extract and gave inhibition zones 09mm, 09mm and 12mm respectively for 400µg disc^{-1} application.

3.5.1.2. Antibacterial activity of *L. camara* (aerial part and root) extracts

Among the *L. camara* extracts the root extract showed the highest antibacterial activity. Among the test bacteria *B. subtilis*, *L. monocytogenes*, *K. pneumoniae*, *Sa. enteritidis* and *Sh. flexneri* were responsive. *B. subtilis* was the most susceptible against the aerial ($CHCl_3$) and root ($CHCl_3$) extracts, and gave inhibition zones 13mm and 18mm respectively for 200µg disc^{-1} application and 15mm and 21mm respectively for 400µg disc^{-1} application; and the root (CH_3OH) extract offered inhibition zones 10mm for 400µg disc^{-1}. While *L. monocytogenes* was susceptible against the aerial part ($CHCl_3$ and CH_3OH) extracts which gave inhibition zones 10mm and 09mm respectively for 200µg disc^{-1} application and 12mm in both cases for 400µg disc^{-1} application; and 09mm for the root ($CHCl_3$) extract for 400µg disc^{-1}. *K. pneumoniae*, *Sa. enteritidis* and *Sh. flexneri* were susceptible against the aerial part (CH_3OH) extract, and gave inhibition zone 16mm,10mm and 14mm respectively for 400µg disc^{-1} application.

3.5.1.3. Antibacterial activity of *M. piperita* (wp) extract

Among the three collection PetE extracts of this test plant showed the highest antibacterial activity, where *St. aureus*, *E.coli*, *K. pneumoniae, Sa. enteritidis* and *Sh. flexneri* were responsive among the selected test bacteria. *St. aureus* was responsive against the PetE extract and gave inhibition zones 12mm and 14mm at concentrations 200µg disc^{-1} and 400µg disc^{-1} respectively. *E.coli* was responsive against PetE extract; *K. pneumoniae* was responsive against PetE and $CHCl_3$ extracts; *Sa. enteritidis* was responsive against PetE and CH_3OH extracts; and *Sh. flexneri* was susceptible against CH_3OH extract and gave inhibition zone 10mm in all the cases at a concentration of 400µg disc^{-1}.

3.5.1.4. Antibacterial activity of *Mi. pudica* (wp) extract

Only *E. coli* was susceptible among the selected test bacteria against $CHCl_3$ extract of *Mi. pudica* (wp) and gave inhibition zones 09mm and 11mm at concentrations 200µg disc^{-1} and 400 µg disc^{-1} respectively; and against the CH_3OH extracts with the inhibition zone of 12mm at a concentration of 400µg disc^{-1}.

3.5.1.5. Antibacterial activity of *P. hysterophorus* (wp) extract

Among the collection $CHCl_3$ extracts of this test plant showed promising antibacterial activity against *B. subtilis*, *L. monocytogenes*, *E.coli* and *K. pneumoniae*. For *B. subtilis* the inhibition zones were 21mm and 25mm at concentrations of 200µg disc^{-1} and 400µg disc^{-1} respectively. While *L. monocytogenes* only susceptible against the $CHCl_3$ extract and gave inhibition zones 10mm for 400µg disc^{-1} application; and *E. coli* was susceptible against the $CHCl_3$ extract that gave inhibition zones 10mm and 13mm for 200µg disc^{-1} and 400µg disc^{-1} respectively. While *K. pneumoniae* was susceptible against the CH_3OH extract by showing the inhibition zone of 09mm for 400µg disc^{-1} application.

3.5.1.6. Antibacterial activity of *Ph. niruri* (wp) extract

Among the selected test bacteria only the *E. coli* was susceptible against the $CHCl_3$ and CH_3OH extracts that offered inhibition zones 10mm and 12mm at 400µg disc^{-1}; and also gave 10mm for CH_3OH extracts at 200µg disc^{-1} application.

3.5.1.7. Antibacterial activity of *Po. hydropiper* (wp) extract

Among the collection $CHCl_3$ extracts was found active that offered the highest antibacterial activity. Only the *B. subtilis*, *L. monocytogenes*, *St. aureus, Sa. enteritidis* and *Sh. flexneri* were responsive among the selected test bacteria. *B. subtilis* was most susceptible against the PetE and $CHCl_3$ extracts and gave inhibition zones 09mm (PetE) and 11mm (PetE) for 200µg disc^{-1} and 400µg disc^{-1} respectively; 11mm ($CHCl_3$) and 13mm ($CHCl_3$) for 200µg disc^{-1} and 400µg disc^{-1} respectively. While *L. monocytogenes*, *St. aureus* and *Sa. enteritidis* were susceptible against the $CHCl_3$ extracts and gave inhibition zone of 10mm in all the cases for 200µg disc^{-1} and 12mm in all the cases for 400µg disc^{-1}. While *Sh. flexneri* was found susceptible against the $CHCl_3$ extract that gave inhibition zones 10mm for 400µg disc^{-1}.

3.5.1.8. Antibacterial activity of *Pz. zeylanica* (wp) extract

None of the extracts collected from *Pz. zeylanica* (wp) offered any activity against the 8 selected test bacteria.

3.5.1.9. Antibacterial activity of *S. nodiflora* (wp) extract

Among the three collections the PetE extract was the highest in response against some of the selected bacteria, *B. subtilis* and *K. pneumonia*. *B. subtilis* was the most susceptible one against PetE and $CHCl_3$ extracts and gave inhibition zones of 09mm (PetE) and 11mm (PetE) for 200µg disc^{-1} and 400µg disc^{-1} respectively; while the $CHCl_3$ extract gave inhibition zone of 09mm at 400µg disc^{-1}. While *K pneumoniae* was susceptible against the PetE extract and gave inhibition zone of 13mm and 17mm respectively for 200 and 400µg disc^{-1} application.

3.5.1.10. Antibacterial activity of the *Z. zerumbet* (aerial and rhizome part)

Among the *Z. zerumbet* extracts the rhizome extract showed the highest antibacterial activity. The bacteria *B. subtilis*, *St. aureus*, *E.coli* and *K. pneumoniae* were responsive among the selected test bacteria. *B. subtilis* was susceptible against the rhizome ($CHCl_3$) extract and gave inhibition zones 09mm and 11mm respectively for 200µg disc^{-1} and 400µg disc^{-1} application. While *St. aureus* was susceptible against the aerial part (PetE) extract that gave 09mm inhibition zone for 400µg disc^{-1}. It also susceptible against the rhizome part ($CHCl_3$) that gave 10mm of inhibition zone for 200µg disc^{-1} and 13mm of inhibition zone for 400µg disc^{-1}. While *E.coli* was only susceptible against the aerial part extract (PetE) that gave inhibition zone 10mm for 400µg disc^{-1} application and *K. pneumoniae* rhizome extract ($CHCl_3$) gave inhibition zone of 09mm for 400µg disc^{-1}.

To compare the efficacy of the extracts against the selected bacteria a standard Ampicillin (10µg disc^{-}1) was applied against the same bacteria through the similar procedure in application. The test bacteria *B. subtilis*, *L. monocytogenes, St. aureus, K. pneumoniae, Sa. enteritidis*, *Sh. flexneri* and *Sh. sonnei* were responsive against the standard provided with the inhibition zones 41, 40, 35, 35, 23, 34 and 35mm respectively; except *E. coli,* where no clear zone traced so far.

Table 3.7a. Antibacterial activity of the extracts and the standard Ampicillin

Type of extracts		Doses (µg disc^{-1})	Diameter of zone of inhibition (in mm)							
			gram (+ve)			gram (-ve)				
			B. subtilis	*L. monocytogenes*	*St. aureus*	*E. coli*	*K. pneumoniae*	*Sa. enteritidis*	*Sh.flexneri*	*Sh. sonnei*
E. nummularius **(wp)**	PetE	200	-	-	-	-	-	-	-	-
		400	-	-	-	-	-	-	-	-
	$CHCl_3$	200	14	-	-	-	-	10	-	-
		400	16	09	09	-	-	12	-	-
	CH_3OH	200	-	-	-	-	-	-	-	-
		400	09	-	-	-	-	-	-	-
L. camara **(ap)**	PetE	200	-	-	-	-	-	-	-	-
		400	-	-	-	-	-	-	-	-
	$CHCl_3$	200	13	10	-	-	-	-	-	-
		400	15	12	-	-	-	-	-	-
	CH_3OH	200	-	09	-	-	10	-	10	-
		400	-	12	-	-	16	10	14	-
L. camara **(r)**	PetE	200	-	-	-	-	-	-	-	-
		400	-	-	-	-	-	-	-	-
	$CHCl_3$	200	18	-	-	-	-	-	-	-
		400	21	09	-	-	-	-	-	-
	CH_3OH	200	-	-	-	-	-	-	-	-
		400	10	-	-	-	-	-	-	-
M. piperita **(wp)**	PetE	200	-	-	12	-	-	-	-	-
		400	-	-	14	10	10	10	-	-
	$CHCl_3$	200	-	-	-	-	-	-	-	-
		400	-	-	-	-	10	-	-	-
	CH_3OH	200	-	-	-	-	-	-	-	-
		400	-	-	-	-	-	10	10	-
M. pudica **(wp)**	PetE	200	-	-	-	-	-	-	-	-
		400	-	-	-	-	-	-	-	-
	$CHCl_3$	200	-	-	-	09	-	-	-	-
		400	-	-	-	11	-	-	-	-
	CH_3OH	200	-	-	-	-	-	-	-	-
		400	-	-	-	12	-	-	-	-
Ampicillin (10µg disc^{-1})			41	40	35	-	35	23	34	35

Table 3.7b. Antibacterial activity of the extracts and the standard Ampicillin

Types of extract		Doses (µg disc^{-1})	Diameter of zone of inhibition (in mm)							
			gram (+ve)			gram (-ve)				
			B. subtilis	*L. monocytogenes*	*St. aureus*	*E. coli*	*K. pneumoniae*	*Sa. enteritidis*	*Sh.flexneri*	*Sh. sonnei*
***P. hysterophorus* (wp)**	PetE	200	-	-	-	-	-	-	-	-
		400	-	-	-	-	-	-	-	-
	$CHCl_3$	200	21	-	-	10	-	-	-	-
		400	25	10	-	13	-	-	-	-
	CH_3OH	200	-	-	-	-	-	-	-	-
		400	-	-	-	-	09	-	-	-
***Ph. nirurii* (wp)**	PetE	200	-	-	-	-	-	-	-	-
		400	-	-	-	-	-	-	-	-
	$CHCl_3$	200	-	-	-	-	-	-	-	-
		400	-	-	-	10	-	-	-	-
	CH_3OH	200	-	-	-	10	-	-	-	-
		400	-	-	-	12	-	-	-	-
***Po. hydropiper* (wp)**	PetE	200	09	-	-	-	-	-	-	-
		400	11	-	-	-	-	-	-	-
	$CHCl_3$	200	11	10	10	-	-	10	-	-
		400	13	12	12	-	-	12	10	-
	CH_3OH	200	-	-	-	-	-	-	-	-
		400	-	-	-	-	-	-	-	-
***Pz. zeyanica* (wp)**	PetE	200	-	-	-	-	-	-	-	-
		400	-	-	-	-	-	-	-	-
	$CHCl_3$	200	-	-	-	-	-	-	-	-
		400	-	-	-	-	-	-	-	-
	CH_3OH	200	-	-	-	-	-	-	-	-
		400	-	-	-	-	-	-	-	-
***S. nodiflora* (wp)**	PetE	200	09	-	-	-	13	-	-	-
		400	11	-	-	-	17	-	-	-
	$CHCl_3$	200	-	-	-	-	-	-	-	-
		400	09	-	-	-	-	-	-	-
	CH_3OH	200	-	-	-	-	-	-	-	-
		400	-	-	-	-	-	-	-	-
Ampicillin (10µg disc^{-1})			41	40	35	-	35	23	34	35

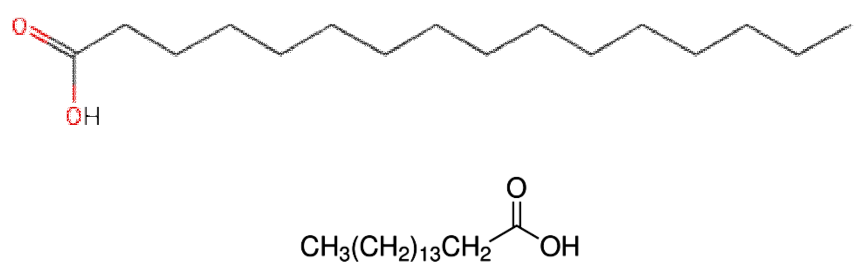
Table 3.7c. Antibacterial activity of the extracts and the standard Ampicillin

Type of extracts		Doses (µg disc^{-1})	Diameter of zone of inhibition (in mm)							
			gram (+ve)			gram (-ve)				
			B. subtilis	*L. monocytogene*	*St. aureus*	*E. coli*	*K. pneumoniae*	*Sa. enteritidis*	*Sh.flexneri*	*Sh. sonnei*
Z. zerumbet **(ap)**	PetE	200	-	-	-	-	-	-	-	-
		400	-	-	09	10	-	-	-	-
	$CHCl_3$	200	-	-	-	-	-	-	-	-
		400	-	-	-	-	-	-	-	-
	CH_3OH	200	-	-	-	-	-	-	-	-
		400	-	-	-	-	-	-	-	-
Z. zerumbet **(rh)**	PetE	200	-	-	-	-	-	-	-	-
		400	-	-	-	-	-	-	-	-
	$CHCl_3$	200	09	-	10	-	-	-	-	-
		400	11	-	13	-	09	-	-	-
	CH_3OH	200	-	-	-	-	-	-	-	-
		400	-	-	-	-	-	-	-	-
Ampicillin (10µg disc^{-1})			41	40	35	-	35	23	34	35

3.6. Interpretation of the isolated compounds

Two compounds from the extracts of two plants (ENP = Whole plant of *E. nummularius* PetE extract/COMP. 1 and POM = *Po. hydropiper* CH_3OH extract/COMP. 2) were subjected to NMR spectral analyses for their possible characterization.

The LC-MS analyses seemed they were not so pure, however, to have more information ^{1}H-NMR was run and the Mass spectra were made (Appendix Table DCCCXXIV & DCCCXXV); and according to the NMR spectra, the ENP (Comp. 1) seemed probably be a fatty acid, and the idea about POM (Comp. 2) remained unclear. The compound ENP might be a palmitic acid considering the chemical shifts and integration of the proton signals in the ^{1}H-NMR spectrum. Finding similarity with the palmitic acid in ^{1}H-NMR spectrum the ^{13}C-NMR of the compound was not run, however, the online information for the same was given in the following manner: Formula- $C_{16}H_{32}O_2$; Molecular weight- 256.4241; IUPAC Standard InChI-1S/ $C_{16}H_{32}O_2$/ c1-2-3- 4-5-6- 7-8-9- 10-11- 12-13- 14-15-16 (17)18/h2-15H2,1H3,(H,17,18) and there were only two proton signals at 2.6 (3h, s) and 3.2 (2h, s) in the ^{1}H-NMR spectrum of POM and it was difficult to establish an idea what type of natural product it should be. The chemical structure of the compound 1 or ENP is given below:



Palmitic acid (Merck index, 1996)

The isolation and purification of the compounds through chromatographic techniques was maintained with the available facilities present there in the IES, University of Rajshahi and in the Crop Protection and Toxicology Lab, Department. of Zoology, University of Rajshahi using the solvents marketed under the brand Merck, Germany; however it was difficult to avoid impurities. The attempt of chromatographic fractionation was not an obligation in terms of the title of the current research, however introduction of the procedure of isolation of compound(s) would be an essential tool for further approach if the bioactive compound(s) are targeted for future endeavors; and this is why it was attempted so far.

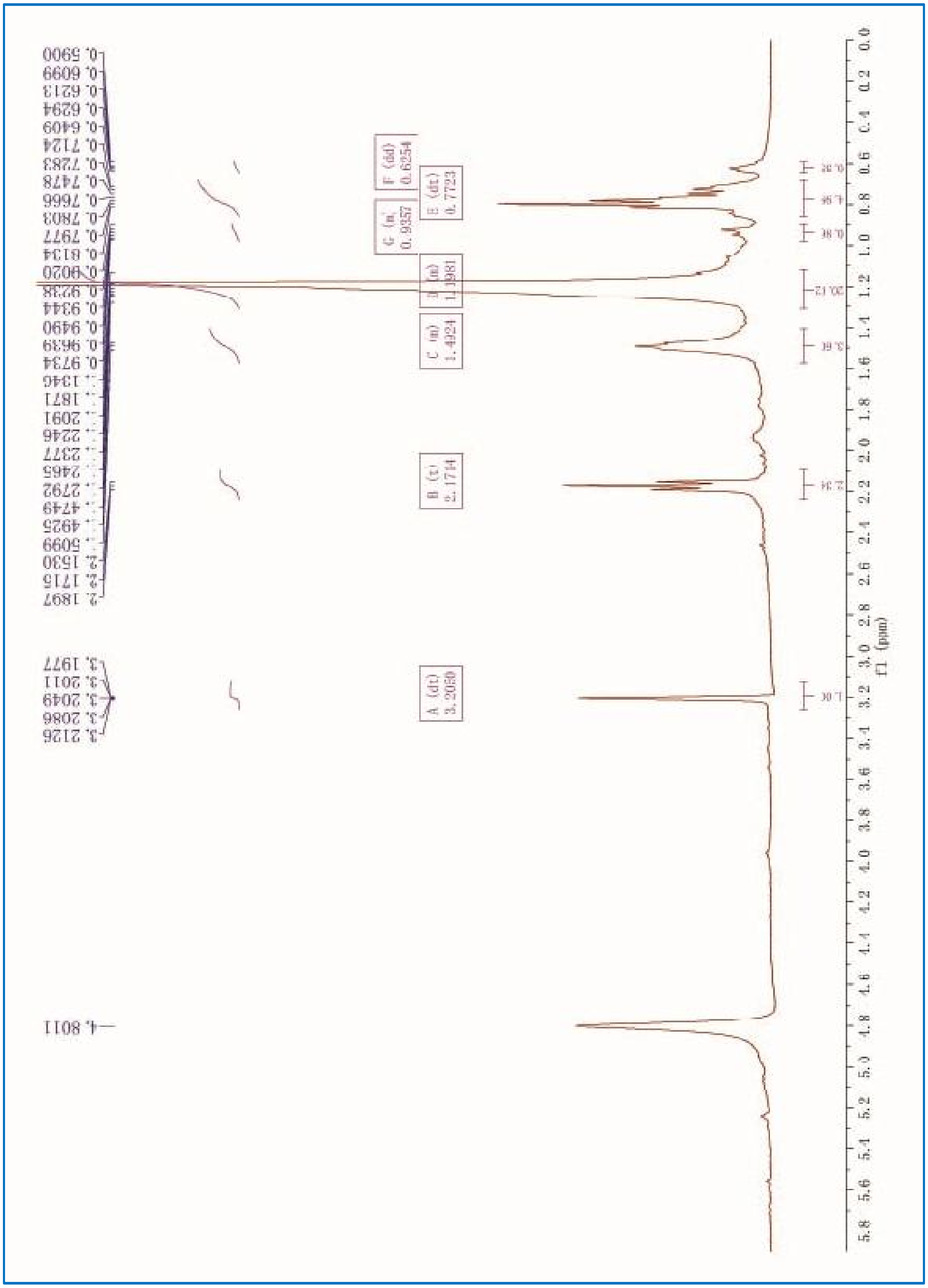


Fig. 3.1: ^{1}H NMR spectrum of *E. nummularius* (wp) compound 1 (ENP)

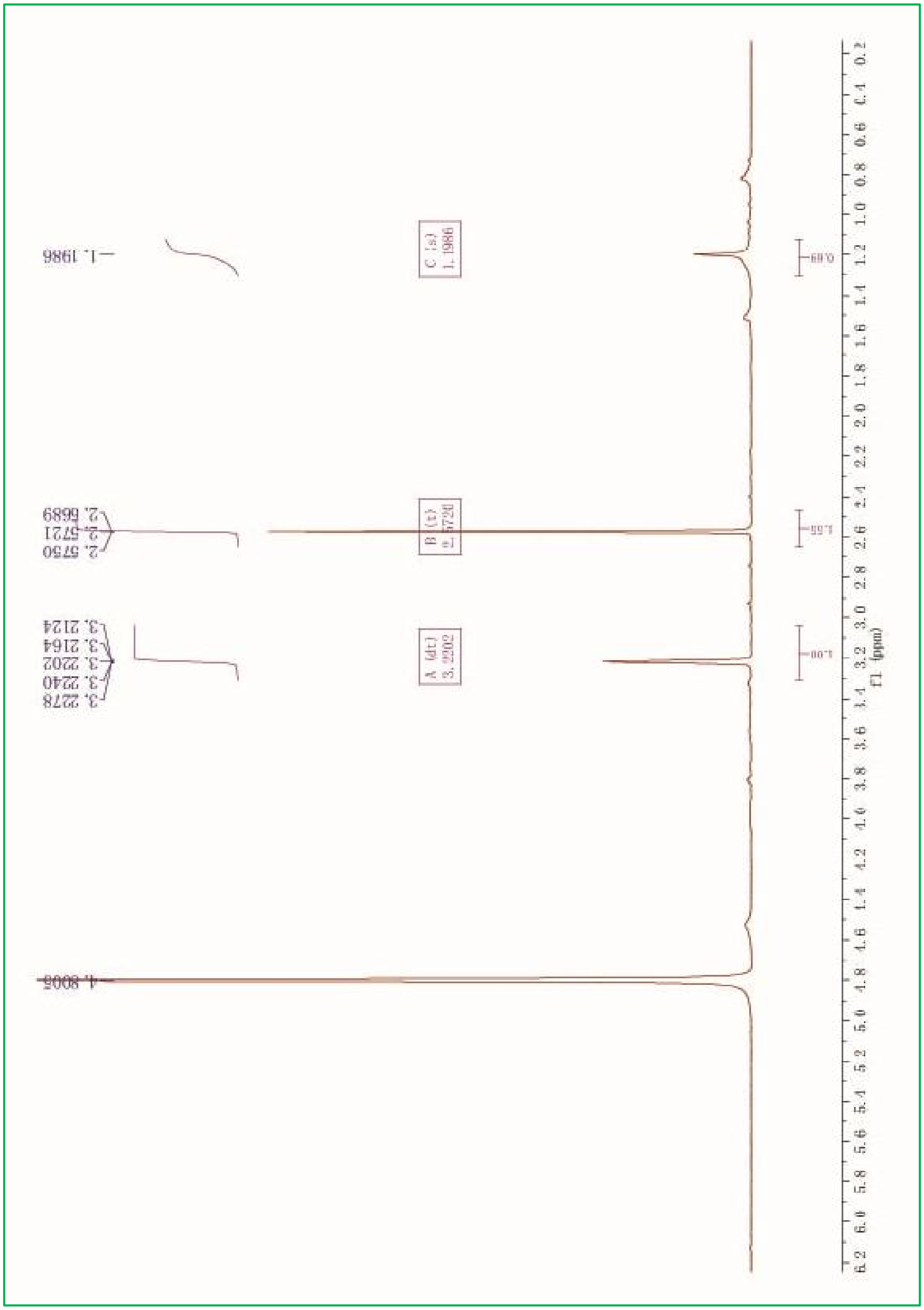


Fig. 3.2: ^{1}H NMR spectrum of *Po. hydropiper* (wp) compound 2 (POM)

3.7. Summary of the experimentation

3.7.1. Summary of the biological activities

For the detection of vector control potentials in PetE, $CHCl_3$, CH_3OH extracts of the test plants insecticidal, insect repellency, larvicidal and brine shrimp lethality tests were carried out. For further know the activity of the test plant the antimicrobial (antibacterial) test were done. The total outcomes of the bioassays done are represented in Table 3.8a-3.8d.

Table 3.8a. Summary of biological activities of the selected plant extracts

Types of extract		Test agents (tests)					
		A. gossypii		***A. salina***	***C. quinquefasciatus***	***T. castaneum***	
		Dose mortality	**Repellency**	**Brine shrimp lethality**	**Larval lethality**	**Dose mortality**	**Repellency**
E. nummularius **(wp)**	PetE	+	-	+	+	+	+
	$CHCl_3$	+	-	+	+	+	+
	CH_3OH	+	+	+	+	+	+
L. camara **(ap)**	PetE	+	-	+	+	+	+
	$CHCl_3$	+	-	+	+	+	-
	CH_3OH	+	+	+	+	+	-
L. camara **(r)**	PetE	+	+	+	+	+	-
	$CHCl_3$	+	-	+	+	-	+
	CH_3OH	+	+	+	+	-	+
M. piperita **(wp)**	PetE	+	-	+	+	+	-
	$CHCl_3$	+	+	+	+	+	+
	CH_3OH	+	+	+	+	+	+
Mi. pudica **(wp)**	PetE	+	-	+	+	-	-
	$CHCl_3$	+	-	+	+	-	+
	CH_3OH	+	+	+	-	-	-

(+ = active, - = not active)

Table 3.8b. Summary of biological activities of the selected plant extracts

Test samples		Test agents					
		A. gossypii		*A. Salina*	*C. quinquefasciatus*	*T. castaneum*	
		Dose mortality	Repellency	Brine shrimp lethality	Larval lethality	Dose mortality	Repellency
***P. hysterophorus* (wp)**	PetE	+	-	+	+	+	+
	$CHCl_3$	+	+	+	+	+	+
	CH_3OH	+	-	+	+	+	-
***Ph. niruri* (wp)**	PetE	+	-	+	+	+	+
	$CHCl_3$	+	-	+	+	+	-
	CH_3OH	+	-	+	+	+	-
***Po. hydropiper* (wp)**	PetE	+	+	+	+	+	+
	$CHCl_3$	+	-	+	+	+	+
	CH_3OH	+	-	+	+	+	+
***Pz. zeylanica* (wp)**	PetE	+	-	+	+	+	+
	$CHCl_3$	+	-	+	+	+	-
	CH_3OH	+	+	+	-	-	+
***S. nodiflora* (wp)**	PetE	+	-	+	+	+	+
	$CHCl_3$	+	-	+	+	-	+
	CH_3OH	+	-	+	+	+	+
***Z. zerumbet* (ap)**	PetE	+	-	+	+	+	-
	$CHCl_3$	+	-	+	+	+	-
	CH_3OH	+	-	+	-	+	-
***Z. zerumbet* (rh)**	PetE	+	-	+	+	+	-
	$CHCl_3$	+	+	+	+	+	-
	CH_3OH	+	+	+	+	+	-

(+ = active, - = not active)

Table 3.8c. Summary of antibacterial activities of the selected plant extracts

Test samples		Microbial test (Antibacterial)							
		B. subtilis	*L. monocytogenes*	*St. aureus*	*E. coli*	*K. pneumoniae*	*Sa. enteritidis*	*Sh. flexneri*	*Sh. sonnei*
***E. nummularius* (ap)**	PetE	-	-	-	-	-	-	-	-
	$CHCl_3$	+	+	+	-	-	+	-	-
	CH_3OH	+	-	-	-	-	-	-	-
***L. camara* (ap)**	PetE	-	-	-	-	-	-	-	-
	$CHCl_3$	+	+	-	-	-	-	-	-
	CH_3OH	-	+	-	-	+	+	+	-
***L. camara* (r)**	PetE	-	-	-	-	-	-	-	-
	$CHCl_3$	+	+	-	-	-	-	-	-
	CH_3OH	+	-	-	-	-	-	-	-
***M. piperita* (wp)**	PetE	-	-	+	+	+	+	-	-
	$CHCl_3$	-	-	-	-	+	-	-	-
	CH_3OH	-	-	-	-	-	+	+	-
***Mi. pudica* (wp)**	PetE	-	-	-	-	-	-	-	-
	$CHCl_3$	-	-	-	+	-	-	-	-
	CH_3OH	-	-	-	+	-	-	-	-
***P. hysterophorus* (wp)**	PetE	-	-	-	-	-	-	-	-
	$CHCl_3$	+	+	-	+	-	-	-	-
	CH_3OH	-	-	-	-	+	-	-	-

(+ = active, - = not active)

Table 3.8d. Summary of antibacterial activities of the selected plant extracts

Test samples		Microbial test (Antibacterial)							
		B. subtilis	*L. monocytogenes*	*St. aureus*	*E. coli*	*K. pneumoniae*	*Sa. enteritidis*	*Sh.flexneri*	*Sh. sonnei*
Ph. niruri **(wp)**	PetE	-	-	-	-	-	-	-	-
	$CHCl_3$	-	-	-	+	-	-	-	-
	CH_3OH	-	-	-	+	-	-	-	-
Po. hydropiper **(wp)**	PetE	+	-	-	-	-	-	-	-
	$CHCl_3$	+	+	+	-	-	+	+	-
	CH_3OH	-	-	-	-	-	-	-	-
Pz. zeylanica **(wp)**	PetE	-	-	-	-	-	-	-	-
	$CHCl_3$	-	-	-	-	-	-	-	-
	CH_3OH	-	-	-	-	-	-	-	-
S. nodiflora **(wp)**	PetE	+	-	-	-	+	-	-	-
	$CHCl_3$	+	-	-	-	-	-	-	-
	CH_3OH	-	-	-	-	-	-	-	-
Z. zerumbet **(ap)**	PetE	-	-	+	+	-	-	-	-
	$CHCl_3$	-	-	-	-	-	-	-	-
	CH_3OH	-	-	-	-	-	-	-	-
Z. zerumbet **(rh)**	PetE	-	-	-	-	-	-	-	-
	$CHCl_3$	+	-	+	-	+	-	-	-
	CH_3OH	-	-	-	-	-	-	-	-

(+ = active, - = not active)

3.7.2. Summary of isolation, purification and characterization

Two compounds ENP (from *E. nummularius* PetE extract) and POM (from *Po. hydropiper* CH_3OH extract) were subjected to NMR spectral analyses, while the ENP was determined as a palmitic acid and the POM was remained unknown.

DISCUSSION

Petroleum ether, chloroform and methanol extracts of *E. nummularius*, *M. piperita*, *Mi. pudica*, *P. hysterophorus*, *Ph. niruri*, *Po. hydropiper*, *Pz. zeylanica,* and *S. nodiflora* (whole plant)*, L. camara* (aerial part and roots) and *Z. zerumbet* (aerial part and rhizome) were screened against four vectors namely eggplant aphid, *A. gossypii* (plant disease vector); larvae of the mosquito, *C. quinquefasciatus* (human disease vector); rust-red flour beetle, *T. castaneum* (animal disease vector) and brine shrimp nauplii, *A. salina* (shrimp disease vector) under laboratory conditions to yield their efficacy through different assays with much success. Antimicrobial tests were also done to know the antibacterial activities of the extractives collected from the test plants.

In the present investigation the effects of extracts of the test plants on mortality of the eggplant aphid were found in the following order: *E. nummularius* (wp/PetE; LD_{50} 0.034 mg/cm^2) > *Z. zerumbet* (rh/PetE; LD_{50} 0.035mg/cm^2) > *Z. zerumbet* (ap/PetE; LD_{50} 0.043 mg/cm^2) > *L. camara* (r/PetE; LD_{50} 0.053mg/cm^2) > *Ph. niruri* (wp/PetE; LD_{50} 0.060mg/cm^2) > *S. nodiflora* (wp/CH_3OH; LD_{50} 0.065mg/cm^2) > *Pz. zeylanica* (wp/PetE; LD_{50} 0.067mg/cm^2) > *P. hysterophorus* (wp/PetE; LD_{50} 0.068mg/cm^2) > *M. piperita* (wp/PetE; LD_{50} 0.070mg/cm^2) > *Mi. pudica* (wp/$CHCl_3$; LD_{50} 0.071mg/cm^2) > *Po. hydropiper* (wp/$CHCl_3$, LD_{50} 0.079mg/cm^2) > *L. camara* (ap/PetE; LD_{50} 0.080mg/cm^2).

The results receive supports from many previous findings. Moawad and Barty (2011) found that ethanol and water extracts of five medicinal and ornamental plant species: *Aerva lanata*, *Ruta chalepensis*, *Fagonia arabica*, *Malva parviflora*, and *Calotropis procera*; were active against pomegranate aphid, *Aphis punicae* Passerini under laboratory conditions, while the ethanol extract of *R. chalepensis* (wp) showed the highest mortality against aphid. Neem extract generally recorded low aphid populations and an average fewer plants infected with symptoms of viral infestation (Sing and Korpraditskul, 1999). Karanja extract treated plants had minimal rate of incidence of viral infestation, with maximum plant height, flower production, fruit formation and highest yield (Bhyan *et al.*, 2007). According to Das *et al*., 2008 aphidicidal activity of hot and cold water extracts of some indigenous plants were tested against the bean aphid, *Aphis craccivora* Koch. Hot water extract of *Po. hydropiper* and *A. indica* were found to be the most effective (87.6 - 94.5 and 80.47 - 89.6% mortality respectively, $P < 0.01$) among all the extracts.

In case of larvicidal activity the results could be arranged in a descending order as follows: *Ph. niruri* (wp/$CHCl_3$; LC_{50} 3.220ppm) > *Z. zerumbet* (rh/PetE; LC_{50} 5.389ppm) > *Po. hydropiper* (wp/CH_3OH; LC_{50} 21.432ppm) > *L. camara* (ap/PetE; LC_{50} 22.950ppm) > *Pz. zeylanica* (wp/PetE; LC_{50} 24.226ppm) > *L. camara* (r/PetE; LC_{50} 28.532ppm) > *P. hysterophorus* (wp/PetE; LC_{50} 37.858ppm) > *E. nummularius* (wp/PetE; LC_{50} 45.345ppm) > *M. piperita* (wp/PetE; LC_{50} 46.065ppm) > *S. nodiflora* (wp/PetE; LC_{50} 50.361ppm) > *Z. zerumbet* (ap/PetE; LC_{50} 55.681ppm) > *Mi. pudica* (wp/PetE; LC_{50} 88.187ppm). Methanol extract of *Mi. pudica* (wp), *Pz. zeylanica* (wp) and *Z. zerumbet* (ap) did not show any larvicidal effects.

Essential oil from the leaves of *L. camara* was reported to possess adulticidal activity against *Aedes aegypti*, *C. quinquefasciatus*, *Anopheles culicifacies*, *An*. *fluvialitis* and *An*. *stephensi* (mosquitoes) with LD_{50} values 0.06, 0.05, 0.05, 0.05 and 0.06mg/cm^2 (Dua, *et al*., 2010). Mosquito larvicidal assays through methanol and ethanol extracts of leaves and flowers of *L. camara* exhibited significant activity against 3rd and 4th instar larvae of *Ae. aegypti* and *C. quinquefasciatus* (Kumar and Maneemegalai, 2008). Bosly (2013) showed that the essential oils of peppermint and lavender have a control potential against *M. domestica*, which supports larvicidal activity of the aerial part of *L. camara* and *M. piperita* extracts in the present investigation. According to Bucker *et al*. (2013) CH_3OH extracts showed higher activity against *A. nuneztovari* larvae than against *A. aegypti* larvae, suggesting that the extracts have species-specific activity. Cent percent mortality of *Anopheles stephensi* was observed in case of four plants, namely- *Albizia amara*, *Areca catechu*, *Leucas aspera* and *Ocimum sanctum* after 24h of exposures (Vinayagam *et al*., 2008). The $CHCl_3$ extract of the fruit and the root of *Cleome viscosa* showed the highest and the second highest toxicity (LC_{50} values were 185.390 and 272.910ppm after 30h of exposure respectively) against the larvae of *Culex* sp. (Islam *et al*., 2014). Kamaraj *et al*. (2011) reported that the ethyl acetate and methanol extract of stem bark of *Annona squamosa*, leaf extract of *Chrysanthemum indicum* and acetone and ethyl acetate extracts of leaf of *Tridax procumbens* have the potentials to be used as an eco-friendly approach for the control of the *Anopheles subpictus*, and *Culex tritaeniorhynchus*.

According to Batabyal *et al.* (2007) CH_3OH extract of *Azadirachta indica* exhibited most potential larvicidal activity against *Anopheles stephensi* with LC_{50} 15.25 and 12.70ppm after 24 and 48h of exposure. Murugan *et al.* (2013) reported on larval mortality of neem products against malarial vector *Anopheles stephensi* was dose-dependent. The LC_{50} and LC_{90} values of Azadirachtin were 0.299% and 1.061%, respectively. To establish the larvicidal activities seeds of *Rauvolfia serpentina* were extracted with five solvents graded according to the polarity [viz. PetE, benzene, ethyl acetate, acetone and absolute alcohol] where mortality rate with PetE extract was significantly higher than other extracts (Das and Chandra, 2012). Citrus limonoids, nomilin and limonin, were used for larvicidal assay against *Aedes albopictus*. Results exhibited that citrus nomilin was more toxic than limonin against mosquito larvae (Hafeez *et al.*, 2011). The ethanol extract of unripe fruits of *Evodia rutaecarpa* Hook F. et Thomas (Rutaceae) was found to possess larvicidal activity against the mosquitoes larvae of the Culicidae mosquito *Aedes albopictus* (Liu *et al.*, 2012). Neem oil as larvicide against the main African malaria vector, *Anopheles gambiae* were observed by Okumu *et al.*, 2007. The steam distilled oils of 3 species of marigold, *Tagetes patula*, *T. erecta* and *T. minuta* were tested for larvicidal activity toward third instar larvae of *Aedes aegypti*; however activity at 10ppm was demonstrated only for *T. minuta* (Green *et al.*, 1991). The acetone, chloroform, ethyl acetate, hexane, and methanol extracts of leaf and flower of *Ocimum sanctum* were studied against fourth instar larvae of *Aedes aegypti* and *Culex quinquefasciatus*, where highest larval mortality was found in leaf extract of *O. sanctum* against the larvae of *A. aegypti* and *C. quinquefasciatus* (Anees, 2008). According to Kamaraj *et al.* (2010) the larval mortality was found in the hexane extract of *Zingiber zerumbet* (wp) against *Culex gelidus* (LC_{50} 26.48) and against *Culex quinquefasciatus* (LC_{50} 69.18ppm) after 24h of exposures. Kundu *et al.* (2013) reported that crude and ethyl acetate extracts of matured seed-coat of *Cassia sophera* can be used for the control of *Culex quinquefaciatus* larvae. The CH_3OH extract of leaf of *Cocculus hirsutus* L. and *Tagetes erecta* L. have the potentials to be used as an ideal eco-friendly means for the control of *Anopheles subpictus* Grassi (Elango *et al.*, 2011). Larval mortality was found in case of acetone, chloroform, methanol, and PetE extract of leaf of *Canna indica* L. against second and fourth instar larvae of *C. quinquefasciatus* (Rahuman *et al.*, 2009). Mosquito larval mortality up to 93.33% and reduction of egg hatchability was observed in case of *Acacia nilotica* extract by Zaitoun in 2012. The leaf extract of *Ageratina adenophora* is more toxic to both *A. aegypti* and *C. quinquefasciatus* (Mohan and Ramaswamy, 2007).

The present investigation depicts the effects of extracts of the test plants through cytotoxicity test against *A. salina* were found in the following order: *Po. hydropiper* (wp/ $CHCl_3$; LC_{50} 1.590ppm) > *M. piperita* (wp/PetE; LC_{50} 9.573ppm) > *L. camara* (ap/$CHCl_3$; LC_{50} 10.481ppm) > *Z. zerumbet* (ap/PetE; LC_{50} 10.938ppm) > *Z. zerumbet* (rh/$CHCl_3$; LC_{50} 11.172ppm) > *S. nodiflora* (wp/PetE; LC_{50} 11.380ppm) > *Pz. zeylanica* (wp/PetE; LC_{50} 11.648ppm) > *L. camara* (r/PetE; LC_{50} 12.497ppm) > *E. nummularius* (wp/PetE; LC_{50} 13.601ppm) > *Mi. pudica* (wp/PetE; LC_{50} 23.815ppm) > *Ph. niruri* (wp/$CHCl_3$; LC_{50} 24.331ppm).

According to Saha and Paul (2012a) ethanol extract of *Pouzolzia zeylanica* (L.) Benn posseses significant cytotoxic activity with the LC_{50} value of 6.1µg/ml and the LC_{90} value of 12.2µg/ml. Chloroform extracts of the fruit shell, leaves, root bark, root wood, seeds, stem bark and stem wood of *Derris indica* Bennet were found to be effective against the brine shrimp, A*rtemia salina* nauplii (Mondal *et al.*, 2012b). Rhizome essential oils of red and black varieties of *Cyperus articulatus* were tested for bioactivity using brine shrimp lethality test that showed significant activity with LC_{50} of 2.84g/ml and 3.34g/ml for red and black varieties respectively (Ameen *et al.*, 2011). Different concentrations 10, 100 and 1000ug/ml of the methanolic extract of medicinal herb *Ajuga parviflora* were used by Rahman *et al.*, 2013 for brine shrimp lethality bioassay and significant results were obtained. Chloroform extracts of the leaf, stem bark, stem wood and roots of *Glycosmis pentaphylla* (Retz.) were tested against the brine shrimp, *Artemia salina* nauplii for cytotoxic activity in which the dose-mortality assay revealed LC_{50} values of 28.579, 28.659, 57.213 and 84.111ppm respectively, for the plant parts efficacy of which could be arranged in the order of leaf > stem bark > stem wood > root (Pramanik *et al*., 2009). The cytotoxic effect of *Cleome viscosa* extracts (PetE, $CHCl_3$ and CH_3OH) against the brine shrimp (*A. salina*) nauplii were found promising where PetE extract of the root and $CHCl_3$ extract of the fruit showed the highest and the second highest toxicity (LC_{50} values were 21.905 and 26.675ppm after 30h of exposure respectively) against the nauplii (Islam *et al.*, 2014). The cytotoxic activities of crude extract (CH_3OH/fruits) of *Hibiscus sabdariffa* (MEHS) was determined using brine shrimp lethality assay and LC_{50} values of standard vincristine sulphate as a positive 50 control and the crude extract was found to be 0.21±0.19µg/ml and 5.082±0.12µg/ml respectively (Al-Mamun *et al.*, 2011). The methanol extracts of *Lantana camara* (Root, Stem, Leaf, Flower and Fruit) were tested for *In Vivo* brine shrimp lethality assay. All the tested extracts exhibited very low toxicity on brine shrimp nauplii. The results showed that the root extract was the most toxic part of *L. camara* (Badakhshan *et al.*, 2009). Crude ethanol extracts of the rhizome of *Z. zerumbet* showed the highest cytotoxicity (LC_{50} was 1.24µg/ml) against brine shrimp nauplii as compared with that of *Curcuma zedoaria* Rosc. (LC_{50} was

33.593µg/ml) after 24h of exposure (Hossain *et al.*, 2012); and it supports the findings of this investigation. Good cytotoxic activity (66.66%) was shown by the *n*-hexane fraction of crude methanolic extract of the aerial parts of *Myrsine africana* plant at 1000µg/ml (Ahmad *et al.*, 2011a). Preliminary cytotoxicity tests were done with the methanolic, hexane, chloroform, ethyl acetate and butanol fractions of *Vitex agnus-castus* using the nauplii of the brine shrimp, *Artemia salina*. These fractions were, however found to be relatively nontoxic (Azizuddin and Choudhary, 2011). In cytotoxicity determination, LC_{50} of *Candida albicans* compound against brine shrimp nauplii was 13.25µg/ml (Khan *et al.*, 2008). Moderate level of cytotoxicity (LD_{50} value 9.23µg/ml) against brine shrimp larvae was found with the methanolic extract of *Calendula arvensis* (Ullah *et al.*, 2012).

The mortality of *T. castaneum* adults through dose-mortality experiments by residual film method was done and the results have been analyzed and tabulated; While, no activity was traced for whole plant of *Mi. pudica*. While, no activity was traced for whole plant of *Mi. pudica*. The methanol extract of *Pz. zeylanica* (wp); methanol and $CHCl_3$ extracts of *L. camara* (r) and $CHCl_3$ extract of *S. nodiflora* (wp) didn't show any mortality against the adult beetles of *T. castaneum*.

Mortality in LD_{50} values for the rest extracts were found active in the following order: *M. piperita* (wp/CH_3OH; LD_{50} 0.238mg/cm^2) > *Po. hydropiper* (wp/CH_3OH; LD_{50} 0.342mg/cm^2) > *Ph. niruri* (wp/PetE; LD_{50} 0.508mg/cm^2) > *Z. zerumbet* (rh/CH_3OH; LD_{50} 0.793mg/cm^2) > *L. camara* (ap/CH_3OH); LD_{50} 0.797mg/cm^2) > *Pz. zeylanica* (wp/PetE; LD_{50} 0.799mg/cm^2) > *E. nummularius* (wp/PetE; LD_{50} 1.031mg/cm^2) > *S. nodiflora* (wp/PetE; LD_{50} 1.248mg/cm^2) > *Z. zerumbet* (ap/CH_3OH; LD_{50} 1.316mg/cm^2) > *P. hysterophorus* (wp/CH_3OH; LD_{50} 1.631mg/cm^2) > *L. camara* (r/PetE; LD_{50} 2.672mg/cm^2).

Insecticidal activity of the methanolic extract of *Synedrela nodiflora* leaves against the stored product pest *Sitophilus oryzae* using surface film method was found active and dose dependent that showed 95%, 96% and 98% activity against the doses of 20, 40 and 50mg/ml respectively after 12h of exposures (Haque *et al.*, 2012). Methanol extract of *Polygonum persicaria* (ap) and *Polygonum plebejum* (wp) showed significant insecticidal activities against *Tribolium castaneum* (Hussain *et al.*, 2010). According to Islam *et al.* (2014) $CHCl_3$ and CH_3OH extracts of *Cleome viscosa* (ap) showed the highest and the second highest mortality (LD_{50} values were 0.170 and 0.248mg/cm^2 respectively) against *T. castaneum* adults and $CHCl_3$ extract of the root part of that plant was found to show no mortality against the adult beetles of *T. castaneum*. Ethanol extract of *Phyllanthus amarus* (root) possessed significant insecticidal activity against *T. castaneum* (Khanna *et al.*, 2003). Padin *et al.* (2000) reported that the essential oil of *Rosemary* (*Rosmarinus officinalis*) killed *Tribolium* adults. The crude methanolic extract and various fractions of *Zizyphus jujuba* except n-hexane showed low activity (20%) against *T. castaneum* (Ahmad *et al.*, 2011b). According to Rajashekar *et al.* (2012) the methanol extract collected from leaves of *Lantana camara* had fumigant and contact toxicity against *Sitophilus oryzae*, *Callosobruchus chinesis* and *Tribolium castaneum*. Petroleum spirit extract of custard apple, *Annona squamosa* L. seeds offered highest toxicity (LD_{50} 58.697µg/cm^2) on CTC-12 strain of the red flour beetle, *Tribolium castaneum* (Herbst) adults (Khalequzzaman and Sultana, 2006).The LD_{50} results revealed that methanol extract of *Synedrella nodiflora* Gaertn is the most toxic to *Spodoptera litura* followed by benzene and chloroform, PetE and water extracts (Martin Rathi and Gopalakrishnan, 2006). According to Mamun *et al.* (2011) Methanol (85%) extract of fruits of *Hibiscus sabdariffa* showed the significant activity with 100% mortality of *Tribolium castaneum* at a dose of 50mg/ml with 12 hours of exposures. Low insecticidal activity (20%) was shown by chloroform ($CHCl_3$) and aqueous fractions of aerial parts of *Myrsine africana* against *Tribolium castaneum* (Ahmad *et al.*, 2011a). Methanolic extract and its fractions of *Vitex agnus-castus* did not show any insecticidal activity against *Tribolium castaneum* (Azizuddin and Choudhary, 2011). Chloroform and ethanol extracts of Bishkatali, *Polygonum hydropiper* were moderately toxic to *Tribolium castaneum*. The toxicity of ethanol extract was higher than chloroform extract after 24 and 72h of exposures (Kundu *et al.*, 2007).

Against the eggplant aphids CH_3OH extracts of *E. nummularius* (wp), *L. camara* (ap), *Mi. pudica* (wp) and *Pz. zeylanica* (wp) offered repellent activity, while the PetE and $CHCl_3$ extracts of the same didn't show repellency; however PetE, $CHCl_3$ and CH_3OH the extracts of *Ph. niruri* (wp), *S. nodiflora* (wp) and *Z. zerumbet* (ap); PetE extracts of *M. piperita* (wp), *P. hysterophorus* (wp) and *Z. zerumbet* (rh); $CHCl_3$ extracts of *L. camara* (r) and *Po. hydropiper* (wp) and CH_3OH extracts of *P. hysterophorus* (wp) and *Po. hydropiper* (wp) offered no repellent activity at all.

According to intensity of repellency the result could be arranged in a descending order: *M. piperita* (wp/CH_3OH) > *Po. hydropiper* (wp/PetE) > *Pz. zeylanica* (wp/CH_3OH) > *L. camara* (r/PetE) > *L. camara* (r/CH_3OH) > *P. hysterophorus* (wp/$CHCl_3$) > *L. camara* (ap/CH_3OH) > *Mi. pudica* (wp/CH_3OH) > *Z. zerumbet* (rh/CH_3OH) > *E. nummularius* (wp/CH_3OH) > *M. piperita* (wp/$CHCl_3$) > *Z. zerumbet* (rh/$CHCl_3$).

For the repellency against *T. castaneum* adults CH_3OH extracts of *Po. hydropiper* (wp) offered the most promising activity, however except *L. camara* (ap/$CHCl_3$ and CH_3OH); *L. camara* (r/PetE); *M. piperita* (wp/PetE); *Mi. pudica* (wp/PetE and CH_3OH); *P. hysterophorus* (wp/CH_3OH); *Ph. niruri* (wp/$CHCl_3$ and CH_3OH); *Pz. zeylanica* (wp/$CHCl_3$) showed repellent activity of different degree; and aerial and rhizome part of *Z. zerumbet* extracts of all the three solvents showed no repellent activity.

According to intensity of repellency the result could be arranged in a descending order: *Po. hydropiper* (wp/CH_3OH) > *Po. hydropiper* (wp/PetE) > *L. camara* (r/$CHCl_3$) > *E. nummularius* (wp/PetE) > *S. nodiflora* (wp/$CHCl_3$) > *Pz. zeylanica* (wp/PetE) > *P. hysterophorus* (wp/$CHCl_3$) > *Po. hydropiper* (wp/$CHCl_3$) > *E. nummularius* (wp/CH_3OH) > *Pz. zeylanica* (wp/CH_3OH) > *E. nummularius* (wp/$CHCl_3$) > *P. hysterophorus* (wp/PetE) > *Mi. pudica* (wp/$CHCl_3$) > *L. camara* (ap/PetE) > *M. piperita* (wp/$CHCl_3$) > *S. nodiflora* (wp/CH_3OH) > *L. camara* (r/CH_3OH) > *S. nodiflora* (wp/PetE) > *Ph. niruri* (wp/PetE) > *M. piperita* (wp/CH_3OH).

Gallardo *et al.* (2011) showed that essential oils (EOs) from *Tagetes lucida*, *Lepechinia betonicifolia*, *Lippia alba*, *Cananga odorata*, and *Rosmarinus* were repellent, followed a dose-response relationship and EOs from *C. odorata* and *L. alba* were the most active repellents against *T. castaneum*. Pramanik *et al.* (2009) observed that the F values of the arcsine transformed data were 60.983, 14.177, 19.437, 15.429 and 1.082 respectively for the repellency against *T. castaneum* adults for $CHCl_3$ extracts of leaf, stem bark, stem wood, root bark and root wood extracts of *Glycosmis pentaphylla*. Except for the root wood extract, strong repellent activity was observed for the rest of the extracts ($P<0.001$). *Abroma augusta* extracts can be used as a reduced risk repellent compound in the grain and cereal stores to manage the population of *T. castaneum* (Mondal, 2012a). Chloroform and ethanol extract of Bishkatali showed strong repellency against *T. castaneum* (like that of the mortality results) where chloroform extract was better than ethyl alcohol extract (Kundu *et al.*, 2007), and this finding supports the present study. Three plant species, leaf of *Polygonum hydropiper* Linn. (Bishkatali), *Vitex negundo* Linn. (Nishinda) and *Aphanamixis polystachya* (Pithraj) extracted with water and acetone were evaluated for their repellent and feeding deterrent activity against adult red flour beetle, *Tribolium castaneum* (Herbst). It was observed that Biskatali (leaf/water extract) have shown strong repellent and feeding deterrent effect followed by Nishinda and Pithraj (Islam *et al.*, 2000). Petroleum and methanol extracts of *Cyperus articulatus* (rh) were evaluated against the red flour beetle, *Tribolium castaneum* (Hbst.) using standard techniques and both the extracts were observed to have similar repellant actions (Abubakar, 2000). Islam *et al*, 2014 reported that the CH_3OH extract of *Cleome viscosa* (ap) showed the highest repellency between dose interval at 1% level of significance ($P<0.01$) against the adult beetles of *T. castaneum*. The PetE extract of the aerial part and the $CHCl_3$ extract of the root of that plant showed repellency at 5% level of significance ($P<0.05$) while the other parts (fruit) did not show significant repellency against the adult flour beetles.

The anitbacterial activity of the PetE, $CHCl_3$ and CH_3OH extracts of the selected plants were tested against 8 selected pathogenic bacteria (3 gram-positive bacteria- *Bacillus subtilis*, *Listeria monocytogenes*, *Staphylococcus aureus* and 5 gram-negative bacteria- *Escherichia coli*, *Klebsella pneumoniae*, *Salmonela enteritidis*, *Shigella flexneri* and *Shigella sonnei*) at concentrations of 200μg $disc^{-1}$ and 400μg $disc^{-1}$ along with a standard antibiotic, Ampicillin 10μg $disc^{-1}$. The chloroform extract was found most effective in comparison to the PetE and CH_3OH extracts.

Pavithra *et al*. (2009) reported that CH_3OH extract of *E. nummularius* has antibacterial activity against *Escherichia coli* (MIC, 12.50mg/ml) and *Bacillus subtilus* (MIC, 3.125mg/ml) and the most resistant strains were *Staphylococcus aureus*, *Klebsiella pneumoniae* and *Pseudomonas aeruginosa*. Barreto *et al.* (2010) showed that ethanolic extracts of leaves and roots of *Lantana camara* and *Lantana montevidensis* exhibited antibacterial activity against clinically relevant pathogens (gram positive and gram negative bacteria). *L. camara* leaf extract was active against *Proteus vulgaris* and *Víbrio cholerae* (MIC 128 μg/ml for both the strains); in addition to the root extract which was effective against *P. vulgaris* and *Pseudomonas aeruginosa* (64 and 128μg/ml respectively). The leaves and roots of *L. montevidensis* extracts were active against *P. vulgaris* and *P. aeruginosa* (MIC 8μg/ml) and two strains of *E. coli* (MIC 16μg/ml for the multi-resistant strain). Methanolic extracts of different parts of *L. camara* were screened for antimicrobial activity against 10 bacteria by disk diffusion method. The leaf extract of *L. camara* showed highest activity against the Gram positive bacteria, *Bacillus cereus* and Gram negative bacteria, *Salmonella typhi* (Badakhshan *et al.*, 2009). The ethanol extract of *Pouzolzia zeylanica* showed highest antibacterial activity against *Staphylococcus aureus*, *E. coli* compared with the standard drug amoxicillin (Saha *et al.*, 2012b). The antimicrobial activity of CH_3OH

extracts of different plant parts of *Phyllanthus niruri* were tested against 5 bacterial strains (*E. cloacae*, *S. aureus*, *P. aeruginosa*, *E. coli* and *S. viridians*). Individually against *E. coli* maximum IZ was observed in extract of leaves, which was as par with that of seeds (12mm) and minimum was in roots. In case of *S. aureus* maximum IZ was observed in seeds (16mm) and minimum in stem (7mm) reported by Mathur *et al.* (2012). Hasan *et al.* (2009) observed that chloroform extract of *Polygonum hydropiper* (L.) had significant antibacterial activities against the four gram-positive bacteria, *Bacillus subtilis*, *Bacillus megaterium*, *Stapphylococcus aureus* and *Enterobacter aerogenes*; and four gram-negative bacteria, *Escherichia coli*, *Pseudomonas aeruginosa*, *Salmonella typhi* and *Shigella sonnei* and the minimum inhibitory concentration (MIC) values against these bacteria ranged from 16 to 64μg/ml. Antibacterial activity of aqueous crude extracts of *Phyllanthus niruri* was effective against *Lactobacillus* strain (Kanthimathi and Soranam, 2013) and the methanol crude extract of *S. nodiflora* exhibited 14.0mm IZ against *Bacillus cereus* (Chowdhury *et al.*, 2013). The antibacterial potential of six organic solvent (ethanol, methanol, ethyl acetate, chloroform, hexane and PetE) extracts from leaf, stem and root of *Mentha piperita* against pathogenic bacteria, such as *Bacillus subtilis*, *Streptococcus pneumonia*, *Staphylococcus aureus*, *Escherichia coli*, *Proteus vulgaris and Klebsiella pneumonia* were evaluated by agar diffusion method. The leaf extract activity was found comparatively higher on *Bacillus subtilis*, *Staphylo-coccus aureus* and *Proteus vulgaris* than *Escherichia coli*, *Streptococcus pneumonia* and *Klebsiella pneumonia* (Sujana *et al.*, 2013). According to Bhogaonkar *et al.* (2011) PetE extracts of *Synedrella nodiflora* (leaves) showed maximum activity against all the test microbes (Strains used are *Bacillus subtilis* NCIM 2063, *Staphylococcus aureus* NCIM 2079, *Escherichia coli* NCIM 2065, *Candida albicans* NCIM 3100 and *Aspergillus flavus* NCIM 519) tested except *E. coli*. Kumar *et al.* (2013) found that the aqueous and ethanolic extracts of leaf were able to inhibit *Bacillus cereus* MTCC 1272 with IZ 11±1.0mm. CH_3OH extracts of *Mimosa pudica* displayed considerable bacteriostatic activity against all six bacterial strains (MIC range = 0.625 to 2.50mg/ml) including *Bacillus cereus*, *B. subtilis*, *Escherichia coli*, ampicillin-resistant *Escherichia coli*, *Staphylococcus aureus* and *Pseudomonas aeruginosa* (Genest *et al.*, 2008). The antibacterial activity of the compound Zederone which was isolated from the crude ethanolic extract of the rhizomes of *Zingiber zerumbet* (L.) Smith was determined against a number of multi-drug resistant and methicillin-resistant *Staphylococcus aureus* strains (SA1199B, ATCC25923, XU212, RN4220 and EMRSA15) and minimum inhibitory concentration (MIC) values were found to be in the range of 64-128ug/ml (Kader *et al.*, 2010). Ethyl acetate fraction of *Zizyphus oxyphylla* showed good antibacterial activity against *Bacillus subtilis* (IZ 16mm) and *Staphylococcus aureus* (IZ 18mm) (Nisar *et al.*, 2010). The antibacterial activity of the CH_3OH (85%) extract of fruits of *Hibiscus sabdariffa* (MEHS) were done against six Gram-positive and eight Gram-negative bacteria using disc diffusion method. The extract showed the highest activity against *Sarcina lutea* with an IZ 13±0.21mm followed by *Shigella dysenteriae* (12±0.07mm), *Escherichia coli* (12±0.11mm) and *Shigella boydii (*12±0.13mm) and inactivity against *Bacillus subtilis*, *B. megaterium*, *B. anthracis*, *B. cereus* and *P. aeruginosa* were also recorded (Mamun *et al.*, 2011). Hot aqueous extract of *Cassia senna* had the strongest inhibition effect on *Staphylococcus aureus* sub sp. *aureus*, *Salmonella typhimurium* and *Bacillus stearothermophilus*. *Acacia nilotica* showed only complete inhibition against *Staphylococcus aureus* sub sp. *aureus*, *Salmonella typhimurium* (Zaitoun *et al.*, 2012). The anti-listerial effect of water extract of garlic shoot juice (GSJ) was investigated against the four strains of *Listeria monocytogenes* ATCC 19116, 19118, 19166 and 15313. Various concentrations of (1%, 2.5% and 5%) were used and showed the strongest anti-listerial effect (Kim and Kang, 2007). Tamilarasi and Ananthi (2012) reported that the ethanolic extracts of *Mimosa pudica* leaves showed antimicrobial activity against *Bacillus subtilis*, *Pseudomonas aeruginosa*, *Klebsiella pneumonia* may be due to the presence of active constituents like alkaloids or tannins.

Finding potential activity the PetE extract of *E. nummularius* (wp) and CH_3OH extract of *Po. hydropiper* (wp) were attempted for chromatographic fractionation to isolate bioactive compound(s) and as a result two compounds named ENP and POM were isolated, and only the ENP was determined as palmitic acid. However, isolation of compound(s) from each of the test plants was rather impossible due to limitations in the laboratory supports, obligations in my job and shortage of funds.

The data achieved in these experiments clearly depicted the presence of bioactive properties or vector control potentials in the test plants- *E. nummularius*, *L. camara*, *M. piperita*, *Mi. pudica*, *P. hysterophorus*, *Ph. niruri*, *Po. hydropiper*, *Pz. zeylanica*, *S. nodiflora* and *Z. zerumbet.* Since the test organisms were considered as vectors (because, they play role as vectors either for plant or animal diseases) the biological activities incorporated here as the vector control potentials, and everyone knows that the mosquito, *C. quinquefasciatus* and the egg-plant aphid, *A. gossypii* is are vectors, however a very few people know that the flour beetle, *T. castaneum*, and the brine shrimp, *A. salina* are also vectors. The focal point of this investigation was to determine biological activities as control potentials of the test plants which were selected through survey of literature considering the published and the online information on them; and the magnitude of their activities were also established along with their comparative evaluation. It was rather interesting that some of them have been found promisingly active. Thus, comprehensive phytochemical analyses of the test plants for their insecticidal, insect repellent, cytotoxic and larvicidal components, as well as the physiological studies of the active ingredients are very much to be solicited for their effective use in the future vector control and pharmaceutical endeavors.

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APPENDICES

Appendix Table I: Dose mortality effect of *E. nummularius* (wp/PetE) extracts against *A. gossypii* after 3h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	11	36.667	37	4.67	4.387	4.714	15.96	4.442
0.147	1.167	30	6	20.000	20	4.16	4.272	4.150	15.09	4.312
0.098	0.991	30	3	10.000	10	3.72	4.109	3.790	14.13	4.129
0.049	0.690	30	5	16.667	17	4.05	3.832	4.077	11.10	3.815

Regression equation : Y = 3.097 + 1.041X
Chi-squared is 3.957 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.828mg/cm^2
LD_{50} is 0.673mg/cm^2
95% confidence limits are 0.080 to 5.631mg/cm^2

Appendix Table II: Dose mortality effect of *E. nummularius* (wp/PetE) extracts against *A. gossypii* after 6h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	19	63.333	63	5.33	5.124	5.315	19.02	5.137
0.147	1.167	30	13	43.333	43	4.82	4.890	4.838	18.81	4.895
0.098	0.991	30	7	23.333	23	4.26	4.560	4.264	17.43	4.555
0.049	0.690	30	6	20.000	20	4.16	3.995	4.200	12.15	3.973

Regression equation : Y = 2.639 + 1.933X
Chi-squared is 2.767 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.221mg/cm^2
LD_{50} is 0.167mg/cm^2
95% confidence limits are 0.117 to 0.236mg/cm^2

Appendix Table III: Dose mortality effect of *E. nummularius* (wp/PetE) extracts against *A. gossypii* after 9h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	21	70.000	70	5.52	5.449	5.510	18.03	5.434
0.147	1.167	30	15	50.000	50	5.00	5.188	4.990	19.02	5.181
0.098	0.991	30	14	46.667	47	4.92	4.819	4.942	18.81	4.826
0.049	0.690	30	7	23.333	23	4.26	4.188	4.284	14.13	4.217
0.025	0.398	30	2	6.667	7	3.52	3.576	3.519	8.07	3.626

Regression equation : Y = 2.822 + 2.021X
Chi-squared is1.213 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.078mg/cm^2
LD_{50} is 0.120mg/cm^2
95% confidence limits are 0.092 to 0.156mg/cm^2

Appendix Table IV: Dose mortality effect of *E. nummularius* (wp/PetE) extracts against *A. gossypii* after 12h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	22	73.333	73	5.61	5.581	5.584	17.43	5.566
0.147	1.167	30	19	63.333	63	5.33	5.363	5.318	18.48	5.347
0.098	0.991	30	16	53.333	53	5.08	5.056	5.075	19.11	5.039
0.049	0.690	30	9	30.000	30	4.48	4.530	4.460	17.43	4.513
0.025	0.398	30	5	16.667	17	4.05	4.020	4.037	13.17	4.002

Regression equation : Y = 3.306 + 1.749X
Chi-squared is 0.111 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} IS 0.969mg/cm^2
LD_{50} is 0.093mg/cm^2
95% confidence limits are 0.070 to 0.123mg/cm^2

Appendix Table V: Dose mortality effect of *E. nummularius* (wp/PetE) extracts against *A. gossypii* after 15h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	25	83.333	83	5.95	5.807	5.902	15.09	5.776
0.147	1.167	30	20	66.667	67	5.44	5.587	5.416	17.43	5.561
0.098	0.991	30	18	60.000	60	5.25	5.277	5.280	18.81	5.258
0.049	0.690	30	12	40.000	40	4.75	4.747	4.740	18.48	4.740
0.025	0.398	30	7	23.333	23	4.26	4.232	4.252	15.09	4.238

Regression equation: Y = 3.553 + 1.720X
Chi-squared is 0.618 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.841mg/cm^2
LD_{50} is 0.069mg/cm^2
95% confidence limits are 0.052 to 0.093mg/cm^2

Appendix Table VI: Dose mortality effect of *E. nummularius* (wp/PetE) extracts against *A. gossypii* after 18h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	27	90.000	90	6.28	6.162	6.270	12.15	6.157
0.147	1.167	30	24	80.000	80	5.85	5.939	5.870	14.13	5.935
0.098	0.991	30	21	70.000	70	5.52	5.626	5.520	16.74	5.622
0.049	0.690	30	17	56.667	57	5.18	5.091	5.175	19.11	5.087
0.025	0.398	30	10	33.333	33	4.56	4.572	4.544	17.43	4.568

Regression equation: Y = 3.861 + 1.776X
Chi-squared is 0.546 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.641mg/cm^2
LD_{50} is 0.044mg/cm^2
95% confidence limits are 0.0309 to 0.062mg/cm^2

Appendix Table VII: Dose mortality effect of *E. nummularius* (wp/PetE) extracts against *A. gossypii* after 21h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	28	93.333	93	6.48	6.394	6.424	10.08	6.347
0.147	1.167	30	26	86.667	87	6.13	6.159	6.132	12.15	6.121
0.098	0.991	30	23	76.667	77	5.74	5.827	5.698	15.09	5.802
0.049	0.690	30	18	60.000	60	5.25	5.260	5.280	18.81	5.257
0.025	0.398	30	12	40.000	40	4.75	4.710	4.740	18.48	4.728

Regression equation: Y = 4.008 + 1.810X
Chi-squared is 0.237 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.548mg/cm^2
LD_{50} is 0.035mg/cm^2
95% confidence limits are 0.024 to 0.052mg/cm^2

Appendix Table VIII: Dose mortality effect of *E. nummularius* (wp/PetE) extracts against *A. gossypii* after 24h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	29	96.667	97	6.88	6.444	6.759	9.06	6.433
0.147	1.167	30	26	86.667	87	6.13	6.206	6.077	11.10	6.198
0.098	0.991	30	23	76.667	77	5.74	5.871	5.698	15.09	5.866
0.049	0.690	30	18	60.000	60	5.25	5.297	5.280	18.81	5.299
0.025	0.398	30	13	43.333	43	4.82	4.741	4.818	18.48	4.749

Regression equation: Y = 3.999 + 1.884X
Chi-squared is 1.646 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} IS 0.531mg/cm^2
LD_{50} is 0.034mg/cm^2
95% confidence limits are 0.023 to 0.050Smg/cm^2

Appendix Table IX: Dose mortality effect of *E. nummularius* (wp/$CHCl_3$) extracts against *A. gossypii* after 3h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	12	40.000	40	4.75	4.607	4.740	18.03	4.644
0.147	1.167	30	4	13.333	13	3.87	4.114	3.904	14.13	4.114
0.098	0.991	30	2	6.667	7	3.52	3.419	3.540	7.14	3.367

Regression equation: Y = -0.835 + 4.240X
Chi-squared is 1.003 with 1 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.376mg/cm^2
LD_{50} is 0.238mg/cm^2
95% confidence limits are 0.171 to 0.331mg/cm^2

Appendix Table X: Dose mortality effect of *E. nummularius* (wp/$CHCl_3$) extracts against *A. gossypii* after 6h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	15	50.000	50	5.00	4.913	4.990	19.02	4.926
0.147	1.167	30	6	20.000	20	4.16	4.309	4.170	15.96	4.300
0.098	0.991	30	2	6.667	7	3.52	3.458	3.540	7.14	3.419

Regression equation: Y = -1.543 + 5.006X
Chi-squared is 0.454 with 1 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.307mg/cm^2
LD_{50} is 0.203mg/cm^2
95% confidence limits are 0.166 to 0.248mg/cm^2

Appendix Table XI: Dose mortality effect of *E. nummularius* (wp/$CHCl_3$) extracts against *A. gossypii* after 9h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	18	60.000	60	5.25	5.163	5.240	19.02	5.163
0.147	1.167	30	8	26.667	27	4.39	4.539	4.376	17.43	4.520
0.098	0.991	30	3	10.000	10	3.72	3.658	3.730	9.06	3.615

Regression equation: Y = -1.482 + 5.142X
Chi-squared is 0.597 with 1 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.261mg/cm^2
LD_{50} is 0.182mg/cm^2
95% confidence limits are 0.156 to 0.213mg/cm^2

Appendix Table XII: Dose mortality effect of *E. nummularius* (wp/$CHCl_3$) extracts against *A. gossypii* after 12h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	21	70.000	70	5.52	5.487	5.510	18.03	5.484
0.147	1.167	30	12	40.000	40	4.75	4.806	4.760	18.81	4.803
0.098	0.991	30	4	13.333	13	3.87	3.847	3.873	11.10	3.843

Regression equation: Y = -1.561 + 5.451X
Chi-squared is 0.057 with 1 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.203mg/cm^2
LD_{50} is 0.160mg/cm^2
95% confidence limits are 0.141 to 0.181mg/cm^2

Appendix Table XIII: Dose mortality effect of *E. nummularius* (wp/$CHCl_3$) extracts against *A. gossypii* after 15h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	25	83.333	83	5.95	5.578	5.864	17.43	5.585
0.147	1.167	30	15	50.000	50	5.00	5.122	4.990	19.02	5.123
0.098	0.991	30	7	23.333	23	4.26	4.479	4.270	16.74	4.473
0.049	0.690	30	1	3.333	3	3.12	3.380	3.148	6.24	3.360
0.025	0.398	30	1	3.333	3	3.12	2.313	4.847	0.93	2.280

Regression equation: Y = 0.810 + 3.695X
Chi-squared is 8.790 with 3 degrees of freedom
Variance has been adjusted for heterogeneity
Log LD_{50} is 1.134mg/cm^2
LD_{50} is 0.136mg/cm^2
95% confidence limits are 0.103 to 0.179mg/cm^2

Appendix Table XIV: Dose mortality effect of *E. nummularius* (wp/$CHCl_3$) extracts against *A. gossypii* after 18h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	27	90.000	90	6.28	5.727	6.150	15.96	5.723
0.147	1.167	30	18	60.000	60	5.25	5.359	5.240	18.48	5.361
0.098	0.991	30	10	33.333	33	4.56	4.840	4.578	18.81	4.850
0.049	0.690	30	2	6.667	7	3.52	3.953	3.602	12.15	3.978
0.025	0.398	30	3	10.000	10	3.72	3.092	4.430	3.93	3.130

Regression equation: Y = 1.976 + 2.899X
Chi-squared is 12.927 with 3 degrees of freedom
Variance has been adjusted for heterogeneity
Log LD_{50} is 1.043mg/cm^2
LD_{50} is 0.110mg/cm^2
95% confidence limits are 0.075 to 0.163mg/cm^2

Appendix Table XV: Dose mortality effect of *E. nummularius* (wp/$CHCl_3$) extracts against *A. gossypii* after 21h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	28	93.333	93	6.48	6.061	6.333	13.17	5.987
0.147	1.167	30	21	70.000	70	5.52	5.684	5.520	16.74	5.609
0.098	0.991	30	14	46.667	47	4.92	5.153	4.915	19.02	5.076
0.049	0.690	30	4	13.333	13	3.87	4.246	3.912	15.09	4.165
0.025	0.398	30	3	10.000	10	3.72	3.365	3.890	6.24	3.280

Regression equation: Y = 2.076 + 3.027X
Chi-squared is 5.485 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.966mg/cm^2
LD_{50} is 0.093mg/cm^2
95% confidence limits are 0.077 to 0.111mg/cm^2

Appendix Table XVI: Dose mortality effect of *E. nummularius* (wp/$CHCl_3$) extracts against *A. gossypii* after 24h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	29	96.667	97	6.88	6.233	6.587	11.10	6.194
0.147	1.167	30	24	80.000	80	5.85	5.849	5.800	15.09	5.821
0.098	0.991	30	16	53.333	53	5.08	5.309	5.058	18.48	5.295
0.049	0.690	30	6	20.000	20	4.16	4.385	4.170	15.96	4.397
0.025	0.398	30	4	13.333	13	3.87	3.489	4.080	7.14	3.525

Regression equation: Y = 2.338 + 2.984X
Chi-squared is 5.788 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.892mg/cm^2
LD_{50} is 0.078mg/cm^2
95% confidence limits are 0.065 to 0.094mg/cm^2

Appendix Table XVII: Dose mortality effect of *E. nummularius* (wp/CH_3OH) extracts against *A. gossypii* after 3h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	12	40.000	40	4.75	4.458	4.780	16.74	4.513
0.147	1.167	30	6	20.000	20	4.16	4.310	4.170	15.96	4.349
0.098	0.991	30	4	13.333	13	3.87	4.102	3.904	14.13	4.118
0.049	0.690	30	3	10.000	10	3.72	3.747	3.720	10.08	3.723
0.025	0.398	30	2	6.667	7	3.52	3.402	3.540	7.14	3.339

Regression equation: Y = 2.817 + 1.313X
Chi-squared is 2.639 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.663mg/cm^2
LD_{50} is 0.461mg/cm^2
95% confidence limits are 0.158 to 1.340mg/cm^2

Appendix Table XVIII: Dose mortality effect of *E. nummularius* (wp/CH_3OH) extracts against *A. gossypii* after 6h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	15	50.000	50	5.00	4.774	5.000	18.48	4.805
0.147	1.167	30	10	33.333	33	4.56	4.598	4.544	17.43	4.616
0.098	0.991	30	6	20.000	20	4.16	4.350	4.170	15.96	4.350
0.049	0.690	30	3	10.000	10	3.72	3.925	3.740	12.15	3.894
0.025	0.398	30	3	10.000	10	3.72	3.513	3.750	8.07	3.452

Regression equation: Y = 2.850 + 1.513X
Chi-squared is 2.313 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.421mg/cm^2
LD_{50} is 0.264mg/cm^2
95% confidence limits are 0.142 to 0.491mg/cm^2

Appendix Table XIX: Dose mortality effect of *E. nummularius* (wp/CH_3OH) extracts against *A. gossypii* after 9h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	18	60.000	60	5.25	5.030	5.250	19.11	5.067
0.147	1.167	30	13	43.333	43	4.82	4.828	4.838	18.81	4.853
0.098	0.991	30	8	26.667	27	4.39	4.544	4.376	17.43	4.551
0.049	0.690	30	3	10.000	10	3.72	4.059	3.750	13.17	4.036
0.025	0.398	30	4	13.333	13	3.87	3.588	3.981	8.07	3.535

Regression equation: Y = 2.853+ 1.713X
Chi-squared is 3.859 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.253mg/cm^2
LD_{50} is 0.179mg/cm^2
95% confidence limits are 0.120 to 0.268mg/cm^2

Appendix Table XX: Dose mortality effect of *E. nummularius* (wp/CH_3OH) extracts against *A. gossypii* after 12h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	19	63.333	63	5.33	5.188	5.315	19.02	5.198
0.147	1.167	30	15	50.000	50	5.00	4.973	4.990	19.02	4.977
0.098	0.991	30	10	33.333	33	4.56	4.670	4.551	18.03	4.666
0.049	0.690	30	4	13.333	13	3.87	4.151	3.904	14.13	4.134
0.025	0.398	30	4	13.333	13	3.87	3.648	3.931	9.06	3.617

Regression equation: Y = 2.913 + 1.768X
Chi-squared is 2.140 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.180mg/cm^2
LD_{50} is 0.151mg/cm^2
95% confidence limits are 0.107 to 0.214mg/cm^2

Appendix Table XXI: Dose mortality effect of *E. nummularius* (wp/CH_3OH) extracts against *A. gossypii* after 15h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	21	70.000	70	5.52	5.429	5.510	18.03	5.431
0.147	1.167	30	17	56.667	57	5.18	5.196	5.165	19.02	5.195
0.098	0.991	30	13	43.333	43	4.82	4.866	4.838	18.81	4.862
0.049	0.690	30	6	20.000	20	4.16	4.303	4.170	15.96	4.293
0.025	0.398	30	4	13.333	13	3.87	3.756	3.894	10.08	3.740

Regression equation: Y = 2.988 + 1.890X
Chi-squared is 0.619 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.064mg/cm^2
LD_{50} is 0.116mg/cm^2
95% confidence limits are 0.088 to 0.153mg/cm^2

Appendix Table XXII: Dose mortality effect of *E. nummularius* (wp/CH_3OH) extracts against *A. gossypii* after 18h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	23	76.667	77	5.74	5.689	5.730	16.74	5.682
0.147	1.167	30	21	70.000	70	5.52	5.450	5.510	18.03	5.440
0.098	0.991	30	16	53.333	53	5.08	5.112	5.065	19.02	5.100
0.049	0.690	30	7	23.333	23	4.26	4.535	4.264	17.43	4.517
0.025	0.398	30	6	20.000	20	4.16	3.974	4.200	12.15	3.952

Regression equation: Y = 3.182 + 1.935X
Chi-squared is 2.015 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.940mg/cm^2
LD_{50} is 0.087mg/cm^2
95% confidence limits are 0.067 to 0.112mg/cm^2

Appendix Table XXIII: Dose mortality effect of *E. nummularius* (wp/CH_3OH) extracts against *A. gossypii* after 21h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	25	83.333	83	5.95	5.912	5.984	14.13	5.915
0.147	1.167	30	23	76.667	77	5.74	5.660	5.730	16.74	5.660
0.098	0.991	30	18	60.000	60	5.25	5.304	5.240	18.48	5.299
0.049	0.690	30	9	30.000	30	4.48	4.697	4.470	18.03	4.684
0.025	0.398	30	7	23.333	23	4.26	4.107	4.284	14.13	4.086

Regression equation: Y = 3.272 + 2.045X
Chi-squared is 1.593 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.845mg/cm^2
LD_{50} is 0.070mg/cm^2
95% confidence limits are 0.054 to 0.090mg/cm^2

Appendix Table XXIV: Dose mortality effect of *E. nummularius* (wp/CH_3OH) extracts against *A. gossypii* after 24h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	28	93.333	93	6.48	6.268	6.383	11.10	6.193
0.147	1.167	30	25	83.333	83	5.95	5.987	5.984	14.13	5.923
0.098	0.991	30	20	66.667	67	5.44	5.591	5.416	17.43	5.542
0.049	0.690	30	11	36.667	37	4.67	4.915	4.665	19.02	4.890
0.025	0.398	30	9	30.000	30	4.48	4.259	4.490	15.09	4.258

Regression equation: Y = 3.397 + 2.164X
Chi-squared is 2.507 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.741mg/cm^2
LD_{50} is 0.055mg/cm^2
95% confidence limits are 0.042 to 0.071mg/cm^2

Appendix Table XXV: Dose mortality effect of *L. camara* (ap/PetE) extracts extracts against *A. gossypii* after 9h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	20	66.667	67	5.44	5.084	5.425	19.11	5.082
0.147	1.167	30	10	33.333	33	4.56	4.762	4.558	18.48	4.762
0.098	0.991	30	4	13.333	13	3.87	4.309	3.946	15.96	4.311
0.049	0.690	30	3	10.000	10	3.72	3.534	3.750	8.07	3.539
0.025	0.398	30	1	3.333	3	3.12	2.782	3.379	2.28	2.790

Regression equation: Y = 1.771 + 2.563X
Chi-squared is 6.286 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.260mg/cm^2
LD_{50} is 0.182mg/cm^2
95% confidence limits are 0.137 to 0.242mg/cm^2

Appendix Table XXVI: Dose mortality effect of *L. camara* (ap/PetE) extracts against *A. gossypii* after 12h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	22	73.333	73	5.61	5.214	5.618	18.81	5.239
0.147	1.167	30	13	43.333	43	4.82	4.929	4.815	19.02	4.948
0.098	0.991	30	5	16.667	17	4.05	4.526	4.096	17.43	4.537
0.049	0.690	30	4	13.333	13	3.87	3.839	3.873	11.10	3.834
0.025	0.398	30	2	6.667	7	3.52	3.171	3.724	4.62	3.152

Regression equation: Y = 2.223 + 2.335X
Chi-squared is 7.946 with 3 degrees of freedom
Variance has been adjusted for heterogeneity
Log LD_{50} is 1.190mg/cm^2
LD_{50} is 0.155mg/cm^2
95% confidence limits are 0.100 to 0.239mg/cm^2

Appendix Table XXVII: Dose mortality effect of *L. camara* (ap/PetE) extracts against *A. gossypii* after 15h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	23	76.667	77	5.74	5.340	5.682	18.48	5.348
0.147	1.167	30	15	50.000	50	5.00	5.084	5.000	19.11	5.078
0.098	0.991	30	7	23.333	23	4.26	4.725	4.298	18.48	4.699
0.049	0.690	30	5	16.667	17	4.05	4.109	4.056	14.13	4.051
0.025	0.398	30	3	10.000	10	3.72	3.512	3.750	8.07	3.421

Regression equation: Y = 2.564 + 2.154X
Chi-squared is 6.031 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.131mg/cm^2
LD_{50} is 0.135mg/cm^2
95% confidence limits are 0.104 to 0.176mg/cm^2

Appendix Table XXVIII: Dose mortality effect of *L. camara* (ap/PetE) extracts against *A. gossypii* after 18h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	27	90.000	90	6.28	5.713	6.150	15.96	5.627
0.147	1.167	30	18	60.000	60	5.25	5.458	5.240	18.03	5.382
0.098	0.991	30	10	33.333	33	4.56	5.098	4.575	19.11	5.036
0.049	0.690	30	8	26.667	27	4.39	4.484	4.390	16.74	4.446
0.025	0.398	30	6	20.000	20	4.16	3.887	4.230	11.10	3.873

Regression equation: Y = 3.093 + 1.960X
Chi-squared is 10.268 with 3 degrees of freedom
Variance has been adjusted for heterogeneity
Log LD_{50} is 0.973mg/cm^2
LD_{50} is 0.094mg/cm^2
95% confidence limits are 0.058 to 0.151mg/cm^2

Appendix Table XXIX: Dose mortality effect of *L. camara* (ap/PetE) extracts against *A. gossypii* after 21h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	28	93.333	93	6.48	5.700	6.246	15.96	5.714
0.147	1.167	30	19	63.333	63	5.33	5.466	5.321	18.03	5.475
0.098	0.991	30	11	36.667	37	4.67	5.135	4.665	19.02	5.139
0.049	0.690	30	10	33.333	33	4.56	4.569	4.544	17.43	4.564
0.025	0.398	30	7	23.333	23	4.26	4.019	4.283	13.17	4.005

Regression equation: Y = 3.245 + 1.911X
Chi-squared is 10.239 with 3 degrees of freedom
Variance has been adjusted for heterogeneity
Log LD_{50} is 0.919mg/cm^2
LD_{50} is 0.083mg/cm^2
95% confidence limits are 0.051 to 0.134mg/cm^2

Appendix Table XXX: Dose mortality effect of *L. camara* (ap/PetE) extracts against *A. gossypii* after 24h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.147	1.167	30	21	70.000	70	5.52	5.363	5.500	18.48	5.345
0.098	0.991	30	14	46.667	47	4.92	5.131	4.915	19.02	5.117
0.049	0.690	30	12	40.000	40	4.75	4.735	4.740	18.48	4.727
0.025	0.398	30	8	26.667	27	4.39	4.351	4.394	15.96	4.348

Regression equation: Y = 3.833 + 1.295X
Chi-squared is 1.256 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.901mg/cm^2
LD_{50} is 0.080mg/cm^2
95% confidence limits are 0.052 to 0.122mg/cm^2

Appendix Table XXXI: Dose mortality effect of *L. camara* (ap/$CHCl_3$) extracts against *A. gossypii* after 3h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	16	53.333	53	5.08	5.011	5.075	19.11	5.009
0.147	1.167	30	10	33.333	33	4.56	4.679	4.551	18.03	4.670
0.098	0.991	30	7	23.333	23	4.26	4.211	4.252	15.09	4.193

Regression equation: Y = 1.505 + 2.712X
Chi-squared is 0.393 with 1 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.289mg/cm^2
LD_{50} is 0.194mg/cm^2
95% confidence limits are 0.139 to 0.271mg/cm^2

Appendix Table XXXII: Dose mortality effect of *L. camara* (ap/$CHCl_3$) extracts against *A. gossypii* after 6h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	19	63.333	63	5.33	5.322	5.318	18.48	5.310
0.147	1.167	30	14	46.667	47	4.92	4.933	4.915	19.02	4.928
0.098	0.991	30	8	26.667	27	4.39	4.385	4.394	15.96	4.388

Regression equation: Y = 1.350 + 3.065X
Chi-squared is 0.005 with 1 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.191mg/cm^2
LD_{50} is 0.155mg/cm^2
95% confidence limits are 0.126 to 0.191mg/cm^2

Appendix Table XXXIII: Dose mortality effect of *L. camara* (ap/$CHCl_3$) extracts against *A. gossypii* after 9h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	21	70.000	70	5.52	5.403	5.510	18.03	5.407
0.147	1.167	30	15	50.000	50	5.00	5.040	5.000	19.11	5.043
0.098	0.991	30	9	30.000	30	4.48	4.528	4.460	17.43	4.529
0.049	0.690	30	2	6.667	7	3.52	3.652	3.529	9.06	3.651
0.025	0.398	30	1	3.333	3	3.12	2.802	3.256	2.76	2.799

Regression equation: Y = 1.638 + 2.917X
Chi-squared is 1.021 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.153mg/cm^2
LD_{50} is 0.142mg/cm^2
95% confidence limits are 0.116 to 0.174mg/cm^2

Appendix Table XXXIV: Dose mortality effect of *L. camara* (ap/$CHCl_3$) extracts against *A. gossypii* after 12h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	22	73.333	73	5.61	5.563	5.584	17.43	5.577
0.147	1.167	30	17	56.667	57	5.18	5.210	5.202	18.81	5.214
0.098	0.991	30	12	40.000	40	4.75	4.712	4.740	18.48	4.703
0.049	0.690	30	3	10.000	10	3.72	3.861	3.720	11.10	3.829
0.025	0.398	30	1	3.333	3	3.12	3.034	3.135	3.93	2.980

Regression equation: Y = 1.824 + 2.904X
Chi-squared is 0.255 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.094mg/cm^2
LD_{50} is 0.124mg/cm^2
95% confidence limits are 0.102 to 0.150mg/cm^2

Appendix Table XXXV: Dose mortality effect of *L. camara* (ap/$CHCl_3$) extracts against *A. gossypii* after 15h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	25	83.333	83	5.95	5.778	5.926	15.96	5.775
0.147	1.167	30	18	60.000	60	5.25	5.396	5.240	18.48	5.386
0.098	0.991	30	13	43.333	43	4.82	4.857	4.838	18.81	4.838
0.049	0.690	30	4	13.333	13	3.87	3.936	3.878	12.15	3.901
0.025	0.398	30	1	3.333	3	3.12	3.042	3.135	3.93	2.991

Regression equation: Y = 1.753 + 3.112X
Chi-squared is 0.846 with 3 degrees of freedom
No significant heterogeneity
log LD_{50} is 1.043mg/cm^2
LD_{50} is 0.110mg/cm^2
95% confidence limits are 0.093 to 0.132mg/cm^2

Appendix Table XXXVI: Dose mortality effect of *L. camara* (ap/$CHCl_3$) extracts against *A. gossypii* after 18h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	25	83.333	83	5.95	5.783	5.926	15.96	5.762
0.147	1.167	30	19	63.333	63	5.33	5.463	5.321	18.03	5.443
0.098	0.991	30	14	46.667	47	4.92	5.010	4.925	19.11	4.993
0.049	0.690	30	7	23.333	23	4.26	4.237	4.252	15.09	4.223
0.025	0.398	30	2	6.667	7	3.52	3.486	3.540	7.14	3.476

Regression equation: Y = 2.459 + 2.556X
Chi-squared is 0.825 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.994mg/cm^2
LD_{50} is 0.099mg/cm^2
95% confidence limits are 0.080 to 0.121mg/cm^2

Appendix Table XXXVII: Dose mortality effect of *L. camara* (ap/$CHCl_3$) extracts against *A. gossypii* after 21h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	27	90.000	90	6.28	5.992	6.250	14.13	5.959
0.147	1.167	30	20	66.667	67	5.44	5.655	5.430	16.74	5.621
0.098	0.991	30	16	53.333	53	5.08	5.181	5.065	19.02	5.145
0.049	0.690	30	7	23.333	23	4.26	4.370	4.266	15.96	4.332
0.025	0.398	30	3	10.000	10	3.72	3.582	3.750	8.07	3.543

Regression equation: Y = 2.467 + 2.702X
Chi-squared is 2.351 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.937mg/cm^2
LD_{50} is 0.087mg/cm^2
95% confidence limits are 0.071 to 0.105mg/cm^2

Appendix Table XXXVIII: Dose mortality effect of *L. camara* (ap/$CHCl_3$) extracts against *A. gossypii* after 24h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.147	1.167	30	21	70.000	70	5.52	5.534	5.500	17.43	5.516
0.098	0.991	30	17	56.667	57	5.18	5.152	5.165	19.02	5.139
0.049	0.690	30	9	30.000	30	4.48	4.499	4.480	16.74	4.495
0.025	0.398	30	4	13.333	13	3.87	3.865	3.873	11.10	3.869

Regression equation: Y = 3.017 + 2.141X
Chi-squared is 0.021 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.926mg/cm^2
LD_{50} is 0.084mg/cm^2
95% confidence limits are 0.064 to 0.111mg/cm^2

Appendix Table XXXIX: Dose mortality effect of *L. camara* (ap/CH_3OH) extracts against *A. gossypii* after 3h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	15	50.000	50	5.00	4.821	5.020	18.81	4.842
0.196	1.292	30	5	16.667	17	4.05	4.301	4.074	15.96	4.314
0.147	1.167	30	2	6.667	7	3.52	3.644	3.529	9.06	3.646
0.098	0.991	30	1	3.333	3	3.12	2.718	3.379	2.28	2.704

Regression equation: Y = -2.597 + 5.348X
Chi-squared is 2.679 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.421mg/cm^2
LD_{50} is 0.263mg/cm^2
95% confidence limits are 0.217 to 0.319mg/cm^2

Appendix Table XL: Dose mortality effect of *L. camara* (ap/CH_3OH) extracts against *A. gossypii* after 6h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	16	53.333	53	5.08	4.932	5.065	19.02	4.907
0.196	1.292	30	6	20.000	20	4.16	4.380	4.170	15.96	4.368
0.147	1.167	30	2	6.667	7	3.52	3.680	3.529	9.06	3.685
0.098	0.991	30	1	3.333	3	3.12	2.693	3.568	1.86	2.723

Regression equation: Y = -2.693 + 5.464X
Chi-squared is 2.649 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.408mg/cm^2
LD_{50} is 0.256mg/cm^2
95% confidence limits are 0.214 to 0.306mg/cm^2

Appendix Table XLI: Dose mortality effect of *L. camara* (ap/CH_3OH) extracts against *A. gossypii* after 9h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	17	56.667	57	5.18	4.988	5.165	19.02	5.001
0.196	1.292	30	9	30.000	30	4.48	4.643	4.470	18.03	4.637
0.147	1.167	30	5	16.667	17	4.05	4.207	4.048	15.09	4.175
0.098	0.991	30	3	10.000	10	3.72	3.592	3.750	8.07	3.525

Regression equation: Y = -0.137 + 3.694 X
Chi-squared is 1.665 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.391mg/cm^2
LD_{50} is 0.246mg/cm^2
95% confidence limits are 0.196 to 0.309mg/cm^2

Appendix Table XLII: Dose mortality effect of *L. camara* (ap/CH_3OH) extracts against *A. gossypii* after 12h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	21	70.000	70	5.52	5.379	5.500	18.48	5.362
0.196	1.292	30	12	40.000	40	4.75	4.963	4.740	19.02	4.947
0.147	1.167	30	9	30.000	30	4.48	4.436	4.480	16.74	4.422
0.098	0.991	30	3	10.000	10	3.72	3.692	3.730	9.06	3.682

Regression equation: Y = -0.484 + 4.203X
Chi-squared is 1.246 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.305mg/cm^2
LD_{50} is 0.202mg/cm^2
95% confidence limits are 0.174 to 0.234mg/cm^2

Appendix Table XLIII: Dose mortality effect of *L. camara* (ap/CH_3OH) extracts against *A. gossypii* after 15h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	23	76.667	77	5.74	5.534	5.696	17.43	5.502
0.196	1.292	30	14	46.667	47	4.92	5.142	4.915	19.02	5.113
0.147	1.167	30	10	33.333	33	4.56	4.646	4.551	18.03	4.621
0.098	0.991	30	5	16.667	17	4.05	3.947	4.062	12.15	3.927

Regression equation: Y = 0.024 + 3.938X
Chi-squared is 1.712 with 2 degrees of freedom
No significant heterogeneity
log LD_{50} is 1.264mg/cm^2
LD_{50} is 0.183mg/cm^2
95% confidence limits are 0.159 to 0.212mg/cm^2

Appendix Table XLIV: Dose mortality effect of *L. camara* (ap/CH_3OH) extracts against *A. gossypii* after 18h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	27	90.000	90	6.28	5.787	6.150	15.96	5.723
0.196	1.292	30	16	53.333	53	5.08	5.442	5.051	18.03	5.376
0.147	1.167	30	13	43.333	43	4.82	5.005	4.825	19.11	4.936
0.098	0.991	30	7	23.333	23	4.26	4.389	4.266	15.96	4.317
0.049	0.690	30	2	6.667	7	3.52	3.336	3.572	6.24	3.258

Regression equation: Y = 0.830 + 3.518X
Chi-squared is 5.707 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.186mg/cm^2
LD_{50} is 0.153mg/cm^2
95% confidence limits are 0.132 to 0.178mg/cm^2

Appendix Table XLV: Dose mortality effect of *L. camara* (ap/CH_3OH) extracts against *A. gossypii* after 21h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	29	96.667	97	6.88	5.944	6.516	14.13	5.940
0.196	1.292	30	18	60.000	60	5.25	5.589	5.220	17.43	5.583
0.147	1.167	30	15	50.000	50	5.00	5.138	4.990	19.02	5.131
0.098	0.991	30	8	26.667	27	4.39	4.504	4.376	17.43	4.493
0.049	0.690	30	3	10.000	10	3.72	3.419	3.810	7.14	3.403

Regression equation: Y = 0.903 + 3.621X
Chi-squared is 8.777 with 3 degrees of freedom
Variance has been adjusted for heterogeneity
Log LD_{50} is 1.131mg/cm^2
LD_{50} is 0.135mg/cm^2
95% confidence limits are 0.106 to 0.173mg/cm^2

Appendix Table XLVI: Dose mortality effect of *L. camara* (ap/CH_3OH) extracts against *A. gossypii* after 24h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	21	70.000	70	5.52	5.516	5.500	17.43	5.497
0.147	1.167	30	17	56.667	57	5.18	5.173	5.165	19.02	5.157
0.098	0.991	30	11	36.667	37	4.67	4.689	4.659	18.03	4.678
0.049	0.690	30	4	13.333	13	3.87	3.862	3.873	11.10	3.860

Regression equation: Y = 1.984 + 2.719X
Chi-squared is 0.099 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.110mg/cm^2
LD_{50} is 0.129mg/cm^2
95% confidence limits are 0.104 to 0.159mg/cm^2

Appendix Table XLVII: Dose mortality effect of *L. camara* (r/PetE) extracts against *A. gossypii* after 3h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	14	46.667	47	4.92	4.891	4.942	18.81	4.889
0.147	1.167	30	9	30.000	30	4.48	4.617	4.470	18.03	4.619
0.098	0.991	30	8	26.667	27	4.39	4.231	4.388	15.09	4.239
0.049	0.690	30	2	6.667	7	3.52	3.571	3.519	8.07	3.589

Regression equation: Y = 2.100 + 2.158X
Chi-squared is 0.829 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.344mg/cm^2
LD_{50} is 0.221mg/cm^2
95% confidence limits are 0.143 to 0.340mg/cm^2

Appendix Table XLVIII: Dose mortality effect of *L. camara* (r/PetE) extracts against *A. gossypii* after 6h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	17	56.667	57	5.18	5.162	5.165	19.02	5.159
0.147	1.167	30	13	43.333	43	4.82	4.865	4.838	18.81	4.864
0.098	0.991	30	9	30.000	30	4.48	4.445	4.480	16.74	4.448
0.049	0.690	30	3	10.000	10	3.72	3.728	3.720	10.08	3.737

Regression equation: Y = 2.106 + 2.362X
Chi-squared is 0.033 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.225mg/cm^2
LD_{50} is 0.168mg/cm^2
95% confidence limits are 0.126 to 0.224mg/cm^2

Appendix Table XLIX: Dose mortality effect of *L. camara* (r/PetE) extracts against *A. gossypii* after 9h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	19	63.333	63	5.33	5.180	5.315	19.02	5.180
0.147	1.167	30	15	50.000	50	5.00	4.981	4.990	19.02	4.976
0.098	0.991	30	9	30.000	30	4.48	4.701	4.480	18.48	4.689
0.049	0.690	30	6	20.000	20	4.16	4.222	4.150	15.09	4.198
0.025	0.398	30	4	13.333	13	3.87	3.757	3.894	10.08	3.721

Regression equation: Y = 3.071 + 1.632X
Chi-squared is 1.493 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.182mg/cm^2
LD_{50} is 0.152mg/cm^2
95% confidence limits are 0.105 to 0.221mg/cm^2

Appendix Table L: Dose mortality effect of *L. camara* (r/PetE) extracts against *A. gossypii* after 12h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	21	70.000	70	5.52	5.394	5.500	18.48	5.388
0.147	1.167	30	17	56.667	57	5.18	5.169	5.165	19.02	5.161
0.098	0.991	30	11	36.667	37	4.67	4.851	4.682	18.81	4.841
0.049	0.690	30	7	23.333	23	4.26	4.307	4.266	15.96	4.295
0.025	0.398	30	4	13.333	13	3.87	3.779	3.894	10.08	3.764

Regression equation: Y = 3.042 + 1.815X
Chi-squared is 0.894 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.079mg/cm^2
LD_{50} is 0.120mg/cm^2
95% confidence limits are 0.089 to 0.161mg/cm^2

Appendix Table LI: Dose mortality effect of *L. camara* (r/PetE) extracts against *A. gossypii* after 15h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	24	80.000	80	5.85	5.641	5.820	16.74	5.614
0.147	1.167	30	19	63.333	63	5.33	5.386	5.318	18.48	5.361
0.098	0.991	30	12	40.000	40	4.75	5.026	4.750	19.11	5.004
0.049	0.690	30	9	30.000	30	4.48	4.412	4.480	16.74	4.394
0.025	0.398	30	4	13.333	13	3.87	3.815	3.873	11.10	3.802

Regression equation: Y = 2.996 + 2.026X
Chi-squared is 2.157 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.989mg/cm^2
LD_{50} is 0.098mg/cm^2
95% confidence limits are 0.076 to 0.125mg/cm^2

Appendix Table LII: Dose mortality effect of *L. camara* (r/PetE) extracts against *A. gossypii* after 18h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	27	90.000	90	6.28	5.977	6.250	14.13	5.938
0.147	1.167	30	22	73.333	73	5.61	5.694	5.610	16.74	5.660
0.098	0.991	30	14	46.667	47	4.92	5.295	4.942	18.81	5.267
0.049	0.690	30	11	36.667	37	4.67	4.613	4.659	18.03	4.597
0.025	0.398	30	5	16.667	17	4.05	3.950	4.062	12.15	3.945

Regression equation: Y = 3.059 + 2.228X
Chi-squared is 3.642 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.871mg/cm^2
LD_{50} is 0.074mg/cm^2
95% confidence limits are 0.059 to 0.094mg/cm^2

Appendix Table LIII: Dose mortality effect of *L. camara* (r/PetE) extracts against *A. gossypii* after 21h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	29	96.667	97	6.88	6.097	6.497	13.17	6.089
0.147	1.167	30	24	80.000	80	5.85	5.814	5.800	15.09	5.808
0.098	0.991	30	15	50.000	50	5.00	5.416	4.970	18.03	5.413
0.049	0.690	30	12	40.000	40	4.75	4.735	4.740	18.48	4.737
0.025	0.398	30	7	23.333	23	4.26	4.074	4.283	13.17	4.081

Regression equation: Y = 3.187 + 2.245X
Chi-squared is 6.271 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.807mg/cm^2
LD_{50} is 0.064mg/cm^2
95% confidence limits are 0.051 to 0.081mg/cm^2

Appendix Table LIV: Dose mortality effect of *L. camara* (r/PetE) extracts against *A. gossypii* after 24h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.147	1.167	30	25	83.333	83	5.95	5.787	5.926	15.96	5.755
0.098	0.991	30	18	60.000	60	5.25	5.481	5.240	18.03	5.458
0.049	0.690	30	15	50.000	50	5.00	4.959	4.990	19.02	4.949
0.025	0.398	30	9	30.000	30	4.48	4.452	4.480	16.74	4.455

Regression equation: Y = 3.783 + 1.689X
Chi-squared is 1.362 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.720mg/cm^2
LD_{50} is 0.053mg/cm^2
95% confidence limits are 0.038 to 0.073mg/cm^2

Appendix Table LV: Dose mortality effect of *L. camara* (r/$CHCl_3$) extracts against *A. gossypii* after 3h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	18	60.000	60	5.25	5.222	5.280	18.81	5.252
0.147	1.167	30	13	43.333	43	4.82	4.868	4.838	18.81	4.886
0.098	0.991	30	8	26.667	27	4.39	4.370	4.394	15.96	4.370

Regression equation: Y = 1.468 + 2.928X
Chi-squared is 0.067 with 1 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.206mg/cm^2
LD_{50} is 0.161mg/cm^2
95% confidence limits are 0.128 to 0.202mg/cm^2

Appendix Table LVI: Dose mortality effect of *L. camara* (r/$CHCl_3$) extracts against *A. gossypii* after 6h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	20	66.667	67	5.44	5.398	5.422	18.48	5.394
0.147	1.167	30	13	43.333	43	4.82	4.969	4.815	19.02	4.967
0.098	0.991	30	10	33.333	33	4.56	4.366	4.586	15.96	4.365
0.049	0.690	30	1	3.333	3	3.12	3.334	3.148	6.24	3.335

Regression equation: Y = 0.975 + 3.419X
Chi-squared is 1.454 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.177mg/cm^2
LD_{50} is 0.150mg/cm^2
95% confidence limits are 0.125 to 0.180mg/cm^2

Appendix Table LVII: Dose mortality effect of *L. camara* (r/$CHCl_3$) extracts against *A. gossypii* after 9h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	21	70.000	70	5.52	5.344	5.500	18.48	5.342
0.147	1.167	30	13	43.333	43	4.82	4.995	4.815	19.02	4.995
0.098	0.991	30	10	33.333	33	4.56	4.505	4.544	17.43	4.505
0.049	0.690	30	2	6.667	7	3.52	3.666	3.529	9.06	3.669
0.025	0.398	30	1	3.333	3	3.12	2.851	3.256	2.76	2.856

Regression equation: Y = 1.750 + 2.780X
Chi-squared is 1.719 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.169mg/cm^2
LD_{50} is 0.148mg/cm^2
95% confidence limits are 0.119 to 0.184mg/cm^2

Appendix Table LVIII: Dose mortality effect of *L. camara* (r/$CHCl_3$) extracts against *A. gossypii* after 12h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	24	80.000	80	5.85	5.485	5.780	18.03	5.483
0.147	1.167	30	14	46.667	47	4.92	5.162	4.915	19.02	5.161
0.098	0.991	30	11	36.667	37	4.67	4.706	4.662	18.48	4.708
0.049	0.690	30	3	10.000	10	3.72	3.928	3.740	12.15	3.933
0.025	0.398	30	2	6.667	7	3.52	3.172	3.724	4.62	3.180

Regression equation: Y = 2.155 + 2.575X
Chi-squared is 4.600 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.105mg/cm^2
LD_{50} is 0.127mg/cm^2
95% confidence limits are 0.103 to 0.158mg/cm^2

Appendix Table LIX: Dose mortality effect of *L. camara* (r/$CHCl_3$) extracts against *A. gossypii* after 15h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	25	83.333	83	5.95	5.564	5.864	17.43	5.552
0.147	1.167	30	14	46.667	47	4.92	5.251	4.942	18.81	5.230
0.098	0.991	30	12	40.000	40	4.75	4.811	4.760	18.81	4.777
0.049	0.690	30	4	13.333	13	3.87	4.058	3.873	13.17	4.002
0.025	0.398	30	2	6.667	7	3.52	3.327	3.572	6.24	3.250

Regression equation: Y = 2.225 + 2.574X
Chi-squared is 4.133 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.078mg/cm^2
LD_{50} is 0.120mg/cm^2
95% confidence limits are 0.097 to 0.148mg/cm^2

Appendix Table LX: Dose mortality effect of *L. camara* (r/$CHCl_3$) extracts against *A. gossypii* after 18h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	25	83.333	83	5.95	5.682	5.910	16.74	5.660
0.147	1.167	30	17	56.667	57	5.18	5.406	5.159	18.03	5.383
0.098	0.991	30	15	50.000	50	5.00	5.017	5.000	19.11	4.993
0.049	0.690	30	6	20.000	20	4.16	4.351	4.170	15.96	4.325
0.025	0.398	30	4	13.333	13	3.87	3.704	3.894	10.08	3.677

Regression equation: Y = 2.795 + 2.217X
Chi-squared is 2.810 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.995mg/cm^2
LD_{50} is 0.099mg/cm^2
95% confidence limits are 0.079 to 0.124mg/cm^2

Appendix Table LXI: Dose mortality effect of *L. camara* (r/$CHCl_3$) extracts against *A. gossypii* after 21h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	29	96.667	97	6.88	5.936	6.516	14.13	5.938
0.147	1.167	30	18	60.000	60	5.25	5.604	5.220	16.74	5.604
0.098	0.991	30	15	50.000	50	5.00	5.135	4.990	19.02	5.133
0.049	0.690	30	6	20.000	20	4.16	4.335	4.170	15.96	4.328
0.025	0.398	30	4	13.333	13	3.87	3.557	3.981	8.07	3.546

Regression equation: Y = 2.481 + 2.675X
Chi-squared is 9.499 with 3 degrees of freedom
Variance has been adjusted for heterogeneity
Log LD_{50} is 0.941mg/cm^2
LD_{50} is 0.087mg/cm^2
95% confidence limits are 0.062 to 0.124mg/cm^2

Appendix Table LXII: Dose mortality effect of *L. camara* (r/$CHCl_3$) extracts against *A. gossypii* after 24h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.147	1.167	30	21	70.000	70	5.52	5.397	5.500	18.48	5.396
0.098	0.991	30	15	50.000	50	5.00	5.055	5.000	19.11	5.050
0.049	0.690	30	7	23.333	23	4.26	4.472	4.270	16.74	4.458
0.025	0.398	30	5	16.667	17	4.05	3.906	4.062	12.15	3.884

Regression equation: Y = 3.101 + 1.966X
Chi-squared is 1.226 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.966mg/cm^2
LD_{50} is 0.092mg/cm^2
95% confidence limits are 0.068 to 0.125mg/cm^2

Appendix Table LXIII: Dose mortality effect of *L. camara* (r/CH_3OH) extracts against *A. gossypii* after 3h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	0.391	30	8	26.667	27	4.39	4.340	4.394	15.96	4.356
0.196	0.292	30	4	13.333	13	3.87	3.960	3.878	12.15	3.967
0.147	0.167	30	2	6.667	7	3.52	3.480	3.540	7.14	3.473

Regression equation: Y = 2.813 + 3.948X
Chi-squared is 0.150 with 1 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.554mg/cm^2
LD_{50} is 0.358mg/cm^2
95% confidence limits are 0.200 to 0.641mg/cm^2

Appendix Table LXIV: Dose mortality effect of *L. camara* (r/CH_3OH) extracts against *A. gossypii* after 6h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	0.391	30	11	36.667	37	4.67	4.636	4.659	18.03	4.630
0.196	0.292	30	6	20.000	20	4.16	4.220	4.150	15.09	4.212
0.147	0.167	30	3	10.000	10	3.72	3.693	3.730	9.06	3.684

Regression equation: Y = 2.976 + 4.229X
Chi-squared is 0.093 with 1 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.478mg/cm^2
LD_{50} is 0.301mg/cm^2
95% confidence limits are 0.208 to 0.435mg/cm^2

Appendix Table LXV: Dose mortality effect of *L. camara* (r/CH_3OH) extracts against *A. gossypii* after 9h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	16	53.333	53	5.08	4.776	5.078	18.48	4.774
0.196	1.292	30	8	26.667	27	4.39	4.552	4.376	17.43	4.551
0.147	1.167	30	5	16.667	17	4.05	4.269	4.048	15.09	4.269
0.098	0.991	30	3	10.000	10	3.72	3.870	3.720	11.10	3.872
0.049	0.690	30	2	6.667	7	3.52	3.188	3.724	4.62	3.192

Regression equation: Y = 1.635 + 2.257X
Chi-squared is 4.544 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.491mg/cm^2
LD_{50} is 0.310mg/cm^2
95% confidence limits are 0.199 to 0.482mg/cm^2

Appendix Table LXVI: Dose mortality effect of *L. camara* (r/CH_3OH) extracts against *A. gossypii* after 12h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	21	70.000	70	5.52	5.084	5.500	19.11	5.087
0.196	1.292	30	9	30.000	30	4.48	4.824	4.500	18.81	4.827
0.147	1.167	30	7	23.333	23	4.26	4.495	4.270	16.74	4.499
0.098	0.991	30	5	16.667	17	4.05	4.030	4.037	13.17	4.036
0.049	0.690	30	2	6.667	7	3.52	3.237	3.629	5.40	3.244

Regression equation: Y = 1.428 + 2.630X
Chi-squared is 6.954 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.358mg/cm^2
LD_{50} is 0.228mg/cm^2
95% confidence limits are 0.175 to 0.296mg/cm^2

Appendix Table LXVII: Dose mortality effect of *L. camara* (r/CH_3OH) extracts against *A. gossypii* after 15h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	22	73.333	73	5.61	5.244	5.618	18.81	5.241
0.196	1.292	30	12	40.000	40	4.75	4.991	4.740	19.02	4.991
0.147	1.167	30	9	30.000	30	4.48	4.671	4.470	18.03	4.673
0.098	0.991	30	6	20.000	20	4.16	4.220	4.150	15.09	4.226
0.049	0.690	30	3	10.000	10	3.72	3.449	3.810	7.14	3.461

Regression equation: Y = 1.707 + 2.541X
Chi-squared is 5.564 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.296mg/cm^2
LD_{50} is 0.198mg/cm^2
95% confidence limits are 0.157 to 0.250mg/cm^2

Appendix Table LXVIII: Dose mortality effect of *L. camara* (r/CH_3OH) extracts against *A. gossypii* after 18h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	25	83.333	83	5.95	5.478	5.861	18.03	5.452
0.196	1.292	30	15	50.000	50	5.00	5.247	5.020	18.81	5.216
0.147	1.167	30	11	36.667	37	4.67	4.955	4.665	19.02	4.919
0.098	0.991	30	8	26.667	27	4.39	4.542	4.376	17.43	4.499
0.049	0.690	30	5	16.667	17	4.05	3.837	4.077	11.10	3.781

Regression equation: Y = 2.136 + 2.384X
Chi-squared is 6.204 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.201mg/cm^2
LD_{50} is 0.159mg/cm^2
95% confidence limits are 0.129 to 0.197mg/cm^2

Appendix Table LXIX: Dose mortality effect of *L. camara* (r/CH_3OH) extracts against *A. gossypii* after 21h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	28	93.333	93	6.48	5.698	6.210	16.74	5.716
0.196	1.292	30	18	60.000	60	5.25	5.431	5.240	18.03	5.445
0.147	1.167	30	12	40.000	40	4.75	5.092	4.750	19.11	5.102
0.098	0.991	30	10	33.333	33	4.56	4.614	4.551	18.03	4.619
0.049	0.690	30	5	16.667	17	4.05	3.798	4.126	10.08	3.792

Regression equation: Y = 1.898 + 2.744X
Chi-squared is 8.418 with 3 degrees of freedom
Variance has been adjusted for heterogeneity
Log LD_{50} is 1.130mg/cm^2
LD_{50} is 0.135mg/cm^2
95% confidence limits are 0.100 to 0.183mg/cm^2

Appendix Table LXX: Dose mortality effect of *L. camara* (r/CH_3OH) extracts against *A. gossypii* after 24h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	21	70.000	70	5.52	5.324	5.500	18.48	5.313
0.147	1.167	30	15	50.000	50	5.00	5.102	4.990	19.02	5.088
0.098	0.991	30	10	33.333	33	4.56	4.789	4.558	18.48	4.772
0.049	0.690	30	8	26.667	27	4.39	4.254	4.388	15.09	4.231

Regression equation: Y = 2.991 + 1.796X
Chi-squared is 2.049 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.118mg/cm^2
LD_{50} is 0.131mg/cm^2
95% confidence limits are 0.096 to 0.179mg/cm^2

Appendix Table LXXI: Dose mortality effect of *M. piperita* (wp/PetE) extracts against *A. gossypii* after 3h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	12	40.000	40	4.75	4.801	4.760	18.81	4.792
0.147	1.167	30	9	30.000	30	4.48	4.460	4.480	16.74	4.463
0.098	0.991	30	5	16.667	17	4.05	3.980	4.062	12.15	4.001
0.049	0.690	30	1	3.333	3	3.12	3.159	3.116	4.62	3.209

Regression equation: Y = 1.395 + 2.628X
Chi-squared is 0.110 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.372mg/cm^2
LD_{50} is 0.235mg/cm^2
95% confidence limits are 0.157 to 0.352mg/cm^2

Appendix Table LXXII: Dose mortality effect of *M. piperita* (wp/PetE) extracts against *A. gossypii* after 6h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	16	53.333	53	5.08	5.029	5.075	19.11	5.041
0.147	1.167	30	12	40.000	40	4.75	4.699	4.740	18.03	4.698
0.098	0.991	30	5	16.667	17	4.05	4.234	4.048	15.09	4.214
0.049	0.690	30	2	6.667	7	3.52	3.439	3.540	7.14	3.387

Regression equation: Y = 1.490 + 2.748X
Chi-squared is 0.637 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.277mg/cm^2
LD_{50} is 0.189mg/cm^2
95% confidence limits are 0.142 to 0.252mg/cm^2

Appendix Table LXXIII: Dose mortality effect of *M. piperita* (wp/PetE) extracts against *A. gossypii* after 9h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	18	60.000	60	5.25	5.226	5.280	18.81	5.247
0.147	1.167	30	14	46.667	47	4.92	4.907	4.915	19.02	4.919
0.098	0.991	30	8	26.667	27	4.39	4.458	4.390	16.74	4.457
0.049	0.690	30	3	10.000	10	3.72	3.689	3.730	9.06	3.667

Regression equation: Y = 1.855 + 2.625X
Chi-squared is 0.132 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.198mg/cm^2
LD_{50} is 0.158mg/cm^2
95% confidence limits are 0.123 to 0.202mg/cm^2

Appendix Table LXXIV: Dose mortality effect of *M. piperita* (wp/PetE) extracts against *A. gossypii* after 12h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	21	70.000	70	5.52	5.415	5.510	18.03	5.391
0.147	1.167	30	15	50.000	50	5.00	5.101	4.990	19.02	5.084
0.098	0.991	30	10	33.333	33	4.56	4.659	4.551	18.03	4.652
0.049	0.690	30	5	16.667	17	4.05	3.904	4.062	12.15	3.912
0.025	0.398	30	1	3.333	3	3.12	3.171	3.116	4.62	3.195

Regression equation: Y = 2.217 + 2.456X
Chi-squared is 0.907 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.133mg/cm^2
LD_{50} is 0.136mg/cm^2
95% confidence limits are 0.107 to 0.172mg/cm^2

Appendix Table LXXV: Dose mortality effect of *M. piperita* (wp/PetE) extracts against *A. gossypii* after 15h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	22	73.333	73	5.61	5.572	5.584	17.43	5.576
0.147	1.167	30	19	63.333	63	5.33	5.280	5.358	18.81	5.283
0.098	0.991	30	12	40.000	40	4.75	4.869	4.760	18.81	4.870
0.049	0.690	30	6	20.000	20	4.16	4.166	4.170	14.13	4.164
0.025	0.398	30	2	6.667	7	3.52	3.483	3.540	7.14	3.478

Regression equation: Y = 2.545 + 2.346X
Chi-squared is 0.362 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.047mg/cm^2
LD_{50} is 0.111mg/cm^2
95% confidence limits are 0.089 to 0.139mg/cm^2

Appendix Table LXXVI: Dose mortality effect of *M. piperita* (wp/PetE) extracts against *A. gossypii* after 18h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	25	83.333	83	5.95	5.772	5.926	15.96	5.758
0.147	1.167	30	21	70.000	70	5.52	5.483	5.510	18.03	5.466
0.098	0.991	30	13	43.333	43	4.82	5.077	4.825	19.11	5.055
0.049	0.690	30	7	23.333	23	4.26	4.382	4.266	15.96	4.351
0.025	0.398	30	4	13.333	13	3.87	3.707	3.894	10.08	3.668

Regression equation: Y = 2.738 + 2.338X
Chi-squared is 2.122 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.968mg/cm^2
LD_{50} is 0.093mg/cm^2
95% confidence limits are 0.075 to 0.115mg/cm^2

Appendix Table LXXVII: Dose mortality effect of *M. piperita* (wp/PetE) extracts against *A. gossypii* after 21h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	27	90.000	90	6.28	6.012	6.210	13.17	5.966
0.147	1.167	30	22	73.333	73	5.61	5.684	5.610	16.74	5.641
0.098	0.991	30	15	50.000	50	5.00	5.223	5.020	18.81	5.184
0.049	0.690	30	7	23.333	23	4.26	4.434	4.270	16.74	4.402
0.025	0.398	30	4	13.333	13	3.87	3.668	3.931	9.06	3.644

Regression equation: Y = 2.610 + 2.596X
Chi-squared is 2.351 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.920mg/cm^2
LD_{50} is 0.083mg/cm^2
95% confidence limits are 0.068 to 0.102mg/cm^2

Appendix Table LXXVIII: Dose mortality effect of *M. piperita* (wp/PetE) extracts against *A. gossypii* after 24h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.147	1.167	30	24	80.000	80	5.85	5.727	5.830	15.96	5.706
0.098	0.991	30	18	60.000	60	5.25	5.345	5.240	18.48	5.323
0.049	0.690	30	10	33.333	33	4.56	4.691	4.551	18.03	4.669
0.025	0.398	30	6	20.000	20	4.16	4.057	4.160	13.17	4.034

Regression equation: Y = 3.169 + 2.173X
Chi-squared is 0.835 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.843mg/cm^2
LD_{50} is 0.070mg/cm^2
95% confidence limits are 0.054 to 0.090mg/cm^2

Appendix Table LXXIX: Dose mortality effect of *M. piperita* (wp/$CHCl_3$) extracts against *A. gossypii* after 3h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	0.391	30	14	46.667	47	4.92	4.970	4.915	19.02	4.958
0.196	0.292	30	11	36.667	37	4.67	4.581	4.656	17.43	4.573
0.147	0.167	30	5	16.667	17	4.05	4.089	4.037	13.17	4.086

Regression equation: Y = 3.433 + 3.900X
Chi-squared is 0.186 with 1 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.402mg/cm^2
LD_{50} is 0.252mg/cm^2
95% confidence limits are 0.196 to 0.325mg/cm^2

Appendix Table LXXX: Dose mortality effect of *M. piperita* (wp/$CHCl_3$) extracts against *A. gossypii* after 6h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	24	80.000	80	5.85	5.646	5.820	16.74	5.641
0.196	1.292	30	12	40.000	40	4.75	5.003	4.750	19.11	4.975
0.147	1.167	30	6	20.000	20	4.16	4.189	4.170	14.13	4.131
0.098	0.991	30	1	3.333	3	3.12	3.041	3.135	3.93	2.943

Regression equation: Y = -3.749 + 6.751X
Chi-squared is 1.669 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.296mg/cm^2
LD_{50} is 0.198mg/cm^2
95% confidence limits are 0.180 to 0.217mg/cm^2

Appendix Table LXXXI: Dose mortality effect of *M. piperita* (wp/$CHCl_3$) extracts against *A. gossypii* after 9h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	24	80.000	80	5.85	5.340	5.760	18.48	5.336
0.196	1.292	30	13	43.333	43	4.82	5.048	4.825	19.11	5.047
0.147	1.167	30	9	30.000	30	4.48	4.678	4.470	18.03	4.681
0.098	0.991	30	4	13.333	13	3.87	4.157	3.904	14.13	4.166
0.049	0.690	30	3	10.000	10	3.72	3.266	4.010	5.40	3.284

Regression equation: Y = 1.262 + 2.929X
Chi-squared is 8.881 with 3 degrees of freedom
Variance has been adjusted for heterogeneity
Log LD_{50} is 1.276mg/cm^2
LD_{50} is 0.189mg/cm^2
95% confidence limits are 0.135 to 0.264mg/cm^2

Appendix Table LXXXII: Dose mortality effect of *M. piperita* (wp/$CHCl_3$) extracts against *A. gossypii* after 12h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	26	86.667	87	6.13	5.562	5.976	17.43	5.487
0.196	1.292	30	15	50.000	50	5.00	5.314	4.980	18.48	5.244
0.147	1.167	30	11	36.667	37	4.67	5.001	4.675	19.11	4.936
0.098	0.991	30	8	26.667	27	4.39	4.559	4.376	17.43	4.502
0.049	0.690	30	5	16.667	17	4.05	3.804	4.077	11.10	3.759

Regression equation: Y = 2.058 + 2.466X
Chi-squared is 8.146 with 3 degrees of freedom
Variance has been adjusted for heterogeneity
Log LD_{50} is 1.193mg/cm^2
LD_{50} is 0.156mg/cm^2
95% confidence limits are 0.111 to 0.219mg/cm^2

Appendix Table LXXXIII: Dose mortality effect of *M. piperita* (wp/$CHCl_3$) extracts against *A. gossypii* after 15h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	27	90.000	90	6.28	5.784	6.150	15.96	5.695
0.196	1.292	30	18	60.000	60	5.25	5.524	5.220	17.43	5.447
0.147	1.167	30	14	46.667	47	4.92	5.195	4.915	19.02	5.132
0.098	0.991	30	10	33.333	33	4.56	4.730	4.558	18.48	4.689
0.049	0.690	30	6	20.000	20	4.16	3.937	4.200	12.15	3.932

Regression equation: Y = 2.194 + 2.517X
Chi-squared is 6.290 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.115mg/cm^2
LD_{50} is 0.130mg/cm^2
95% confidence limits are 0.107 to 0.159mg/cm^2

Appendix Table LXXXIV: Dose mortality effect of *M. piperita* (wp/$CHCl_3$) extracts against *A. gossypii* after 18h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	28	93.333	93	6.48	5.902	6.364	14.13	5.927
0.196	1.292	30	21	70.000	70	5.52	5.651	5.520	16.74	5.673
0.147	1.167	30	18	60.000	60	5.25	5.333	5.240	18.48	5.351
0.098	0.991	30	10	33.333	33	4.56	4.885	4.578	18.81	4.897
0.049	0.690	30	8	26.667	27	4.39	4.119	4.436	14.13	4.122

Regression equation: Y = 2.344 + 2.576X
Chi-squared is 6.629 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.031mg/cm^2
LD_{50} is 0.107mg/cm^2
95% confidence limits are 0.088 to 0.132mg/cm^2

Appendix Table LXXXV: Dose mortality effect of *M. piperita* (wp/$CHCl_3$) extracts against *A. gossypii* after21h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	25	83.333	83	5.95	5.729	5.926	15.96	5.699
0.147	1.167	30	19	63.333	63	5.33	5.416	5.321	18.03	5.387
0.098	0.991	30	11	36.667	37	4.67	4.975	4.665	19.02	4.947
0.049	0.690	30	8	26.667	27	4.39	4.220	4.388	15.09	4.194

Regression equation: Y = 2.469 + 2.500X
Chi-squared is 2.975 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.013mg/cm^2
LD_{50} is 0.103mg/cm^2
95% confidence limits are 0.083 to 0.128mg/cm^2

Appendix Table LXXXVI: Dose mortality effect of *M. piperita* (wp/$CHCl_3$) extracts against *A. gossypii* after 24h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	25	83.333	83	5.95	5.838	5.902	15.09	5.794
0.147	1.167	30	21	70.000	70	5.52	5.513	5.500	17.43	5.477
0.098	0.991	30	13	43.333	43	4.82	5.056	4.825	19.11	5.029
0.049	0.690	30	8	26.667	27	4.39	4.274	4.388	15.09	4.264

Regression equation: Y = 2.511 + 2.541X
Chi-squared is 1.213 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.980mg/cm^2
LD_{50} is 0.095mg/cm^2
95% confidence limits are 0.076 to 0.120mg/cm^2

Appendix Table LXXXVII: Dose mortality effect of *M. piperita* (wp/CH_3OH) extracts against *A. gossypii* after 3h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	0.391	30	7	23.333	23	4.26	4.181	4.284	14.13	4.217
0.196	0.292	30	3	10.000	10	3.72	3.862	3.720	11.10	3.872
0.147	0.167	30	2	6.667	7	3.52	3.457	3.540	7.14	3.436

Regression equation: Y = 2.851 + 3.495X
Chi-squared is 0.398 with 1 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.615mg/cm^2
LD_{50} is 0.412mg/cm^2
95% confidence limits are 0.178 to 0.953mg/cm^2

Appendix Table LXXXVIII: Dose mortality effect of *M. piperita* (wp/CH_3OH) extracts against *A. gossypii* after 6h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	0.391	30	9	30.000	30	4.48	4.411	4.480	16.74	4.431
0.196	0.292	30	4	13.333	13	3.87	3.994	3.878	12.15	3.998
0.147	0.167	30	2	6.667	7	3.52	3.465	3.540	7.14	3.450

Regression equation: Y = 2.715 + 4.389X
Chi-squared is 0.273 with 1 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.521mg/cm^2
LD_{50} is 0.332mg/cm^2
95% confidence limits are 0.211 to 0.521mg/cm^2

Appendix Table LXXXIX: Dose mortality effect of *M. piperita* (wp/CH_3OH) extracts against *A. gossypii* after 9h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	12	40.000	40	4.75	4.616	4.740	18.03	4.616
0.196	1.292	30	8	26.667	27	4.39	4.357	4.394	15.96	4.359
0.147	1.167	30	3	10.000	10	3.72	4.030	3.750	13.17	4.032
0.098	0.991	30	2	6.667	7	3.52	3.568	3.519	8.07	3.572
0.049	0.690	30	1	3.333	3	3.12	2.779	3.379	2.28	2.786

Regression equation: Y = 0.983 + 2.612X
Chi-squared is 2.170 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.539mg/cm^2
LD_{50} is 0.345mg/cm^2
95% confidence limits are 0.216 to 0.551mg/cm^2

Appendix Table XC: Dose mortality effect of *M. piperita* (wp/CH_3OH) extracts against *A. gossypii* after12h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	12	40.000	40	4.75	4.679	4.740	18.03	4.698
0.196	1.292	30	9	30.000	30	4.48	4.452	4.480	16.74	4.460
0.147	1.167	30	5	16.667	17	4.05	4.164	4.056	14.13	4.159
0.098	0.991	30	3	10.000	10	3.72	3.759	3.720	10.08	3.734
0.049	0.690	30	1	3.333	3	3.12	3.065	3.135	3.93	3.008

Regression equation: Y = 1.344 + 2.411X
Chi-squared is 0.253 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.516mg/cm^2
LD_{50} is 0.328mg/cm^2
95% confidence limits are 0.209 to 0.515mg/cm^2

Appendix Table XCI: Dose mortality effect of *M. piperita* (wp/CH_3OH) extracts against *A. gossypii* after 15h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	14	46.667	47	4.92	4.953	4.915	19.02	4.953
0.196	1.292	30	12	40.000	40	4.75	4.723	4.740	18.48	4.721
0.147	1.167	30	8	26.667	27	4.39	4.432	4.390	16.74	4.427
0.098	0.991	30	6	20.000	20	4.16	4.021	4.160	13.17	4.012
0.049	0.690	30	1	3.333	3	3.12	3.318	3.148	6.24	3.303

Regression equation: Y = 1.678 + 2.355X
Chi-squared is 0.496 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} IS 1.411mg/cm^2
LD_{50} is 0.258mg/cm^2
95% confidence limits are 0.184 to 0.360mg/cm^2

Appendix Table XCII: Dose mortality effect of *M. piperita* (wp/CH_3OH) extracts against *A. gossypii* after 18h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	19	63.333	63	5.33	5.163	5.315	19.02	5.166
0.196	1.292	30	13	43.333	43	4.82	4.947	4.815	19.02	4.943
0.147	1.167	30	11	36.667	37	4.67	4.674	4.659	18.03	4.661
0.098	0.991	30	6	20.000	20	4.16	4.288	4.150	15.09	4.263
0.049	0.690	30	3	10.000	10	3.72	3.628	3.730	9.06	3.584

Regression equation: Y = 2.025 + 2.258X
Chi-squared is 1.123 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.318mg/cm^2
LD_{50} is 0.208mg/cm^2
95% confidence limits are 0.158 to 0.273mg/cm^2

Appendix Table XCIII: Dose mortality effect of *M. piperita* (wp/CH_3OH) extracts against *A. gossypii* after 21h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	25	83.333	83	5.95	5.588	5.864	17.43	5.552
0.196	1.292	30	17	56.667	57	5.18	5.315	5.162	18.48	5.276
0.147	1.167	30	12	40.000	40	4.75	4.970	4.740	19.02	4.928
0.098	0.991	30	7	23.333	23	4.26	4.484	4.270	16.74	4.437
0.049	0.690	30	4	13.333	13	3.87	3.653	3.931	9.06	3.597

Regression equation: Y = 1.671 + 2.790X
Chi-squared is 4.089 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.193mg/cm^2
LD_{50} IS 0.156 mg/cm^2
95% confidence limits are 0.130 to 0.187mg/cm^2

Appendix Table XCIV: Dose mortality effect of *M. piperita* (wp/CH_3OH) extracts against *A. gossypii* after 24h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	29	96.667	97	6.88	5.876	6.378	15.09	5.849
0.196	1.292	30	19	63.333	63	5.33	5.579	5.304	17.43	5.559
0.147	1.167	30	14	46.667	47	4.92	5.202	4.942	18.81	5.192
0.098	0.991	30	10	33.333	33	4.56	4.672	4.551	18.03	4.674
0.049	0.690	30	5	16.667	17	4.05	3.766	4.126	10.08	3.789

Regression equation: Y = 1.760 + 2.940X
Chi-squared is 7.945 with 3 degrees of freedom
Variance has been adjusted for heterogeneity
Log LD_{50} is 1.102mg/cm^2
LD_{50} is 0.126mg/cm^2
95% confidence limits are 0.095 to 0.168mg/cm^2

Appendix Table XCV: Dose mortality effect of *Mi. pudica* (wp/PetE) extracts against *A. gossypii* after 3h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	0.391	30	11	36.667	37	4.67	4.582	4.656	17.43	4.582
0.196	0.292	30	6	20.000	20	4.16	4.317	4.170	15.96	4.315
0.147	0.167	30	5	16.667	17	4.05	3.981	4.062	12.15	3.978

Regression equation: Y = 3.526 + 2.701X
Chi-squared is 0.519 with 1 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.546mg/cm^2
LD_{50} is 0.351mg/cm^2
95% confidence limits are 0.168 to 0.735mg/cm^2

Appendix Table XCVI: Dose mortality effect of *Mi. pudica* (wp/PetE) extracts against A. gossypii after 6h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	0.391	30	11	36.667	37	4.67	4.619	4.659	18.03	4.620
0.196	0.292	30	7	23.333	23	4.26	4.351	4.266	15.96	4.344
0.147	0.167	30	5	16.667	17	4.05	4.010	4.037	13.17	3.995

Regression equation: Y = 3.527 + 2.796X
Chi-squared is 0.148 with 1 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.527mg/cm^2
LD_{50} is 0.336mg/cm^2
95% confidence limits are 0.176 to 0.644mg/cm^2

Appendix Table XCVII: Dose mortality effect of *Mi. pudica* (wp/PetE) extracts against *A. gossypii* after 9h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	15	50.000	50	5.00	4.884	5.020	18.81	4.886
0.196	1.292	30	10	33.333	33	4.56	4.581	4.544	17.43	4.584
0.147	1.167	30	5	16.667	17	4.05	4.197	4.056	14.13	4.202
0.098	0.991	30	2	6.667	7	3.52	3.657	3.529	9.06	3.663
0.049	0.690	30	1	3.333	3	3.12	2.733	3.379	2.28	2.743

Regression equation: Y = 0.632 + 3.058X
Chi-squared is 1.754 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.428mg/cm^2
LD_{50} is 0.268mg/cm^2
95% confidence limits are 0.200 to 0.359mg/cm^2

Appendix Table XCVIII: Dose mortality effect of *Mi. pudica* (wp/PetE) extracts against *A. gossypii* after 12h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	18	60.000	60	5.25	5.038	5.250	19.11	5.042
0.196	1.292	30	11	36.667	37	4.67	4.778	4.662	18.48	4.783
0.147	1.167	30	8	26.667	27	4.39	4.449	4.390	16.74	4.455
0.098	0.991	30	3	10.000	10	3.72	3.985	3.740	12.15	3.993
0.049	0.690	30	2	6.667	7	3.52	3.191	3.724	4.62	3.202

Regression equation: Y = 1.390 + 2.626X
Chi-squared is 3.200 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.375mg/cm^2
LD_{50} is 0.237mg/cm^2
95% confidence limits are 0.180 to 0.313mg/cm^2

Appendix Table XCIX: Dose mortality effect of *Mi. pudica* (wp/PetE) extracts against *A. gossypii* after 15h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	21	70.000	70	5.52	5.337	5.500	18.48	5.315
0.196	1.292	30	15	50.000	50	5.00	5.019	5.000	19.11	5.002
0.147	1.167	30	9	30.000	30	4.48	4.615	4.470	18.03	4.607
0.098	0.991	30	3	10.000	10	3.72	4.047	3.750	13.17	4.050
0.049	0.690	30	2	6.667	7	3.52	3.076	3.875	3.93	3.098

Regression equation: Y = 0.915 + 3.163X
Chi-squared is 4.535 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.291mg/cm^2
LD_{50} is 0.196mg/cm^2
95% confidence limits are 0.162 to 0.236mg/cm^2

Appendix Table C: Dose mortality effect of *Mi. pudica* (wp/PetE) extracts against *A. gossypii* after 18h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	25	83.333	83	5.95	5.668	5.910	16.74	5.673
0.196	1.292	30	18	60.000	60	5.25	5.325	5.240	18.48	5.329
0.147	1.167	30	12	40.000	40	4.75	4.891	4.760	18.81	4.894
0.098	0.991	30	6	20.000	20	4.16	4.278	4.150	15.09	4.280
0.049	0.690	30	2	6.667	7	3.52	3.232	3.629	5.40	3.231

Regression equation: Y = 0.825 + 3.486X
Chi-squared is 2.534 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.198mg/cm^2
LD_{50} is 0.158mg/cm^2
95% confidence limits are 0.136 to 0.183mg/cm^2

Appendix Table CI: Dose mortality effect of *Mi. pudica* (wp/PetE) extracts against *A. gossypii* after 21h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	29	96.667	97	6.88	6.035	6.497	13.17	6.006
0.196	1.292	30	20	66.667	67	5.44	5.612	5.430	16.74	5.590
0.147	1.167	30	13	43.333	43	4.82	5.076	4.825	19.11	5.064
0.098	0.991	30	6	20.000	20	4.16	4.320	4.170	15.96	4.322
0.049	0.690	30	2	6.667	7	3.52	3.029	3.875	3.93	3.054

Regression equation: Y = 0.147 + 4.212X
Chi-squared is 7.715 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.152mg/cm^2
LD_{50} is 0.142mg/cm^2
95% confidence limits are 0.125 to 0.162mg/cm^2

Appendix Table CII: Dose mortality effect of *Mi. pudica* (wp/PetE) extracts against *A. gossypii* after 24h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	22	73.333	73	5.61	5.489	5.591	18.03	5.476
0.147	1.167	30	16	53.333	53	5.08	5.135	5.065	19.02	5.117
0.098	0.991	30	9	30.000	30	4.48	4.635	4.470	18.03	4.612
0.049	0.690	30	4	13.333	13	3.87	3.781	3.894	10.08	3.747

Regression equation: Y = 1.764 + 2.873X
Chi-squared is 0.869 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.126mg/cm^2
LD_{50} is 0.134mg/cm^2
95% confidence limits are 0.110 to 0.163mg/cm^2

Appendix Table CIII: Dose mortality effect of *Mi. pudica* (wp/$CHCl_3$) extracts against *A. gossypii* after 3h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	8	26.667	27	4.39	4.441	4.390	16.74	4.429
0.147	1.167	30	6	20.000	20	4.16	4.073	4.160	13.17	4.075
0.098	0.991	30	2	6.667	7	3.52	3.556	3.519	8.07	3.576

Regression equation: Y = 0.769 + 2.832X
Chi-squared is 0.147 with 1 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.494mg/cm^2
LD_{50} is 0.312mg/cm^2
95% confidence limits are 0.148 to 0.655mg/cm^2

Appendix Table CIV: Dose mortality effect of *Mi. pudica* (wp/$CHCl_3$) extracts against *A. gossypii* after 6h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	12	40.000	40	4.75	4.564	4.740	17.43	4.589
0.147	1.167	30	7	23.333	23	4.26	4.363	4.266	15.96	4.373
0.098	0.991	30	4	13.333	13	3.87	4.079	3.873	13.17	4.068
0.049	0.690	30	3	10.000	10	3.72	3.594	3.750	8.07	3.547

Regression equation: Y = 2.353 + 1.730X
Chi-squared is 1.413 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.530mg/cm^2
LD_{50} is 0.339mg/cm^2
95% confidence limits are 0.146 to 0.784mg/cm^2

Appendix Table CV: Dose mortality effect of *Mi. pudica* (wp/$CHCl_3$) extracts against *A. gossypii* after 9h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	16	53.333	53	5.08	4.934	5.065	19.02	4.939
0.147	1.167	30	10	33.333	33	4.56	4.665	4.551	18.03	4.659
0.098	0.991	30	6	20.000	20	4.16	4.285	4.150	15.09	4.264
0.049	0.690	30	3	10.000	10	3.72	3.636	3.730	9.06	3.590

Regression equation: Y = 2.044 + 2.240X
Chi-squared is 0.888 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.320mg/cm^2
LD_{50} is 0.209mg/cm^2
95% confidence limits are 0.142 to 0.308mg/cm^2

Appendix Table CVI: Dose mortality effect of *Mi. pudica* (wp/$CHCl_3$) extracts against *A. gossypii* after 12h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	19	63.333	63	5.33	5.176	5.315	19.02	5.171
0.147	1.167	30	13	43.333	43	4.82	4.896	4.838	18.81	4.893
0.098	0.991	30	7	23.333	23	4.26	4.503	4.264	17.43	4.501
0.049	0.690	30	5	16.667	17	4.05	3.830	4.077	11.10	3.831
0.025	0.398	30	1	3.333	3	3.12	3.176	3.116	4.62	3.181

Regression equation: Y = 2.296 + 2.225X
Chi-squared is 2.121 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.215mg/cm^2
LD_{50} is 0.164mg/cm^2
95% confidence limits are 0.122 to 0.220mg/cm^2

Appendix Table CVII: Dose mortality effect of *Mi. pudica* (wp/$CHCl_3$) extracts against *A. gossypii* after 15h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	22	73.333	73	5.61	5.462	5.591	18.03	5.428
0.147	1.167	30	15	50.000	50	5.00	5.146	4.990	19.02	5.124
0.098	0.991	30	10	33.333	33	4.56	4.701	4.558	18.48	4.696
0.049	0.690	30	6	20.000	20	4.16	3.940	4.200	12.15	3.964
0.025	0.398	30	1	3.333	3	3.12	3.200	3.121	5.40	3.254

Regression equation: Y = 2.286 + 2.431X
Chi-squared is 1.944 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.116mg/cm^2
LD_{50} is 0.131mg/cm^2
95% confidence limits are 0.104 to 0.165mg/cm^2

Appendix Table CVIII: Dose mortality effect of *Mi. pudica* (wp/$CHCl_3$) extracts against *A. gossypii* after 18h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	24	80.000	80	5.85	5.745	5.830	15.96	5.714
0.147	1.167	30	19	63.333	63	5.33	5.444	5.321	18.03	5.423
0.098	0.991	30	14	46.667	47	4.92	5.021	4.925	19.11	5.014
0.049	0.690	30	9	30.000	30	4.48	4.297	4.490	15.09	4.315
0.025	0.398	30	2	6.667	7	3.52	3.594	3.519	8.07	3.636

Regression equation: Y = 2.712 + 2.323X
Chi-squared is 1.130 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.985mg/cm^2
LD_{50} is 0.097mg/cm^2
95% confidence limits are 0.077 to 0.121mg/cm^2

Appendix Table CIX: Dose mortality effect of *Mi. pudica* (wp/$CHCl_3$) extracts against *A. gossypii* after 21h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	28	93.333	93	6.48	6.089	6.333	13.17	6.102
0.147	1.167	30	22	73.333	73	5.61	5.740	5.606	15.96	5.750
0.098	0.991	30	16	53.333	53	5.08	5.248	5.098	18.81	5.254
0.049	0.690	30	10	33.333	33	4.56	4.408	4.570	16.74	4.407
0.025	0.398	30	2	6.667	7	3.52	3.592	3.519	8.07	3.584

Regression equation: Y = 2.464 + 2.816X
Chi-squared is 1.975 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.901mg/cm^2
LD_{50} is 0.080mg/cm^2
95% confidence limits are 0.066 to 0.096mg/cm^2

Appendix Table CX: Dose mortality effect of *Mi. pudica* (wp/$CHCl_3$) extracts against *A. gossypii* after 24h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.147	1.167	30	24	80.000	80	5.85	5.792	5.830	15.96	5.767
0.098	0.991	30	18	60.000	60	5.25	5.355	5.240	18.48	5.337
0.049	0.690	30	11	36.667	37	4.67	4.609	4.659	18.03	4.604
0.025	0.398	30	4	13.333	13	3.87	3.884	3.873	11.10	3.891

Regression equation: Y = 2.922 + 2.437X
Chi-squared is 0.298 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.853mg/cm^2
LD_{50} is 0.071mg/cm^2
95% confidence limits are 0.056 to 0.090mg/cm^2

Appendix Table CXI: Dose mortality effect of *Mi. pudica* (wp/CH_3OH) extracts against *A. gossypii* after 9h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	12	40.000	40	4.75	4.982	4.740	19.02	4.976
0.147	1.167	30	13	43.333	43	4.82	4.430	4.870	16.74	4.411
0.098	0.991	30	1	3.333	3	3.12	3.653	3.261	9.06	3.613

Regression equation: Y = -0.876 + 4.529X
Chi-squared is 5.719 with 1 degrees of freedom
Variance has been adjusted for heterogeneity
Log LD_{50} is 1.297mg/cm^2
LD_{50} is 0.198mg/cm^2
95% confidence limits are 0.120 to 0.329mg/cm^2

Appendix Table CXII: Dose mortality effect of *Mi. pudica* (wp/CH_3OH) extracts against *A. gossypii* after 12h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	17	56.667	57	5.18	4.788	5.182	18.48	4.844
0.147	1.167	30	8	26.667	27	4.39	4.550	4.376	17.43	4.585
0.098	0.991	30	3	10.000	10	3.72	4.215	3.810	15.09	4.221
0.049	0.690	30	4	13.333	13	3.87	3.642	3.931	9.06	3.597
0.025	0.398	30	1	3.333	3	3.12	3.085	3.135	3.93	2.993

Regression equation: Y = 2.169 + 2.070X
Chi-squared is 6.508 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.368mg/cm^2
LD_{50} is 0.233mg/cm^2
95% confidence limits are 0.151 to 0.361mg/cm^2

Appendix Table CXIII: Dose mortality effect of *Mi. pudica* (wp/CH_3OH) extracts against *A. gossypii* after 15h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	20	66.667	67	5.44	5.026	5.425	19.11	5.061
0.147	1.167	30	10	33.333	33	4.56	4.760	4.558	18.48	4.783
0.098	0.991	30	4	13.333	13	3.87	4.385	3.946	15.96	4.391
0.049	0.690	30	5	16.667	17	4.05	3.745	4.126	10.08	3.720
0.025	0.398	30	1	3.333	3	3.12	3.124	3.116	4.62	3.069

Regression equation: Y = 2.183 + 2.228X
Chi-squared is 8.290 with 3 degrees of freedom
Variance has been adjusted for heterogeneity
Log LD_{50} is 1.265mg/cm^2
LD_{50} is 0.184mg/cm^2
95% confidence limits are 0.107 to 0.315mg/cm^2

Appendix Table CXIV: Dose mortality effect of *Mi. pudica* (wp/CH_3OH) extracts against *A. gossypii* after 18h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	25	83.333	83	5.95	5.492	5.861	18.03	5.496
0.147	1.167	30	15	50.000	50	5.00	5.136	4.990	19.02	5.140
0.098	0.991	30	6	20.000	20	4.16	4.634	4.200	18.03	4.639
0.049	0.690	30	5	16.667	17	4.05	3.775	4.126	10.08	3.782
0.025	0.398	30	1	3.333	3	3.12	2.941	3.172	3.30	2.950

Regression equation: Y = 1.818 + 2.847X
Chi-squared is 7.662 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.118mg/cm^2
LD_{50} is 0.131mg/cm^2
95% confidence limits are 0.107 to 0.160mg/cm^2

Appendix Table CXV: Dose mortality effect of *Mi. pudica* (wp/CH_3OH) extracts against *A. gossypii* after 21h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	28	93.333	93	6.48	5.654	6.210	16.74	5.670
0.147	1.167	30	17	56.667	57	5.18	5.363	5.162	18.48	5.375
0.098	0.991	30	8	26.667	27	4.39	4.954	4.415	19.02	4.959
0.049	0.690	30	9	30.000	30	4.48	4.254	4.490	15.09	4.247
0.025	0.398	30	3	10.000	10	3.72	3.574	3.750	8.07	3.557

Regression equation: Y = 2.616 + 2.363X
Chi-squared is 12.530 with 3 degrees of freedom
Variance has been adjusted for heterogeneity
Log LD_{50} is 1.009mg/cm^2
LD_{50} is 0.102mg/cm^2
95% confidence limits are 0.065 to 0.159mg/cm^2

Appendix Table CXVI: Dose mortality effect of *Mi. pudica* (wp/CH_3OH) extracts against *A. gossypii* after 24h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.147	1.167	30	21	70.000	70	5.52	5.322	5.500	18.48	5.302
0.098	0.991	30	11	36.667	37	4.67	4.992	4.665	19.02	4.978
0.049	0.690	30	10	33.333	33	4.56	4.427	4.570	16.74	4.424
0.025	0.398	30	4	13.333	13	3.87	3.879	3.873	11.10	3.887

Regression equation: Y = 3.155 + 1.839X
Chi-squared is 2.946 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.003mg/cm^2
LD_{50} is 0.101mg/cm^2
95% confidence limits are 0.072 to 0.142mg/cm^2

Appendix Table CXVII: Dose mortality effect of *P. hysterophorus* (wp/PetE) extracts against *A. gossypii* after 3h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	11	36.667	37	4.67	4.815	4.682	18.81	4.806
0.147	1.167	30	9	30.000	30	4.48	4.248	4.490	15.09	4.227
0.098	0.991	30	1	3.333	3	3.12	3.449	3.180	7.14	3.411

Regression equation: Y = -1.181 + 4.633X
Chi-squared is 1.714 with 1 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.334mg/cm^2
LD_{50} is 0.216mg/cm^2
95% confidence limits are 0.168 to 0.277mg/cm^2

Appendix Table CXVIII: Dose mortality effect of *P. hysterophorus* (wp/PetE) extracts against *A. gossypii* after 6h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	13	43.333	43	4.82	4.969	4.815	19.02	4.953
0.147	1.167	30	12	40.000	40	4.75	4.495	4.780	16.74	4.511
0.098	0.991	30	3	10.000	10	3.72	3.826	3.720	11.10	3.888

Regression equation: Y = 0.381 + 3.538X
Chi-squared is 1.887 with 1 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.305mg/cm^2
LD_{50} is 0.202mg/cm^2
95% confidence limits are 0.153 to 0.267mg/cm^2

Appendix Table CXIX: Dose mortality effect of *P. hysterophorus* (wp/PetE) extracts against *A. gossypii* after 9h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	16	53.333	53	5.08	5.026	5.075	19.11	5.059
0.147	1.167	30	14	46.667	47	4.92	4.750	4.922	18.48	4.767
0.098	0.991	30	5	16.667	17	4.05	4.362	4.074	15.96	4.356
0.049	0.690	30	3	10.000	10	3.72	3.698	3.730	9.06	3.653
0.025	0.398	30	1	3.333	3	3.12	3.053	3.135	3.93	2.970

Regression equation: Y = 2.041 + 2.336 X
Chi-squared is 1.877 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.267mg/cm^2
LD_{50} is 0.185mg/cm^2
95% confidence limits are 0.135 to 0.252mg/cm^2

Appendix Table CXX: Dose mortality effect of *P. hysterophorus* (wp/PetE) extracts against *A. gossypii* after 12h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	18	60.000	60	5.25	5.238	5.280	18.81	5.244
0.147	1.167	30	16	53.333	53	5.08	4.950	5.065	19.02	4.955
0.098	0.991	30	7	23.333	23	4.26	4.544	4.264	17.43	4.549
0.049	0.690	30	5	16.667	17	4.05	3.850	4.077	11.10	3.854
0.025	0.398	30	1	3.333	3	3.12	3.177	3.116	4.62	3.179

Regression equation: Y = 2.260 + 2.309X
Chi-squared is 2.238 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.187mg/cm^2
LD_{50} is 0.154mg/cm^2
95% confidence limits are 0.117 to 0.201mg/cm^2

Appendix Table CXXI: Dose mortality effect of *P. hysterophorus* (wp/PetE) extracts against *A. gossypii* after 15h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	20	66.667	67	5.44	5.372	5.422	18.48	5.348
0.147	1.167	30	17	56.667	57	5.18	5.122	5.165	19.02	5.106
0.098	0.991	30	9	30.000	30	4.48	4.769	4.480	18.48	4.765
0.049	0.690	30	8	26.667	27	4.39	4.166	4.436	14.13	4.183
0.025	0.398	30	2	6.667	7	3.52	3.581	3.519	8.07	3.617

Regression equation: Y = 2.847 + 1.936X
Chi-squared is 2.656 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.112mg/cm^2
LD_{50} is 0.130mg/cm^2
95% confidence limits are 0.097 to 0.173mg/cm^2

Appendix Table CXXII: Dose mortality effect of *P. hysterophorus* (wp/PetE) extracts against *A. gossypii* after 18h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	27	90.000	90	6.28	5.907	6.250	14.13	5.838
0.147	1.167	30	19	63.333	63	5.33	5.570	5.304	17.43	5.512
0.098	0.991	30	12	40.000	40	4.75	5.097	4.750	19.11	5.051
0.049	0.690	30	9	30.000	30	4.48	4.286	4.490	15.09	4.264
0.025	0.398	30	2	6.667	7	3.52	3.500	3.519	8.07	3.500

Regression equation: Y = 2.460 + 2.614X
Chi-squared is 5.653 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.972mg/cm^2
LD_{50} is 0.094mg/cm^2
95% confidence limits are 0.077 to 0.115mg/cm^2

Appendix Table CXXIII: Dose mortality effect of *P. hysterophorus* (wp/PetE) extracts against *A. gossypii* after 21h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	29	96.667	97	6.88	5.949	6.516	14.13	5.986
0.147	1.167	30	21	70.000	70	5.52	5.654	5.520	16.74	5.683
0.098	0.991	30	13	43.333	43	4.82	5.238	4.838	18.81	5.257
0.049	0.690	30	10	33.333	33	4.56	4.526	4.544	17.43	4.528
0.025	0.398	30	5	16.667	17	4.05	3.835	4.077	11.10	3.820

Regression equation: Y = 2.857 + 2.421 X
Chi-squared is 8.455 with 3 degrees of freedom
Variance has been adjusted for heterogeneity
Log LD_{50} is 0.885mg/cm^2
LD_{50} is 0.077mg/cm^2
95% confidence limits are 0.054 to 0.110mg/cm^2

Appendix Table CXXIV: Dose mortality effect of *P. hysterophorus* (wp/PetE) extracts against *A. gossypii* after 24h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.147	1.167	30	23	76.667	77	5.74	5.600	5.696	17.43	5.576
0.098	0.991	30	16	53.333	53	5.08	5.290	5.098	18.81	5.273
0.049	0.690	30	13	43.333	43	4.82	4.762	4.818	18.48	4.754
0.025	0.398	30	7	23.333	23	4.26	4.248	4.252	15.09	4.251

Regression equation: Y = 3.565 + 1.723X
Chi-squared is 0.900 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.833mg/cm^2
LD_{50} is 0.068mg/cm^2
95% confidence limits are 0.050 to 0.093mg/cm^2

Appendix Table CXXV: Dose mortality effect of *P. hysterophorus* (wp/$CHCl_3$) extracts against *A. gossypii* after 3h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	10	33.333	33	4.56	4.524	4.544	17.43	4.510
0.147	1.167	30	6	20.000	20	4.16	4.234	4.150	15.09	4.224
0.098	0.991	30	4	13.333	13	3.87	3.825	3.873	11.10	3.820
0.049	0.690	30	1	3.333	3	3.12	3.127	3.116	4.62	3.130

Regression equation: Y = 1.547 + 2.293X
Chi-squared is 0.134 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.506mg/cm^2
LD_{50} is 0.321mg/cm^2
95% confidence limits are 0.166 to 0.618mg/cm^2

Appendix Table CXXVI: Dose mortality effect of *P. hysterophorus* (wp/$CHCl_3$) extracts against *A. gossypii* after 6h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	11	36.667	37	4.67	4.590	4.656	17.43	4.589
0.147	1.167	30	7	23.333	23	4.26	4.364	4.266	15.96	4.359
0.098	0.991	30	5	16.667	17	4.05	4.045	4.037	13.17	4.035
0.049	0.690	30	2	6.667	7	3.52	3.501	3.519	8.07	3.482

Regression equation: Y = 2.213 + 1.839X
Chi-squared is 0.228 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.516mg/cm^2
LD_{50} is 0.328mg/cm^2
95% confidence limits are 0.152 to 0.708mg/cm^2

Appendix Table CXXVII: Dose mortality effect of *P. hysterophorus* (wp/$CHCl_3$) extracts against *A. gossypii* after 9h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	13	43.333	43	4.82	4.887	4.838	18.81	4.885
0.147	1.167	30	11	36.667	37	4.67	4.610	4.659	18.03	4.611
0.098	0.991	30	7	23.333	23	4.26	4.220	4.252	15.09	4.225
0.049	0.690	30	2	6.667	7	3.52	3.552	3.519	8.07	3.566

Regression equation: Y = 2.054 + 2.191X
Chi-squared is 0.111 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.345mg/cm^2
LD_{50} is 0.221mg/cm^2
95% confidence limits are 0.144 to 0.339mg/cm^2

Appendix Table CXXVIII: Dose mortality effect of *P. hysterophorus* (wp/$CHCl_3$) extracts against *A. gossypii* after 12h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	18	60.000	60	5.25	5.264	5.280	18.81	5.255
0.147	1.167	30	15	50.000	50	5.00	4.977	4.990	19.02	4.974
0.098	0.991	30	9	30.000	30	4.48	4.572	4.460	17.43	4.578
0.049	0.690	30	5	16.667	17	4.05	3.879	4.077	11.10	3.901
0.025	0.398	30	1	3.333	3	3.12	3.207	3.121	5.40	3.244

Regression equation: Y = 2.349 + 2.249X
Chi-squared is 0.684 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.179mg/cm^2
LD_{50} is 0.151mg/cm^2
95% confidence limits are 0.115 to 0.198mg/cm^2

Appendix Table CXXIX: Dose mortality effect of *P. hysterophorus* (wp/$CHCl_3$) extracts against *A. gossypii* after 15h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	20	66.667	67	5.44	5.460	5.429	18.03	5.454
0.147	1.167	30	18	60.000	60	5.25	5.188	5.240	19.02	5.184
0.098	0.991	30	12	40.000	40	4.75	4.805	4.760	18.81	4.804
0.049	0.690	30	6	20.000	20	4.16	4.151	4.170	14.13	4.154
0.025	0.398	30	2	6.667	7	3.52	3.516	3.519	8.07	3.522

Regression equation: Y = 2.663 + 2.160X
Chi-squared is 0.111 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.082mg/cm^2
LD_{50} is 0.121mg/cm^2
95% confidence limits are 0.094 to 0.155mg/cm^2

Appendix Table CXXX: Dose mortality effect of *P. hysterophorus* (wp/$CHCl_3$) extracts against *A. gossypii* after 18h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	23	76.667	77	5.74	5.566	5.696	17.43	5.543
0.147	1.167	30	18	60.000	60	5.25	5.313	5.240	18.48	5.291
0.098	0.991	30	13	43.333	43	4.82	4.957	4.815	19.02	4.936
0.049	0.690	30	7	23.333	23	4.26	4.348	4.266	15.96	4.328
0.025	0.398	30	4	13.333	13	3.87	3.756	3.894	10.08	3.738

Regression equation: Y = 2.935 + 2.019X
Chi-squared is 1.038 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.023mg/cm^2
LD_{50} is 0.105mg/cm^2
95% confidence limits are 0.082 to 0.136mg/cm^2

Appendix Table CXXXI: Dose mortality effect of *P. hysterophorus* (wp/$CHCl_3$) extracts against *A. gossypii* after 21h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	26	86.667	87	6.13	5.845	6.038	15.09	5.778
0.147	1.167	30	20	66.667	67	5.44	5.575	5.416	17.43	5.516
0.098	0.991	30	16	53.333	53	5.08	5.194	5.065	19.02	5.145
0.049	0.690	30	7	23.333	23	4.26	4.544	4.264	17.43	4.512
0.025	0.398	30	6	20.000	20	4.16	3.912	4.200	12.15	3.898

Regression equation: Y = 3.061 + 2.103X
Chi-squared is 3.498 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.922mg/cm^2
LD_{50} is 0.084mg/cm^2
95% confidence limits are 0.066 to 0.106mg/cm^2

Appendix Table CXXXII: Dose mortality effect of *P. hysterophorus* (wp/$CHCl_3$) extracts against *A. gossypii* after 24h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.147	1.167	30	23	76.667	77	5.74	5.619	5.730	16.74	5.622
0.098	0.991	30	17	56.667	57	5.18	5.258	5.202	18.81	5.254
0.049	0.690	30	9	30.000	30	4.48	4.641	4.470	18.03	4.624
0.025	0.398	30	6	20.000	20	4.16	4.042	4.160	13.17	4.012

Regression equation: Y = 3.180 + 2.092X
Chi-squared is 0.959 with 2 degrees of freedom
No significant heterogeneity
LOG LD_{50} is 0.870mg/cm^2
LD_{50} is 0.074mg/cm^2
95% confidence limits are 0.057 to 0.097mg/cm^2

Appendix Table CXXXIII: Dose mortality effect of *P. hysterophorus* (wp/CH_3OH) extracts against *A. gossypii* after 12h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	10	33.333	33	4.56	4.411	4.570	16.74	4.400
0.196	1.292	30	3	10.000	10	3.72	4.032	3.750	13.17	4.025
0.147	1.167	30	2	6.667	7	3.52	3.552	3.519	8.07	3.550
0.098	0.991	30	1	3.333	3	3.12	2.875	3.256	2.76	2.881

Regression equation: Y = -0.888 + 3.802X
CHI-SQUARED IS 1.876 WITH 2 DEGREES OF FREEDOM
NO SIG HETEROGENEITY
LOG LD_{50} IS 1.549mg/cm^2
LD_{50} IS 0.354mg/cm^2
95% CONF LIMITS ARE 0.223 to 0.561mg/cm^2

Appendix Table CXXXIV: Dose mortality effect of *P. hysterophorus* (wp/CH_3OH) extracts against *A. gossypii* after 15h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	13	43.333	43	4.82	4.522	4.824	17.43	4.487
0.196	1.292	30	4	13.333	13	3.87	4.270	3.912	15.09	4.244
0.147	1.167	30	3	10.000	10	3.72	3.951	3.740	12.15	3.937
0.098	0.991	30	2	6.667	7	3.52	3.500	3.519	8.07	3.504
0.049	0.690	30	1	3.333	3	3.12	2.730	3.379	2.28	2.764

Regression equation: Y = 1.068 + 2.458X
Chi-squared is 4.983 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.600mg/cm^2
LD_{50} is 0.398mg/cm^2
95% confidence limits are 0.222 to 0.713mg/cm^2

Appendix Table CXXXV: Dose mortality effect of *P. hysterophorus* (wp/CH_3OH) extracts against *A. gossypii* after 18h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	17	56.667	57	5.18	4.977	5.165	19.02	4.977
0.196	1.292	30	10	33.333	33	4.56	4.690	4.551	18.03	4.690
0.147	1.167	30	6	20.000	20	4.16	4.326	4.170	15.96	4.326
0.098	0.991	30	4	13.333	13	3.87	3.814	3.873	11.10	3.814
0.049	0.690	30	1	3.333	3	3.12	2.938	3.172	3.30	2.938

Regression equation: Y = 0.928 + 2.911X
Chi-squared is 1.630 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} IS 1.399mg/cm^2
LD_{50} is 0.250mg/cm^2
95% confidence limits are 0.191 to 0.329mg/cm^2

Appendix Table CXXXVI: Dose mortality effect of *P. hysterophorus* (wp/CH_3OH) extracts against *A. gossypii* after 21h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	24	80.000	80	5.85	5.414	5.780	18.03	5.409
0.196	1.292	30	14	46.667	47	4.92	5.146	4.915	19.02	5.128
0.147	1.167	30	10	33.333	33	4.56	4.807	4.578	18.81	4.773
0.098	0.991	30	6	20.000	20	4.16	4.329	4.170	15.96	4.273
0.049	0.690	30	3	10.000	10	3.72	3.513	3.750	8.07	3.418

Regression equation: Y = 1.457 + 2.841X
Chi-squared is 5.130 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.247mg/cm^2
LD_{50} is 0.177mg/cm^2
95% confidence limits are 0.146 to 0.214mg/cm^2

Appendix Table CXXXVII: Dose mortality effect of *P. hysterophorus* (wp/CH_3OH) extracts against *A. gossypii* after 24h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	28	93.333	93	6.48	5.750	6.246	15.96	5.772
0.196	1.292	30	17	56.667	57	5.18	5.426	5.159	18.03	5.446
0.147	1.167	30	13	43.333	43	4.82	5.016	4.825	19.11	5.032
0.098	0.991	30	8	26.667	27	4.39	4.439	4.390	16.74	4.449
0.049	0.690	30	3	10.000	10	3.72	3.451	3.810	7.14	3.452

Regression equation: Y = 1.167 + 3.311X
Chi-squared is 6.853 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.158mg/cm^2
LD_{50} is 0.144mg/cm^2
95% confidence limits are 0.123 to 0.168mg/cm^2

Appendix Table CXXXVIII: Dose mortality effect of *Ph. niruri* (wp/PetE) extracts against *A. gossypii* after 3h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	12	40.000	40	4.75	4.515	4.740	17.43	4.479
0.147	1.167	30	5	16.667	17	4.05	4.247	4.048	15.09	4.220
0.098	0.991	30	2	6.667	7	3.52	3.869	3.567	11.10	3.856
0.049	0.690	30	1	3.333	3	3.12	3.223	3.121	5.40	3.233
0.025	0.398	30	1	3.333	3	3.12	2.596	3.860	1.50	2.628

Regression equation: Y = 1.805 + 2.069X
Chi-squared is 4.907 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.544mg/cm^2
LD_{50} is 0.350mg/cm^2
95% confidence limits are 0.176 to 0.697mg/cm^2

Appendix Table CXXXIX: Dose mortality effect of *Ph. niruri* (wp/PetE) extracts against *A. gossypii* after 6h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	14	46.667	47	4.92	4.646	4.929	18.03	4.691
0.147	1.167	30	7	23.333	23	4.26	4.429	4.270	16.74	4.457
0.098	0.991	30	4	13.333	13	3.87	4.123	3.904	14.13	4.127
0.049	0.690	30	3	10.000	10	3.72	3.600	3.750	8.07	3.562
0.025	0.398	30	1	3.333	3	3.12	3.092	3.135	3.93	3.014

Regression equation: Y = 2.268 + 1.876X
Chi-squared is 2.647 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.457mg/cm^2
LD_{50} is 0.286mg/cm^2
95% confidence limits are 0.161 to 0.509mg/cm^2

Appendix Table CXL: Dose mortality effect of *Ph. niruri* (wp/PetE) extracts against *A. gossypii* after 9h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	16	53.333	53	5.08	4.833	5.098	18.81	4.880
0.147	1.167	30	11	36.667	37	4.67	4.653	4.659	18.03	4.683
0.098	0.991	30	5	16.667	17	4.05	4.398	4.074	15.96	4.405
0.049	0.690	30	4	13.333	13	3.87	3.964	3.878	12.15	3.930
0.025	0.398	30	3	10.000	10	3.72	3.542	3.750	8.07	3.469

Regression equation: Y = 2.841 + 1.578X
Chi-squared is 3.324 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.368mg/cm^2
LD_{50} is 0.233mg/cm^2
95% confidence limits are 0.136 to 0.401mg/cm^2

Appendix Table CXLI: Dose mortality effect of *Ph. niruri* (wp/PetE) extracts against *A. gossypii* after 12h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	19	63.333	63	5.33	5.139	5.315	19.02	5.156
0.147	1.167	30	14	46.667	47	4.92	4.914	4.915	19.02	4.918
0.098	0.991	30	8	26.667	27	4.39	4.596	4.376	17.43	4.582
0.049	0.690	30	4	13.333	13	3.87	4.054	3.873	13.17	4.008
0.025	0.398	30	3	10.000	10	3.72	3.528	3.750	8.07	3.451

Regression equation: Y = 2.692 + 1.907X
Chi-squared is 2.183 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.210mg/cm^2
LD_{50} is 0.162mg/cm^2
95% confidence limits are 0.116 to 0.227mg/cm^2

Appendix Table CXLII: Dose mortality effect of *Ph. niruri* (wp/PetE) extracts against *A. gossypii* after 15h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	21	70.000	70	5.52	5.296	5.540	18.81	5.314
0.147	1.167	30	15	50.000	50	5.00	5.083	5.000	19.11	5.093
0.098	0.991	30	10	33.333	33	4.56	4.784	4.558	18.48	4.782
0.049	0.690	30	7	23.333	23	4.26	4.272	4.252	15.09	4.250
0.025	0.398	30	4	13.333	13	3.87	3.775	3.894	10.08	3.734

Regression equation: Y = 3.030 + 1.767X
Chi-squared is 2.314 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.115mg/cm^2
LD_{50} is 0.130mg/cm^2
95% confidence limits are 0.095 to 0.178mg/cm^2

Appendix Table CXLIII: Dose mortality effect of *Ph. niruri* (wp/PetE) extracts against *A. gossypii* after 18h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	24	80.000	80	5.85	5.610	5.820	16.74	5.584
0.147	1.167	30	19	63.333	63	5.33	5.377	5.318	18.48	5.352
0.098	0.991	30	12	40.000	40	4.75	5.048	4.750	19.11	5.025
0.049	0.690	30	9	30.000	30	4.48	4.485	4.480	16.74	4.466
0.025	0.398	30	5	16.667	17	4.05	3.939	4.062	12.15	3.923

Regression equation: Y = 3.183 + 1.858X
Chi-squared is 2.636 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.978mg/cm^2
LD_{50} is 0.095mg/cm^2
95% confidence limits are 0.073 to 0.124mg/cm^2

Appendix Table CXLIV: Dose mortality effect of *Ph. niruri* (wp/PetE) extracts against against *A. gossypii* after 21h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	27	90.000	90	6.28	5.958	6.250	14.13	5.909
0.147	1.167	30	22	73.333	73	5.61	5.693	5.610	16.74	5.648
0.098	0.991	30	15	50.000	50	5.00	5.319	4.980	18.48	5.280
0.049	0.690	30	10	33.333	33	4.56	4.680	4.551	18.03	4.652
0.025	0.398	30	7	23.333	23	4.26	4.060	4.283	13.17	4.042

Regression equation: Y = 3.211 + 2.088X
Chi-squared is 4.286 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.857mg/cm^2
LD_{50} is 0.072mg/cm^2
95% confidence limits are 0.056 to 0.092mg/cm^2

Appendix Table CXLV: Dose mortality effect of *Ph. niruri* (wp/PetE) extracts against against *A. gossypii* after 24h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.147	1.167	30	25	83.333	83	5.95	5.797	5.926	15.96	5.772
0.098	0.991	30	19	63.333	63	5.33	5.444	5.321	18.03	5.423
0.049	0.690	30	11	36.667	37	4.67	4.842	4.682	18.81	4.827
0.025	0.398	30	8	26.667	27	4.39	4.257	4.388	15.09	4.248

Regression equation: Y = 3.460 + 1.981X
Chi-squared is 1.258 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.778mg/cm^2
LD_{50} is 0.060mg/cm^2
95% confidence limits are 0.045 to 0.079mg/cm^2

Appendix Table CXLVI: Dose mortality effect of *Ph. niruri* (wp/$CHCl_3$) extracts against *A. gossypii* after 9h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.393	0.594	30	10	33.333	33	4.56	4.617	4.551	18.03	4.587
0.344	0.537	30	5	16.667	17	4.05	3.944	4.062	12.15	3.961
0.295	0.470	30	1	3.333	3	3.12	3.169	3.116	4.62	3.239

Regression equation: Y = -1.847 + 10.824X
Chi-squared is 0.217 with 1 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.633mg/cm^2
LD_{50} is 0.429mg/cm^2
95% confidence limits are 0.373 to 0.494mg/cm^2

Appendix Table CXLVII: Dose mortality effect of *Ph. niruri* (wp/$CHCl_3$) extracts against *A. gossypii* after 12h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.393	0.594	30	13	43.333	43	4.82	4.755	4.818	18.48	4.782
0.344	0.537	30	8	26.667	27	4.39	4.370	4.394	15.96	4.380
0.295	0.470	30	3	10.000	10	3.72	3.925	3.740	12.15	3.915
0.246	0.391	30	2	6.667	7	3.52	3.400	3.540	7.14	3.366

Regression equation: Y = 0.646 + 6.958X
Chi-squared is 0.616 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.626mg/cm^2
LD_{50} is 0.422mg/cm^2
95% confidence limits are 0.360 to 0.496mg/cm^2

Appendix Table CXLVIII: Dose mortality effect of *Ph. niruri* (wp/$CHCl_3$) extracts against *A. gossypii* after 15h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.393	0.594	30	15	50.000	50	5.00	5.008	5.000	19.11	5.017
0.344	0.537	30	11	36.667	37	4.67	4.562	4.656	17.43	4.563
0.295	0.470	30	4	13.333	13	3.87	4.049	3.873	13.17	4.038
0.246	0.391	30	2	6.667	7	3.52	3.441	3.540	7.14	3.418

Regression equation: Y = 0.347 + 7.857X
Chi-squared is 0.623 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.592mg/cm^2
LD_{50} is 0.391mg/cm^2
95% confidence limits are 0.351 to 0.436mg/cm^2

Appendix Table CXLIX: Dose mortality effect of *Ph. niruri* (wp/$CHCl_3$) extracts against *A. gossypii* after 18h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.393	0.594	30	17	56.667	57	5.18	5.213	5.202	18.81	5.250
0.344	0.537	30	14	46.667	47	4.92	4.804	4.942	18.81	4.828
0.295	0.470	30	7	23.333	23	4.26	4.332	4.266	15.96	4.340
0.246	0.391	30	3	10.000	10	3.72	3.774	3.720	10.08	3.763
0.196	0.292	30	1	3.333	3	3.12	3.076	3.135	3.93	3.042

Regression equation: Y = 0.906 + 7.309X
Chi-squared is 0.430 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.560mg/cm^2
LD_{50} is 0.363mg/cm^2
95% confidence limits are 0.332 to 0.398mg/cm^2

Appendix Table CL: Dose mortality effect of *Ph. niruri* (wp/$CHCl_3$) extracts against *A. gossypii* after 21h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.393	0.594	30	20	66.667	67	5.44	5.365	5.422	18.48	5.364
0.344	0.537	30	16	53.333	53	5.08	5.033	5.075	19.11	5.027
0.295	0.470	30	9	30.000	30	4.48	4.651	4.470	18.03	4.638
0.246	0.391	30	6	20.000	20	4.16	4.198	4.170	14.13	4.178
0.196	0.292	30	3	10.000	10	3.72	3.633	3.730	9.06	3.603

Regression equation: Y = 1.900 + 5.828X
Chi-squared is 0.762 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.532mg/cm^2
LD_{50} is 0.340mg/cm^2
95% confidence limits are 0.308 to 0.376mg/cm^2

Appendix Table CLI: Dose mortality effect of *Ph. niruri* (wp/$CHCl_3$) extracts against *A. gossypii* after 24h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.393	0.594	30	25	83.333	83	5.95	5.672	5.910	16.74	5.641
0.344	0.537	30	18	60.000	60	5.25	5.364	5.240	18.48	5.333
0.295	0.470	30	12	40.000	40	4.75	5.008	4.750	19.11	4.978
0.246	0.391	30	9	30.000	30	4.48	4.587	4.460	17.43	4.559
0.196	0.292	30	7	23.333	23	4.26	4.060	4.283	13.17	4.034

Regression equation: Y = 2.480 + 5.318X
Chi-squared is 3.356 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.474mg/cm^2
LD_{50} is 0.298mg/cm^2
95% confidence limits are 0.272 to 0.327mg/cm^2

Appendix Table CLII: Dose mortality effect of *Ph. niruri* (wp/CH_3OH) extracts against *A. gossypii* after 6h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	0.391	30	7	23.333	23	4.26	4.270	4.252	15.09	4.258
0.196	0.292	30	5	16.667	17	4.05	4.031	4.037	13.17	4.024
0.147	0.167	30	3	10.000	10	3.72	3.728	3.720	10.08	3.727

Regression equation: Y = 3.330 + 2.374X
Chi-squared is 0.003 with 1 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.703mg/cm^2
LD_{50} is 0.505mg/cm^2
95% confidence limits are 0.121 to 2.116mg/cm^2

Appendix Table CLIII: Dose mortality effect of *Ph. niruri* (wp/CH_3OH) extracts against *A. gossypii* after 9h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	9	30.000	30	4.48	4.582	4.460	17.43	4.556
0.196	1.292	30	8	26.667	27	4.39	4.224	4.388	15.09	4.216
0.147	1.167	30	3	10.000	10	3.72	3.771	3.720	10.08	3.784
0.098	0.991	30	1	3.333	3	3.12	3.132	3.116	4.62	3.177

Regression equation: Y = -0.244 + 3.451X
Chi-squared is 0.669 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.520mg/cm^2
LD_{50} is 0.331mg/cm^2
95% confidence limits are 0.217 to 0.505mg/cm^2

Appendix Table CLIV: Dose mortality effect of *Ph. niruri* (wp/CH_3OH) extracts against *A. gossypii* after 12h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	13	43.333	43	4.82	4.941	4.815	19.02	4.951
0.196	1.292	30	12	40.000	40	4.75	4.483	4.780	16.74	4.497
0.147	1.167	30	3	10.000	10	3.72	3.902	3.740	12.15	3.924
0.098	0.991	30	1	3.333	3	3.12	3.084	3.135	3.93	3.115

Regression equation: Y = -1.438 + 4.593X
Chi-squared is 2.098 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.402mg/cm^2
LD_{50} is 0.252mg/cm^2
95% confidence limits are 0.207 to 0.308mg/cm^2

Appendix Table CLV: Dose mortality effect of *Ph. niruri* (wp/CH_3OH) extracts against *A. gossypii* after 15h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	17	56.667	57	5.18	5.057	5.175	19.11	5.060
0.196	1.292	30	14	46.667	47	4.92	4.776	4.922	18.48	4.779
0.147	1.167	30	6	20.000	20	4.16	4.419	4.180	16.74	4.424
0.098	0.991	30	2	6.667	7	3.52	3.917	3.602	12.15	3.924
0.049	0.690	30	2	6.667	7	3.52	3.058	3.875	3.93	3.069

Regression equation: Y = 1.108 + 2.841X
Chi-squared is 5.444 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.370mg/cm^2
LD_{50} is 0.234mg/cm^2
95% confidence limits are 0.182 to 0.302mg/cm^2

Appendix Table CLVI: Dose mortality effect of *Ph. niruri* (wp/CH_3OH) extracts against *A. gossypii* after 18h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	21	70.000	70	5.52	5.351	5.500	18.48	5.324
0.196	1.292	30	17	56.667	57	5.18	5.061	5.175	19.11	5.044
0.147	1.167	30	8	26.667	27	4.39	4.693	4.389	18.03	4.689
0.098	0.991	30	4	13.333	13	3.87	4.175	3.904	14.13	4.188
0.049	0.690	30	3	10.000	10	3.72	3.290	4.010	5.40	3.332

Regression equation: Y = 1.370 + 2.843X
Chi-squared is 6.138 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.277mg/cm^2
LD_{50} is 0.189mg/cm^2
95% confidence limits are 0.155 to 0.231mg/cm^2

Appendix Table CLVII: Dose mortality effect of *Ph. niruri* (wp/CH_3OH) extracts against *A. gossypii* after 21h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	22	73.333	73	5.61	5.452	5.591	18.03	5.446
0.196	1.292	30	19	63.333	63	5.33	5.160	5.315	19.02	5.154
0.147	1.167	30	9	30.000	30	4.48	4.790	4.480	18.48	4.785
0.098	0.991	30	5	16.667	17	4.05	4.268	4.048	15.09	4.264
0.049	0.690	30	3	10.000	10	3.72	3.377	3.890	6.24	3.373

Regression equation: Y = 1.331 + 2.958X
Chi-squared is 4.954 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.240mg/cm^2
LD_{50} is 0.174mg/cm^2
95% confidence limits are 0.145 to 0.209mg/cm^2

Appendix Table CLVIII: Dose mortality effect of *Ph. niruri* (wp/CH_3OH) extracts against *A. gossypii* after 24h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	26	86.667	87	6.13	5.734	6.054	15.96	5.729
0.196	1.292	30	20	66.667	67	5.44	5.414	5.429	18.03	5.414
0.147	1.167	30	12	40.000	40	4.75	5.010	4.750	19.11	5.015
0.098	0.991	30	6	20.000	20	4.16	4.441	4.180	16.74	4.453
0.049	0.690	30	4	13.333	13	3.87	3.467	4.080	7.14	3.493

Regression equation: Y = 1.291 + 3.191X
Chi-squared is 6.750 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.163mg/cm^2
LD_{50} is 0.145mg/cm^2
95% confidence limits are 0.124 to 0.171mg/cm^2

Appendix Table CLIX: Dose mortality effect of *Po. hydropiper* (wp/PetE) extracts against *A. gossypii* after 3h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	10	33.333	33	4.56	4.470	4.570	16.74	4.469
0.147	1.167	30	5	16.667	17	4.05	4.143	4.056	14.13	4.144
0.098	0.991	30	2	6.667	7	3.52	3.683	3.529	9.06	3.686
0.049	0.690	30	1	3.333	3	3.12	2.895	3.256	2.76	2.904

Regression equation: Y = 1.111 + 2.598X
Chi-squared is 0.848 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.497mg/cm^2
LD_{50} is 0.314mg/cm^2
95% confidence limits are 0.168 to 0.585mg/cm^2

Appendix Table CLX: Dose mortality effect of *Po. hydropiper* (wp/PetE) extracts against *A. gossypii* after 6h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	16	53.333	53	5.08	4.970	5.065	19.02	4.968
0.147	1.167	30	9	30.000	30	4.48	4.523	4.460	17.43	4.523
0.098	0.991	30	3	10.000	10	3.72	3.894	3.720	11.10	3.895
0.049	0.690	30	1	3.333	3	3.12	2.819	3.256	2.76	2.822

Regression equation: Y = 0.361 + 3.565X
Chi-squared is 1.107 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.301mg/cm^2
LD_{50} is 0.200mg/cm^2
95% confidence limits are 0.156 mg/cm^2 to 0.256mg/cm^2

Appendix Table CLXI: Dose mortality effect of *Po. hydropiper* (wp/PetE) extracts against *A. gossypii* after 9h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	20	66.667	67	5.44	5.316	5.422	18.48	5.313
0.147	1.167	30	11	36.667	37	4.67	4.857	4.682	18.81	4.848
0.098	0.991	30	7	23.333	23	4.26	4.211	4.252	15.09	4.193
0.049	0.690	30	1	3.333	3	3.12	3.106	3.116	4.62	3.073

Regression equation: Y = 0.505 + 3.720X
Chi-squared is 0.800 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.208mg/cm^2
LD_{50} is 0.162mg/cm^2
95% confidence limits are 0.135 to 0.193mg/cm^2

Appendix Table CLXII: Dose mortality effect of *Po. hydropiper* (wp/PetE) extracts against *A. gossypii* after 12h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	21	70.000	70	5.52	5.467	5.510	18.03	5.438
0.147	1.167	30	13	43.333	43	4.82	4.990	4.815	19.02	4.981
0.098	0.991	30	9	30.000	30	4.48	4.317	4.490	15.96	4.338
0.049	0.690	30	1	3.333	3	3.12	3.166	3.116	4.62	3.237

Regression equation: Y = 0.713 + 3.656X
Chi-squared is 1.058 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.172mg/cm^2
LD_{50} is 0.149mg/cm^2
95% confidence limits are 0.125 to 0.176mg/cm^2

Appendix Table CLXIII: Dose mortality effect of *Po. hydropiper* (wp/PetE) extracts against *A. gossypii* after 15h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	26	86.667	87	6.13	5.745	6.054	15.96	5.752
0.147	1.167	30	16	53.333	53	5.08	5.267	5.098	18.81	5.269
0.098	0.991	30	9	30.000	30	4.48	4.594	4.460	17.43	4.588
0.049	0.690	30	1	3.333	3	3.12	3.443	3.180	7.14	3.424
0.025	0.398	30	1	3.333	3	3.12	2.326	4.847	0.93	2.294

Regression equation: Y = 0.755 + 3.867X
Chi-squared is 8.777 with 3 degrees of freedom
Variance has been adjusted for heterogeneity
Log LD_{50} is 1.098mg/cm^2
LD_{50} is 0.125mg/cm^2
95% confidence limits are 0.097 to 0.162mg/cm^2

Appendix Table CLXIV: Dose mortality effect of *Po. hydropiper* (wp/PetE) extracts against *A. gossypii* after 18h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	27	90.000	90	6.28	5.908	6.250	14.13	5.918
0.147	1.167	30	19	63.333	63	5.33	5.475	5.321	18.03	5.483
0.098	0.991	30	11	36.667	37	4.67	4.864	4.682	18.81	4.871
0.049	0.690	30	4	13.333	13	3.87	3.820	3.873	11.10	3.824
0.025	0.398	30	1	3.333	3	3.12	2.806	3.256	2.76	2.808

Regression equation: Y = 1.424 + 3.478X
Chi-squared is 3.287 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.028mg/cm^2
LD_{50} is 0.107mg/cm^2
95% confidence limits are 0.091 to 0.125mg/cm^2

Appendix Table CLXV: Dose mortality effect of *Po.hydropiper* (wp/PetE) extracts against *A. gossypii* after 21h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.147	1.167	30	20	66.667	67	5.44	5.248	5.462	18.81	5.305
0.098	0.991	30	12	40.000	40	4.75	4.851	4.760	18.81	4.876
0.049	0.690	30	4	13.333	13	3.87	4.171	3.904	14.13	4.142
0.025	0.398	30	3	10.000	10	3.72	3.511	3.750	8.07	3.430

Regression equation: Y = 2.460 + 2.437X
Chi-squared is 2.344 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.042mg/cm^2
LD_{50} is 0.110mg/cm^2
95% confidence limits are 0.084 to 0.145mg/cm^2

Appendix Table CLXVI: Dose mortality effect of *Po. hydropiper* (wp/PetE) extracts against *A. gossypii* after 24h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.147	1.167	30	24	80.000	80	5.85	5.571	5.780	17.43	5.544
0.098	0.991	30	14	46.667	47	4.92	5.126	4.915	19.02	5.093
0.049	0.690	30	5	16.667	17	4.05	4.366	4.074	15.96	4.322
0.025	0.398	30	4	13.333	13	3.87	3.627	3.931	9.06	3.574

Regression equation: Y = 2.555 + 2.560X
Chi-squared is 3.713 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.955mg/cm^2
LD_{50} is 0.090mg/cm^2
95% confidence limits are 0.071 to 0.114mg/cm^2

Appendix Table CLXVII: Dose mortality effect of *Po. hydropiper* (wp/$CHCl_3$) extracts against *A. gossypii* after 3h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	11	36.667	37	4.67	4.599	4.656	17.43	4.595
0.196	1.292	30	5	16.667	17	4.05	4.288	4.048	15.09	4.286
0.147	1.167	30	6	20.000	20	4.16	3.895	4.230	11.10	3.894
0.098	0.991	30	1	3.333	3	3.12	3.341	3.148	6.24	3.341

Regression equation: Y = 0.230 + 3.139X
Chi-squared is 2.405 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.520mg/cm^2
LD_{50} is 0.331mg/cm^2
95% Confidence limits are 0.211 to 0.519mg/cm^2

Appendix Table CLXVIII: Dose mortality effect of *Po. hydropiper* (wp/$CHCl_3$) extracts against *A. gossypii* after 6h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	15	50.000	50	5.00	5.127	4.990	19.02	5.095
0.196	1.292	30	13	43.333	43	4.82	4.760	4.818	18.48	4.754
0.147	1.167	30	9	30.000	30	4.48	4.294	4.490	15.09	4.323
0.098	0.991	30	2	6.667	7	3.52	3.639	3.529	9.06	3.716

Regression equation: Y = 0.297 + 3.449X
Chi-squared is 1.019 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.363mg/cm^2
LD_{50} is 0.231mg/cm^2
95% confidence limits are 0.185 to 0.288mg/cm^2

Appendix Table CLXIX: Dose mortality effect of *Po. hydropiper* (wp/$CHCl_3$) extracts against *A. gossypii* after 9h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	19	63.333	63	5.33	5.442	5.321	18.03	5.425
0.196	1.292	30	16	53.333	53	5.08	5.091	5.075	19.11	5.090
0.147	1.167	30	14	46.667	47	4.92	4.647	4.929	18.03	4.666
0.098	0.991	30	4	13.333	13	3.87	4.020	3.873	13.17	4.069

Regression equation: Y = 0.706 + 3.392X
Chi-squared is 1.948 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.266mg/cm^2
LD_{50} is 0.184mg/cm^2
95% confidence limits are 0.156 to 0.218mg/cm^2

Appendix Table CLXX: Dose mortality effect of *Po. hydropiper* (wp/$CHCl_3$) extracts against *A. gossypii* after 12h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	23	76.667	77	5.74	5.850	5.698	15.09	5.828
0.196	1.292	30	22	73.333	73	5.61	5.533	5.584	17.43	5.514
0.147	1.167	30	18	60.000	60	5.25	5.131	5.240	19.02	5.115
0.098	0.991	30	9	30.000	30	4.48	4.565	4.460	17.43	4.554

Regression equation: Y = 1.392 + 3.190X
Chi-squared is 0.791 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.131mg/cm^2
LD_{50} is 0.135mg/cm^2
95% confidence limits are 0.112 to 0.164mg/cm^2

Appendix Table CLXXI: Dose mortality effect of *Po. hydropiper* (wp/$CHCl_3$) extracts against *A. gossypii* after 15h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	26	86.667	87	6.13	6.298	6.077	11.10	6.299
0.196	1.292	30	26	86.667	87	6.13	5.934	6.136	14.13	5.934
0.147	1.167	30	21	70.000	70	5.52	5.474	5.510	18.03	5.471
0.098	0.991	30	12	40.000	40	4.75	4.824	4.760	18.81	4.819

Regression equation: Y = 1.147 + 3.704X
Chi-squared is 1.219 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.040mg/cm^2
LD_{50} is 0.110mg/cm^2
95% confidence limits are 0.088 to 0.136mg/cm^2

Appendix Table CLXXII: Dose mortality effect of *Po. hydropiper* (wp/$CHCl_3$) extracts against *A. gossypii* after 18h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	27	90.000	90	6.28	6.442	6.290	9.06	6.487
0.196	1.292	30	27	90.000	90	6.28	6.131	6.270	12.15	6.153
0.147	1.167	30	24	80.000	80	5.85	5.736	5.830	15.96	5.729
0.098	0.991	30	16	53.333	53	5.08	5.180	5.065	19.02	5.131

Regression equation: Y = 1.768 + 3.393X
Chi-squared is 0.768 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.952mg/cm^2
LD_{50} is 0.090mg/cm^2
95% confidence limits are 0.065 to 0.123mg/cm^2

Appendix Table CLXXIII: Dose mortality effect of *Po. hydropiper* (wp/$CHCl_3$) extracts against *A. gossypii* after 21h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	27	90.000	90	6.28	6.506	6.220	8.07	6.464
0.196	1.292	30	28	93.333	93	6.48	6.201	6.383	11.10	6.163
0.147	1.167	30	24	80.000	80	5.85	5.814	5.800	15.09	5.781
0.098	0.991	30	17	56.667	57	5.18	5.269	5.202	18.81	5.243

Regression equation: Y = 2.214 + 3.056X
Chi-squared is 1.057 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.912mg/cm^2
LD_{50} is 0.082mg/cm^2
95% confidence limits are 0.055 to 0.122mg/cm^2

Appendix Table CLXXIV: Dose mortality effect of *Po. hydropiper* (wp/$CHCl_3$) extracts against *A. gossypii* after 24h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	28	93.333	93	6.48	6.497	6.491	9.06	6.485
0.147	1.167	30	24	80.000	80	5.85	5.811	5.800	15.09	5.809
0.098	0.991	30	18	60.000	60	5.25	5.272	5.280	18.81	5.276

Regression equation: Y = 2.279 + 3.024X
Chi-squared is 0.002 with 1 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.900mg/cm^2
LD_{50} is 0.079mg/cm^2
95% confidence limits are 0.052 to 0.121mg/cm^2

Appendix Table LXXV: Dose mortality effect of *Po. hydropiper* (wp/CH_3OH) extracts against *A. gossypii* after 3h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	0.391	30	7	23.333	23	4.26	4.181	4.284	14.13	4.217
0.196	0.292	30	3	10.000	10	3.72	3.862	3.720	11.10	3.872
0.147	0.167	30	2	6.667	7	3.52	3.457	3.540	7.14	3.436

Regression equation: Y = 2.851 + 3.495X
Chi-squared is 0.398 with 1 degrees of freedom
No significant heterogeneity
Log LD_{50} IS 0.615mg/cm^2
LD_{50} is 0.412mg/cm^2
95% confidence limits are 0.178 to 0.953mg/cm^2

Appendix Table CLXXVI: Dose mortality effect of *Po. hydropiper* (wp/CH_3OH) extracts against *A. gossypii* after 6h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	0.391	30	10	33.333	33	4.56	4.582	4.544	17.43	4.566
0.196	0.292	30	6	20.000	20	4.16	4.121	4.170	14.13	4.121
0.147	0.167	30	2	6.667	7	3.52	3.537	3.519	8.07	3.557

Regression equation: Y = 2.802 + 4.514X
Chi-squared is 0.054 with 1 degrees of freedom
No significant heterogeneity
Log LD_{50} IS 0.487mg/cm^2
LD_{50} is 0.307mg/cm^2
95% confidence limits are 0.212 to 0.444mg/cm^2

Appendix Table CLXXVII: Dose mortality effect of *Po. hydropiper* (wp/CH_3OH) extracts against *A. gossypii* after 9h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	12	40.000	40	4.75	4.690	4.740	18.03	4.685
0.196	1.292	30	10	33.333	33	4.56	4.419	4.570	16.74	4.416
0.147	1.167	30	3	10.000	10	3.72	4.077	3.750	13.17	4.076
0.098	0.991	30	2	6.667	7	3.52	3.594	3.519	8.07	3.597
0.049	0.690	30	1	3.333	3	3.12	2.768	3.379	2.28	2.778

Regression equation: Y = 0.900 + 2.722X
Chi-squared is 2.726 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.507mg/cm^2
LD_{50} is 0.321mg/cm^2
95% confidence limits are 0.212 to 0.486mg/cm^2

Appendix Table CLXXVIII: Dose mortality effect of *Po. hydropiper* (wp/CH_3OH) extracts against *A. gossypii* after 12h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	14	46.667	47	4.92	4.974	4.915	19.02	4.973
0.196	1.292	30	14	46.667	47	4.92	4.663	4.929	18.03	4.663
0.147	1.167	30	5	16.667	17	4.05	4.269	4.048	15.09	4.271
0.098	0.991	30	2	6.667	7	3.52	3.713	3.546	10.08	3.718
0.049	0.690	30	1	3.333	3	3.12	2.763	3.379	2.28	2.773

Regression equation: Y = 0.606 + 3.139X
Chi-squared is 3.224 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.400mg/cm^2
LD_{50} is 0.251mg/cm^2
95% confidence limits are 0.194 to 0.325mg/cm^2

Appendix Table CLXXIX: Dose mortality effect of *Po. hydropiper* (wp/CH_3OH) extracts against *A. gossypii* after 15h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	18	60.000	60	5.25	5.278	5.280	18.81	5.282
0.196	1.292	30	17	56.667	57	5.18	4.934	5.165	19.02	4.937
0.147	1.167	30	6	20.000	20	4.16	4.498	4.180	16.74	4.500
0.098	0.991	30	4	13.333	13	3.87	3.883	3.873	11.10	3.884
0.049	0.690	30	1	3.333	3	3.12	2.833	3.256	2.76	2.832

Regression equation: Y = 0.420 + 3.496X
Chi-squared is 3.202 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.310mg/cm^2
LD_{50} IS 0.204 mg/cm^2
95% confidence limits are 0.171 to 0.244mg/cm^2

Appendix Table CLXXX: Dose mortality effect of *Po. hydropiper* (wp/CH_3OH) extracts against *A. gossypii* after 18h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	21	70.000	70	5.52	5.536	5.500	17.43	5.529
0.196	1.292	30	19	63.333	63	5.33	5.155	5.315	19.02	5.152
0.147	1.167	30	10	33.333	33	4.56	4.671	4.551	18.03	4.674
0.098	0.991	30	4	13.333	13	3.87	3.990	3.878	12.15	4.001
0.049	0.690	30	1	3.333	3	3.12	2.826	3.256	2.76	2.849

Regression equation: Y = 0.210 + 3.824X
Chi-squared is 1.433 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.253mg/cm^2
LD_{50} is 0.179mg/cm^2
95% confidence limits are 0.155 to 0.207mg/cm^2

Appendix Table CLXXXI: Dose mortality effect of *Po. hydropiper* (wp/CH_3OH) extracts against *A. gossypii* after 21h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	24	80.000	80	5.85	5.753	5.830	15.96	5.748
0.196	1.292	30	21	70.000	70	5.52	5.379	5.500	18.48	5.376
0.147	1.167	30	13	43.333	43	4.82	4.905	4.815	19.02	4.904
0.098	0.991	30	4	13.333	13	3.87	4.237	3.912	15.09	4.239
0.049	0.690	30	2	6.667	7	3.52	3.096	3.875	3.93	3.103

Regression equation: Y = 0.497 + 3.775X
Chi-squared is 4.502 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.193mg/cm^2
LD_{50} is 0.156mg/cm^2
95% confidence limits are 0.135 to 0.179mg/cm^2

Appendix Table CLXXXII: Dose mortality effect of *Po. hydropiper* (wp/CH_3OH) extracts against *A. gossypii* after 24h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	26	86.667	87	6.13	5.944	6.136	14.13	5.953
0.196	1.292	30	23	76.667	77	5.74	5.617	5.730	16.74	5.612
0.147	1.167	30	15	50.000	50	5.00	5.202	5.020	18.81	5.179
0.098	0.991	30	7	23.333	23	4.26	4.618	4.281	18.03	4.570
0.049	0.690	30	4	13.333	13	3.87	3.619	3.931	9.06	3.528

Regression equation: Y = 1.139 + 3.461X
Chi-squared is 4.159 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.115mg/cm^2
LD_{50} is 0.130mg/cm^2
95% confidence limits are 0.112 to 0.152mg/cm^2

Appendix Table CLXXXIII: Dose mortality effect of *Pz. zeylanica* (wp/PetE) extracts against *A. gossypii* after 3h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	0.292	30	9	30.000	30	4.48	4.480	4.480	16.74	4.480
0.147	0.167	30	4	13.333	13	3.87	3.870	3.873	11.10	3.873

Regression equation: Y = 3.060 + 4.858X
Chi-squared is -0.00003 with 0 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.399mg/cm^2
LD_{50} is 0.251mg/cm^2
95% confidence limits are 0.154 to 0.407mg/cm^2

Appendix Table CLXXXIV: Dose mortality effect of *Pz. zeylanica* (wp/PetE) extracts against *A. gossypii* after 6h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	14	46.667	47	4.92	4.760	4.922	18.48	4.812
0.147	1.167	30	9	30.000	30	4.48	4.469	4.480	16.74	4.491
0.098	0.991	30	3	10.000	10	3.72	4.057	3.750	13.17	4.037
0.049	0.690	30	2	6.667	7	3.52	3.354	3.572	6.24	3.263

Regression equation: Y = 1.487 + 2.573X
Chi-squared is 1.910 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.365mg/cm^2
LD_{50} is 0.232mg/cm^2
95% confidence limits are 0.156 to 0.345mg/cm^2

Appendix Table CLXXXV: Dose mortality effect of *Pz. zeylanica* (wp/PetE) extracts against *A. gossypii* after 9h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	18	60.000	60	5.25	5.082	5.250	19.11	5.083
0.147	1.167	30	12	40.000	40	4.75	4.778	4.740	18.48	4.779
0.098	0.991	30	5	16.667	17	4.05	4.350	4.074	15.96	4.350
0.049	0.690	30	3	10.000	10	3.72	3.618	3.730	9.06	3.616
0.025	0.398	30	1	3.333	3	3.12	2.907	3.172	3.30	2.904

Regression equation: Y = 1.934 + 2.436X
Chi-squared is 2.127 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.258mg/cm^2
LD_{50} is 0.181mg/cm^2
95% confidence limits are 0.135 to 0.243mg/cm^2

Appendix Table CLXXXVI: Dose mortality effect of *Pz. zeylanica* (wp/PetE) extracts against *A. gossypii* after 12h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	21	70.000	70	5.52	5.349	5.500	18.48	5.348
0.147	1.167	30	15	50.000	50	5.00	5.000	4.990	19.02	5.000
0.098	0.991	30	7	23.333	23	4.26	4.507	4.264	17.43	4.509
0.049	0.690	30	3	10.000	10	3.72	3.664	3.730	9.06	3.671
0.025	0.398	30	1	3.333	3	3.12	2.847	3.256	2.76	2.857

Regression equation: Y = 1.748 + 2.785X
Chi-squared is 1.950 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.167mg/cm^2
LD_{50} is 0.147mg/cm^2
95% confidence limits are 0.118 to 0.183mg/cm^2

Appendix Table CLXXXVII: Dose mortality effect of *Pz. zeylanica* (wp/PetE) extracts against *A. gossypii* after 15h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	23	76.667	77	5.74	5.528	5.696	17.43	5.540
0.147	1.167	30	18	60.000	60	5.25	5.229	5.280	18.81	5.227
0.098	0.991	30	9	30.000	30	4.48	4.808	4.500	18.81	4.787
0.049	0.690	30	5	16.667	17	4.05	4.087	4.037	13.17	4.035
0.025	0.398	30	2	6.667	7	3.52	3.388	3.572	6.24	3.305

Regression equation: Y = 2.311 + 2.499X
Chi-squared is 2.477 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.076mg/cm^2
LD_{50} is 0.119mg/cm^2
95% confidence limits are 0.096 to 0.148mg/cm^2

Appendix Table CLXXXVIII: Dose mortality effect of *Pz. zeylanica* (wp/PetE) extracts against *A. gossypii* after 18h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	26	86.667	87	6.13	5.852	6.038	15.09	5.793
0.147	1.167	30	20	66.667	67	5.44	5.534	5.416	17.43	5.479
0.098	0.991	30	13	43.333	43	4.82	5.086	4.825	19.11	5.036
0.049	0.690	30	7	23.333	23	4.26	4.320	4.266	15.96	4.279
0.025	0.398	30	3	10.000	10	3.72	3.577	3.750	8.07	3.545

Regression equation: Y = 2.544 + 2.514X
Chi-squared is 2.170 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.977mg/cm^2
LD_{50} is 0.095mg/cm^2
95% confidence limits are 0.077 to 0.117mg/cm^2

Appendix Table CLXXXIX: Dose mortality effect of *Pz. zeylanica* (wp/PetE) extracts against *A. gossypii* after 21h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	28	93.333	93	6.48	5.945	6.364	14.13	5.972
0.147	1.167	30	21	70.000	70	5.52	5.645	5.520	16.74	5.667
0.098	0.991	30	15	50.000	50	5.00	5.223	5.020	18.81	5.237
0.049	0.690	30	8	26.667	27	4.39	4.502	4.376	17.43	4.502
0.025	0.398	30	5	16.667	17	4.05	3.801	4.077	11.10	3.789

Regression equation: Y = 2.817 + 2.441X
Chi-squared is 4.620 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.894mg/cm^2
LD_{50} is 0.078mg/cm^2
95% confidence limits are 0.063 to 0.097mg/cm^2

Appendix Table CXC: Dose mortality effect of *Pz. zeylanica* (wp/PetE) extracts against *A. gossypii* after 24h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	29	96.667	97	6.88	6.279	6.587	11.10	6.274
0.147	1.167	30	25	83.333	83	5.95	5.938	5.984	14.13	5.935
0.098	0.991	30	18	60.000	60	5.25	5.457	5.240	18.03	5.457
0.049	0.690	30	8	26.667	27	4.39	4.634	4.389	18.03	4.640
0.025	0.398	30	6	20.000	20	4.16	3.835	4.230	11.10	3.846

Regression equation: Y = 2.766 + 2.715X
Chi-squared is 4.736 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.823mg/cm^2
LD_{50} is 0.067mg/cm^2
95% confidence limits are 0.054 to 0.081mg/cm^2

Appendix Table CXCI: Dose mortality effect of *Pz. zeylanica* (wp/$CHCl_3$) extracts against *A. gossypii* after 3h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	0.391	30	11	36.667	37	4.67	4.785	4.662	18.48	4.768
0.196	0.292	30	10	33.333	33	4.56	4.355	4.586	15.96	4.367
0.147	0.167	30	3	10.000	10	3.72	3.811	3.720	11.10	3.859

Regression equation: Y = 3.179 + 4.064X
Chi-squared is 1.189 with 1 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.448mg/cm^2
LD_{50} is 0.281mg/cm^2
95% confidence limits are 0.204 to 0.387mg/cm^2

Appendix Table CXCII: Dose mortality effect of *Pz. zeylanica* (wp/$CHCl_3$) extracts against *A. gossypii* after 6h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	19	63.333	63	5.33	5.143	5.315	19.02	5.136
0.196	1.292	30	14	46.667	47	4.92	4.888	4.942	18.81	4.883
0.147	1.167	30	7	23.333	23	4.26	4.566	4.264	17.43	4.563
0.049	0.690	30	1	3.333	3	3.12	3.335	3.148	6.24	3.339
0.025	0.398	30	1	3.333	3	3.12	2.581	3.860	1.50	2.590

Regression equation: Y = 1.569 + 2.565X
Chi-squared is 4.877 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.338mg/cm^2
LD_{50} is 0.218mg/cm^2
95% confidence limits are 0.169 to 0.281mg/cm^2

Appendix Table CXCIII: Dose mortality effect of *Pz. zeylanica* (wp/$CHCl_3$) extracts against *A. gossypii* after 9h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	22	73.333	73	5.61	5.295	5.618	18.81	5.314
0.196	1.292	30	16	53.333	53	5.08	5.004	5.075	19.11	5.017
0.147	1.167	30	9	30.000	30	4.48	4.636	4.470	18.03	4.642
0.098	0.991	30	1	3.333	3	3.12	4.116	3.524	14.13	4.113
0.049	0.690	30	2	6.667	7	3.52	3.228	3.629	5.40	3.209
0.025	0.398	30	1	3.333	3	3.12	2.366	4.847	0.93	2.331

Regression equation: Y = 1.136 + 3.004X
Chi-squared is 14.083 with 4 degrees of freedom
Variance has been adjusted for heterogeneity
Log LD_{50} is 1.286mg/cm^2
LD_{50} is 0.193mg/cm^2
95% confidence limits are 0.135 to 0.278mg/cm^2

Appendix Table CXCIV: Dose mortality effect of *Pz. zeylanica* (wp/$CHCl_3$) extracts against *A. gossypii* after 12h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	24	80.000	80	5.85	5.381	5.760	18.48	5.354
0.196	1.292	30	18	60.000	60	5.25	5.158	5.240	19.02	5.137
0.147	1.167	30	11	36.667	37	4.67	4.876	4.682	18.81	4.863
0.098	0.991	30	2	6.667	7	3.52	4.478	3.790	16.74	4.477
0.049	0.690	30	4	13.333	13	3.87	3.799	3.894	10.08	3.816
0.025	0.398	30	3	10.000	10	3.72	3.139	4.180	4.62	3.175

Regression equation: Y = 2.302 + 2.194X
Chi-squared is 16.490 with 4 degrees of freedom
Variance has been adjusted for heterogeneity
Log LD_{50} is 1.230mg/cm^2
LD_{50} is 0.170mg/cm^2
95% confidence limits are 0.104 to 0.276mg/cm^2

Appendix Table CXCV: Dose mortality effect of *Pz. zeylanica* (wp/$CHCl_3$) extracts against *A. gossypii* after 15h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	26	86.667	87	6.13	5.508	5.976	17.43	5.508
0.196	1.292	30	20	66.667	67	5.44	5.303	5.422	18.48	5.293
0.147	1.167	30	13	43.333	43	4.82	5.043	4.825	19.11	5.021
0.098	0.991	30	3	10.000	10	3.72	4.678	3.930	18.03	4.638
0.049	0.690	30	5	16.667	17	4.05	4.053	4.037	13.17	3.983
0.025	0.398	30	4	13.333	13	3.87	3.446	4.080	7.14	3.347

Regression equation: Y = 2.481 + 2.176X
Chi-squared is 17.776 with 4 degrees of freedom
Variance has been adjusted for heterogeneity
Log LD_{50} is 1.158mg/cm^2
LD_{50} is 0.144mg/cm^2
95% confidence limits are 0.090 to 0.230mg/cm^2

Appendix Table CXCVI: Dose mortality effect of *Pz. zeylanica* (wp/$CHCl_3$) extracts against *A. gossypii* after 18h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	29	96.667	97	6.88	5.818	6.378	15.09	5.795
0.196	1.292	30	23	76.667	77	5.74	5.589	5.696	17.43	5.572
0.147	1.167	30	16	53.333	53	5.08	5.300	5.058	18.48	5.288
0.098	0.991	30	6	20.000	20	4.16	4.893	4.240	18.81	4.889
0.049	0.690	30	6	20.000	20	4.16	4.196	4.170	14.13	4.206
0.025	0.398	30	5	16.667	17	4.05	3.519	4.289	8.07	3.543

Regression equation: Y = 2.641 + 2.2681X
Chi-squared is 18.797 with 4 degrees of freedom
Variance has been adjusted for heterogeneity
Log LD_{50} is 1.040mg/cm^2
LD_{50} is 0.110mg/cm^2
95% confidence limits are 0.070 to 0.172mg/cm^2

Appendix Table CXCVII: Dose mortality effect of *Pz. zeylanica* (wp/$CHCl_3$) extracts against *A. gossypii* after 21h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	29	96.667	97	6.88	5.959	6.516	14.13	5.949
0.196	1.292	30	25	83.333	83	5.95	5.754	5.926	15.96	5.745
0.147	1.167	30	20	66.667	67	5.44	5.495	5.429	18.03	5.487
0.098	0.991	30	7	23.333	23	4.26	5.129	4.315	19.02	5.123
0.049	0.690	30	8	26.667	27	4.39	4.505	4.376	17.43	4.501
0.025	0.398	30	8	26.667	27	4.39	3.898	4.587	11.10	3.897

Regression equation: Y = 3.074 + 2.066X
Chi-squared is 23.100 with 4 degrees of freedom
Variance has been adjusted for heterogeneity
Log LD_{50} is 0.932mg/cm^2
LD_{50} is 0.085mg/cm^2
95% confidence limits are 0.049 to 0.149mg/cm^2

Appendix Table CXCVIII: Dose mortality effect of *Pz. zeylanica* (wp/$CHCl_3$) extracts against *A. gossypii* after 24h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	28	93.333	93	6.48	5.868	6.242	15.09	5.862
0.147	1.167	30	24	80.000	80	5.85	5.636	5.820	16.74	5.628
0.098	0.991	30	11	36.667	37	4.67	5.309	4.642	18.48	5.299
0.049	0.690	30	11	36.667	37	4.67	4.750	4.662	18.48	4.735
0.025	0.398	30	9	30.000	30	4.48	4.207	4.490	15.09	4.188

Regression equation: Y = 3.444 + 1.871X
Chi-squared is 12.236 with 3 degrees of freedom
Variance has been adjusted for heterogeneity
Log LD_{50} is 0.832mg/cm^2
LD_{50} is 0.068mg/cm^2
95% confidence limits are 0.039 to 0.117mg/cm^2

Appendix Table CXCIX: Dose mortality effect of *Pz. zeylanica* (wp/CH_3OH) extracts against *A. gossypii* after 6h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.295	0.470	30	10	33.333	33	4.56	4.560	4.544	17.43	4.544
0.246	0.391	30	1	3.333	3	3.12	3.120	3.116	4.62	3.116

Regression equation: Y = -3.961 + 18.102X
Chi-squared is -0.0001 with 0 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.495mg/cm^2
LD_{50} is 0.313mg/cm^2
95% confidence limits are 0.287 to 0.341mg/cm^2

Appendix Table CC: Dose mortality effect of *Pz. zeylanica* (wp/CH_3OH) extracts against *A. gossypii* after 9h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.295	0.470	30	12	40.000	40	4.75	4.759	4.740	18.48	4.744
0.246	0.391	30	5	16.667	17	4.05	4.034	4.037	13.17	4.027
0.196	0.292	30	1	3.333	3	3.12	3.127	3.116	4.62	3.129

Regression equation: Y = 0.471 + 9.095X
Chi-squared is 0.003 with 1 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.498mg/cm^2
LD_{50} is 0.315mg/cm^2
95% confidence limits are 0.275 to 0.361mg/cm^2

Appendix Table CCI: Dose mortality effect of *Pz. zeylanica* (wp/CH_3OH) extracts against *A. gossypii* after 12h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.295	0.470	30	16	53.333	53	5.08	5.001	5.075	19.11	5.008
0.246	0.391	30	8	26.667	27	4.39	4.431	4.390	16.74	4.435
0.196	0.292	30	2	6.667	7	3.52	3.717	3.546	10.08	3.719
0.147	0.167	30	1	3.333	3	3.12	2.813	3.256	2.76	2.813

Regression equation: Y = 1.598 + 7.257X
Chi-squared is 0.966 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.469mg/cm^2
LD_{50} is 0.294mg/cm^2
95% confidence limits are 0.260 to 0.332mg/cm^2

Appendix Table CCII: Dose mortality effect of *Pz. zeylanica* (wp/CH_3OH) extracts against *A. gossypii* after 15h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.295	0.470	30	17	56.667	57	5.18	5.248	5.202	18.81	5.251
0.246	0.391	30	12	40.000	40	4.75	4.780	4.740	18.48	4.779
0.196	0.292	30	8	26.667	27	4.39	4.195	4.436	14.13	4.189
0.147	0.167	30	1	3.333	3	3.12	3.455	3.180	7.14	3.441

Regression equation: Y = 2.440 + 5.981X
Chi-squared is 1.425 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.428mg/cm^2
LD_{50} is 0.268mg/cm^2
95% confidence limits are 0.238 to 0.301mg/cm^2

Appendix Table CCIII: Dose mortality effect of *Pz. zeylanica* (wp/CH_3OH) extracts against *A. gossypii* after 18h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.295	0.470	30	21	70.000	70	5.52	5.478	5.510	18.03	5.462
0.246	0.391	30	14	46.667	47	4.92	5.076	4.925	19.11	5.069
0.196	0.292	30	12	40.000	40	4.75	4.572	4.740	17.43	4.578
0.147	0.167	30	4	13.333	13	3.87	3.934	3.878	12.15	3.956

Regression equation: Y = 3.122 + 4.980X
Chi-squared is 0.970 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.377mg/cm^2
LD_{50} is 0.238mg/cm^2
95% confidence limits are 0.212 to 0.267mg/cm^2

Appendix Table CCIV: Dose mortality effect of *Pz. zeylanica* (wp/CH_3OH) extracts against *A. gossypii* after 21h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.295	0.470	30	22	73.333	73	5.61	5.574	5.584	17.43	5.563
0.246	0.391	30	16	53.333	53	5.08	5.254	5.098	18.81	5.254
0.196	0.292	30	16	53.333	53	5.08	4.854	5.098	18.81	4.867
0.147	0.167	30	7	23.333	23	4.26	4.347	4.266	15.96	4.378

Regression equation: Y = 3.722 + 3.917X
Chi-squared is 1.665 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.326mg/cm^2
LD_{50} is 0.212mg/cm^2
95% confidence limits are 0.185 to 0.243mg/cm^2

Appendix Table CCV: Dose mortality effect of *Pz. zeylanica* (wp/CH_3OH) extracts against *A. gossypii* after 24h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.295	1.470	30	26	86.667	87	6.13	5.990	6.136	14.13	5.983
0.246	1.391	30	20	66.667	67	5.44	5.603	5.430	16.74	5.591
0.196	1.292	30	17	56.667	57	5.18	5.119	5.165	19.02	5.101
0.147	1.167	30	8	26.667	27	4.39	4.506	4.376	17.43	4.480
0.098	0.991	30	3	10.000	10	3.72	3.642	3.730	9.06	3.605

Regression equation: Y = -1.323 + 4.971X
Chi-squared is 1.174 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.272mg/cm^2
LD_{50} is 0.187mg/cm^2
95% confidence limits are 0.169 to 0.208mg/cm^2

Appendix Table CCVI: Dose mortality effect of *S. nodiflora* (wp/PetE) extracts against *A. gossypii* after 3h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	16	53.333	53	5.08	4.997	5.065	19.02	4.966
0.147	1.167	30	9	30.000	30	4.48	4.475	4.480	16.74	4.459
0.098	0.991	30	1	3.333	3	3.12	3.740	3.314	10.08	3.744
0.049	0.690	30	1	3.333	3	3.12	2.483	4.268	1.20	2.523

Regression equation: Y = -0.278 + 4.058X
Chi-squared is 5.716 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.301mg/cm^2
LD_{50} is 0.200mg/cm^2
95% confidence limits are 0.159 to 0.250mg/cm^2

Appendix Table CCVII: Dose mortality effect of *S. nodiflora* (wp/PetE) extracts against *A. gossypii* after 6h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	19	63.333	63	5.33	5.276	5.358	18.81	5.305
0.147	1.167	30	13	43.333	43	4.82	4.725	4.818	18.48	4.742
0.098	0.991	30	2	6.667	7	3.52	3.948	3.602	12.15	3.949
0.049	0.690	30	1	3.333	3	3.12	2.620	3.568	1.86	2.592

Regression equation: Y = -0.518 + 4.506X
Chi-squared is 3.390 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.225mg/cm^2
LD_{50} is 0.168mg/cm^2
95% confidence limits are 0.144 to 0.196mg/cm^2

Appendix Table CCVIII: Dose mortality effect of *S. nodiflora* (wp/PetE) extracts against *A. gossypii* after 9h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	22	73.333	73	5.61	5.460	5.591	18.03	5.470
0.147	1.167	30	13	43.333	43	4.82	4.868	4.838	18.81	4.867
0.098	0.991	30	3	10.000	10	3.72	4.035	3.750	13.17	4.017
0.049	0.690	30	1	3.333	3	3.12	2.611	3.568	1.86	2.564

Regression equation: Y = -0.768 + 4.827X
Chi-squared is 3.094 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.195mg/cm^2
LD_{50} is 0.157mg/cm^2
95% confidence limits are 0.137 to 0.180mg/cm^2

Appendix Table CCIX: Dose mortality effect of *S. nodiflora* (wp/PetE) extracts against *A. gossypii* after 12h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	23	76.667	77	5.74	5.676	5.730	16.74	5.675
0.147	1.167	30	19	63.333	63	5.33	5.142	5.315	19.02	5.141
0.098	0.991	30	4	13.333	13	3.87	4.390	3.946	15.96	4.390
0.049	0.690	30	2	6.667	7	3.52	3.104	3.724	4.62	3.105

Regression equation: Y = 0.160 + 4.267X
Chi-squared is 5.538 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.134mg/cm^2
LD_{50} is 0.136mg/cm^2
95% confidence limits are 0.118 to 0.157mg/cm^2

Appendix Table CCX: Dose mortality effect of *S. nodiflora* (wp/PetE) extracts against *A. gossypii* after 15h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	23	76.667	77	5.74	5.749	5.734	15.96	5.750
0.147	1.167	30	20	66.667	67	5.44	5.220	5.462	18.81	5.224
0.098	0.991	30	5	16.667	17	4.05	4.473	4.090	16.74	4.482
0.049	0.690	30	2	6.667	7	3.52	3.197	3.724	4.62	3.214

Regression equation: Y = 0.307 + 4.213X
Chi-squared is 4.846 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.114mg/cm^2
LD_{50} is 0.130mg/cm^2
95% confidence limits are 0.113 to 0.150mg/cm^2

Appendix Table CCXI: Dose mortality effect of *S. nodiflora* (wp/PetE) extracts against *A. gossypii* after 18h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	25	83.333	83	5.95	5.971	5.984	14.13	5.967
0.147	1.167	30	24	80.000	80	5.85	5.539	5.780	17.43	5.521
0.098	0.991	30	9	30.000	30	4.48	4.930	4.490	19.02	4.892
0.049	0.690	30	5	16.667	17	4.05	3.889	4.077	11.10	3.817

Regression equation: Y = 1.352 + 3.571X
Chi-squared is 4.999 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.021mg/cm^2
LD_{50} is 0.105mg/cm^2
95% confidence limits are 0.089 to 0.124mg/cm^2

Appendix Table CCXII: Dose mortality effect of *S. nodiflora* (wp/PetE) extracts against *A. gossypii* after 21h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	27	90.000	90	6.28	6.154	6.270	12.15	6.178
0.147	1.167	30	27	90.000	90	6.28	5.741	6.150	15.96	5.762
0.098	0.991	30	11	36.667	37	4.67	5.159	4.665	19.02	5.175
0.049	0.690	30	6	20.000	20	4.16	4.165	4.170	14.13	4.173
0.025	0.398	30	2	6.667	7	3.52	3.199	3.724	4.62	3.199

Regression equation: Y = 1.874 + 3.331X
Chi-squared is 8.733 with 3 degrees of freedom
Variance has been adjusted for heterogeneity
Log LD_{50} is 0.939mg/cm^2
LD_{50} is 0.087mg/cm^2
95% confidence limits are 0.065 to 0.116mg/cm^2

Appendix Table CCXIII: Dose mortality effect of *S. nodiflora* (wp/PetE) extracts against *A. gossypii* after 24h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	28	93.333	93	6.48	6.205	6.383	11.10	6.168
0.147	1.167	30	27	90.000	90	6.28	5.808	6.140	15.09	5.779
0.098	0.991	30	11	36.667	37	4.67	5.249	4.682	18.81	5.231
0.049	0.690	30	7	23.333	23	4.26	4.292	4.252	15.09	4.295
0.025	0.398	30	3	10.000	10	3.72	3.364	3.890	6.24	3.385

Regression equation: Y = 2.147 + 3.112X
Chi-squared is 9.771 with 3 degrees of freedom
Variance has been adjusted for heterogeneity
Log LD_{50} is 0.917mg/cm^2
LD_{50} is 0.083mg/cm^2
95% confidence limits are 0.060 to 0.114mg/cm^2

Appendix Table CCXIV: Dose mortality effect of *S. nodiflora* (wp/$CHCl_3$) extracts against *A. gossypii* after 3h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	0.292	30	11	36.667	37	4.67	4.670	4.659	18.03	4.659
0.147	0.167	30	3	10.000	10	3.72	3.720	3.720	10.08	3.720

Regression equation: Y = 2.462 + 7.516X
Chi-squared is -0.00007 with 0 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.338mg/cm^2
LD_{50} is 0.218mg/cm^2
95% confidence limits are 0.177 to 0.267mg/cm^2

Appendix Table CCXV: Dose mortality effect of *S. nodiflora* (wp/$CHCl_3$) extracts against *A. gossypii* after 6h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	15	50.000	50	5.00	4.788	5.000	18.48	4.788
0.147	1.167	30	5	16.667	17	4.05	4.396	4.074	15.96	4.396
0.098	0.991	30	4	13.333	13	3.87	3.845	3.873	11.10	3.843
0.049	0.690	30	1	3.333	3	3.12	2.903	3.172	3.30	2.899

Regression equation: Y = 0.732 + 3.139X
Chi-squared is 2.741 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.360mg/cm^2
LD_{50} is 0.229mg/cm^2
95% confidence limits are 0.163 to 0.321mg/cm^2

Appendix Table CCXVI: Dose mortality effect of *S. nodiflora* (wp/$CHCl_3$) extracts against *A. gossypii* after 9h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	19	63.333	63	5.33	5.023	5.325	19.11	5.027
0.147	1.167	30	7	23.333	23	4.26	4.696	4.281	18.03	4.701
0.098	0.991	30	8	26.667	27	4.39	4.236	4.388	15.09	4.241
0.049	0.690	30	1	3.333	3	3.12	3.450	3.180	7.14	3.455
0.025	0.398	30	1	3.333	3	3.12	2.686	3.568	1.86	2.691

Regression equation: Y = 1.651 + 2.613X
Chi-squared is 7.168 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.282mg/cm^2
LD_{50} is 0.191mg/cm^2
95% confidence limits are 0.142 to 0.257mg/cm^2

Appendix Table CCXVII: Dose mortality effect of *S. nodiflora* (wp/$CHCl_3$) extracts against *A. gossypii* after 12h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	21	70.000	70	5.52	5.178	5.490	19.02	5.191
0.147	1.167	30	9	30.000	30	4.48	4.881	4.500	18.81	4.881
0.098	0.991	30	9	30.000	30	4.48	4.462	4.480	16.74	4.444
0.049	0.690	30	3	10.000	10	3.72	3.747	3.720	10.08	3.697
0.025	0.398	30	1	3.333	3	3.12	3.052	3.135	3.93	2.972

Regression equation: Y = 1.984 + 2.481X
Chi-squared is 4.562 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.215mg/cm^2
LD_{50} is 0.164mg/cm^2
95% confidence limits are 0.126 to 0.214mg/cm^2

Appendix Table CCXVIII: Dose mortality effect of *S. nodiflora* (wp/$CHCl_3$) extracts against *A. gossypii* after 15h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	25	83.333	83	5.95	5.639	5.910	16.74	5.609
0.147	1.167	30	14	46.667	47	4.92	5.288	4.942	18.81	5.261
0.098	0.991	30	12	40.000	40	4.75	4.793	4.740	18.48	4.771
0.049	0.690	30	5	16.667	17	4.05	3.946	4.062	12.15	3.933
0.025	0.398	30	1	3.333	3	3.12	3.124	3.116	4.62	3.120

Regression equation: Y = 2.012 + 2.783X
Chi-squared is 3.653 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.073mg/cm^2
LD_{50} is 0.118mg/cm^2
95% confidence limits are 0.097 to 0.144mg/cm^2

Appendix Table CCXIX: Dose mortality effect of *S. nodiflora* (wp/$CHCl_3$) extracts against *A. gossypii* after 18h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	27	90.000	90	6.28	5.810	6.140	15.09	5.718
0.147	1.167	30	16	53.333	53	5.08	5.465	5.051	18.03	5.380
0.098	0.991	30	13	43.333	43	4.82	4.980	4.815	19.02	4.903
0.049	0.690	30	5	16.667	17	4.05	4.150	4.056	14.13	4.089
0.025	0.398	30	2	6.667	7	3.52	3.345	3.572	6.24	3.298

Regression equation: Y = 2.222 + 2.706X
Chi-squared is 5.270 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.027mg/cm^2
LD_{50} is 0.106mg/cm^2
95% confidence limits are 0.087 to 0.130mg/cm^2

Appendix Table CCXX: Dose mortality effect of *S. nodiflora* (wp/$CHCl_3$) extracts against *A. gossypii* after 21h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	28	93.333	93	6.48	5.883	6.242	15.09	5.863
0.147	1.167	30	18	60.000	60	5.25	5.535	5.220	17.43	5.520
0.098	0.991	30	14	46.667	47	4.92	5.044	4.925	19.11	5.037
0.049	0.690	30	7	23.333	23	4.26	4.204	4.252	15.09	4.210
0.025	0.398	30	2	6.667	7	3.52	3.389	3.572	6.24	3.408

Regression equation: Y = 2.315 + 2.746X
Chi-squared is 4.169 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.978mg/cm^2
LD_{50} is 0.095mg/cm^2
95% confidence limits are 0.078 to 0.115mg/cm^2

Appendix Table CCXXI: Dose mortality effect of *S. nodiflora* (wp/$CHCl_3$) extracts against *A. gossypii* after 24h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	29	96.667	97	6.88	6.071	6.497	13.17	6.075
0.147	1.167	30	21	70.000	70	5.52	5.746	5.510	15.96	5.750
0.098	0.991	30	16	53.333	53	5.08	5.288	5.098	18.81	5.294
0.049	0.690	30	10	33.333	33	4.56	4.506	4.544	17.43	4.513
0.025	0.398	30	4	13.333	13	3.87	3.746	3.894	10.08	3.754

Regression equation: Y = 2.722 + 2.594X
Chi-squared is 4.206 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.878mg/cm^2
LD_{50} is 0.076mg/cm^2
95% confidence limits are 0.062 to 0.093mg/cm^2

Appendix Table CCXXII: Dose mortality effect of *S. nodiflora* (wp/CH_3OH) extracts against *A. gossypii* after 3h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	0.391	30	15	50.000	50	5.00	4.844	5.020	18.81	4.886
0.196	0.292	30	6	20.000	20	4.16	4.439	4.180	16.74	4.450
0.147	0.167	30	5	16.667	17	4.05	3.927	4.062	12.15	3.898

Regression equation: Y = 3.159 + 4.418X
Chi-squared is 1.885 with 1 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.417mg/cm^2
LD_{50} is 0.261mg/cm^2
95% confidence limits are 0.204 to 0.334mg/cm^2

Appendix Table CCXXIII: Dose mortality effect of *S. nodiflora* (wp/CH_3OH) extracts against *A. gossypii* after 6h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	0.391	30	17	56.667	57	5.18	5.150	5.165	19.02	5.142
0.196	0.292	30	12	40.000	40	4.75	4.804	4.760	18.81	4.802
0.147	0.167	30	8	26.667	27	4.39	4.366	4.394	15.96	4.372

Regression equation: Y = 3.796 + 3.442X
Chi-squared is 0.051 with 1 degrees of freedom
No significant heterogeneity
Log LD_{50} IS 0.350mg/cm^2
LD_{50} is 0.224mg/cm^2
95% confidence limits are 0.181 to 0.277mg/cm^2

Appendix Table CCXXIV: Dose mortality effect of *S. nodiflora* (wp/CH_3OH) extracts against *A. gossypii* after 9h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	20	66.667	67	5.44	5.455	5.429	18.03	5.465
0.196	1.292	30	19	63.333	63	5.33	5.208	5.358	18.81	5.216
0.147	1.167	30	12	40.000	40	4.75	4.896	4.760	18.81	4.901
0.098	0.991	30	9	30.000	30	4.48	4.456	4.480	16.74	4.456
0.049	0.690	30	3	10.000	10	3.72	3.704	3.720	10.08	3.696

Regression equation: Y = 1.953 + 2.525X
Chi-squared is 0.790 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.207mg/cm^2
LD_{50} is 0.161mg/cm^2
95% confidence limits are 0.131 to 0.197mg/cm^2

Appendix Table CCXXV: Dose mortality effect of *S. nodiflora* (wp/CH_3OH) extracts against *A. gossypii* after 12h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	24	80.000	80	5.85	5.760	5.830	15.96	5.743
0.196	1.292	30	21	70.000	70	5.52	5.483	5.510	18.03	5.465
0.147	1.167	30	15	50.000	50	5.00	5.131	4.990	19.02	5.112
0.098	0.991	30	10	33.333	33	4.56	4.636	4.551	18.03	4.615
0.049	0.690	30	4	13.333	13	3.87	3.790	3.894	10.08	3.766

Regression equation: Y = 1.818 + 2.822X
Chi-squared is 0.681 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.128mg/cm^2
LD_{50} is 0.134mg/cm^2
95% confidence limits are 0.112 to 0.160mg/cm^2

Appendix Table CCXXVI: Dose mortality effect of *S. nodiflora* (wp/CH_3OH) extracts against *A. gossypii* after 15h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	27	90.000	90	6.28	6.085	6.210	13.17	6.018
0.196	1.292	30	24	80.000	80	5.85	5.788	5.830	15.96	5.730
0.147	1.167	30	17	56.667	57	5.18	5.412	5.159	18.03	5.365
0.098	0.991	30	11	36.667	37	4.67	4.881	4.682	18.81	4.851
0.049	0.690	30	6	20.000	20	4.16	3.974	4.200	12.15	3.972

Regression equation: Y = 1.956 + 2.921X
Chi-squared is 2.580 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.042mg/cm^2
LD_{50} is 0.110mg/cm^2
95% confidence limits are 0.092 to 0.132mg/cm^2

Appendix Table CCXXVII: Dose mortality effect of *S. nodiflora* (wp/CH_3OH) extracts against *A. gossypii* after 18h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	25	83.333	83	5.95	5.807	5.902	15.09	5.757
0.147	1.167	30	20	66.667	67	5.44	5.511	5.416	17.43	5.473
0.098	0.991	30	14	46.667	47	4.92	5.093	4.925	19.11	5.073
0.049	0.690	30	9	30.000	30	4.48	4.379	4.490	15.96	4.389

Regression equation: Y = 2.821 + 2.272X
Chi-squared is 0.955 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.959mg/cm^2
LD_{50} is 0.091mg/cm^2
95% confidence limits are 0.071 to 0.117mg/cm^2

Appendix Table CCXXVIII: Dose mortality effect of *S. nodiflora* (wp/CH_3OH) extracts against *A. gossypii* after 21h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	29	96.667	97	6.88	6.324	6.656	10.08	6.344
0.147	1.167	30	24	80.000	80	5.85	5.906	5.870	14.13	5.924
0.098	0.991	30	16	53.333	53	5.08	5.318	5.058	18.48	5.333
0.049	0.690	30	9	30.000	30	4.48	4.311	4.490	15.96	4.321

Regression equation: Y = 2.002 + 3.360X
Chi-squared is 2.871 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} IS 0.892mg/cm^2
LD_{50} is 0.078mg/cm^2
95% confidence limits are 0.064 to 0.095mg/cm^2

Appendix Table CCXXIX: Dose mortality effect of *S. nodiflora* (wp/CH_3OH) extracts against *A. gossypii* after 24h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	29	96.667	97	6.88	6.491	6.759	9.06	6.517
0.147	1.167	30	26	86.667	87	6.13	6.103	6.132	12.15	6.122
0.098	0.991	30	19	63.333	63	5.33	5.555	5.304	17.43	5.566
0.049	0.690	30	12	40.000	40	4.75	4.619	4.740	18.03	4.615

Regression equation: Y = 2.434 + 3.160X
Chi-squared is 2.010 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.812mg/cm^2
LD_{50} is 0.065mg/cm^2
95% confidence limits are 0.051 to 0.082mg/cm^2

Appendix Table CCXXX: Dose mortality effect of *Z. zerumbet* (ap/PetE) extracts against *A. gossypii* after 3h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.147	1.167	30	13	43.333	43	4.82	4.626	4.821	18.03	4.664
0.098	0.991	30	6	20.000	20	4.16	4.343	4.170	15.96	4.359
0.049	0.690	30	3	10.000	10	3.72	3.860	3.720	11.10	3.838
0.025	0.398	30	2	6.667	7	3.52	3.391	3.572	6.24	3.331

Regression equation: Y = 2.642 + 1.732X
Chi-squared is 1.529 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.361mg/cm^2
LD_{50} is 0.230mg/cm^2
95% confidence limits are 0.112 to 0.472mg/cm^2

Appendix Table CCXXXI: Dose mortality effect of *Z. zerumbet* (ap/PetE) extracts against *A. gossypii* after 6h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.147	1.167	30	15	50.000	50	5.00	4.763	5.000	18.48	4.801
0.098	0.991	30	7	23.333	23	4.26	4.491	4.270	16.74	4.505
0.049	0.690	30	4	13.333	13	3.87	4.024	3.873	13.17	4.000
0.025	0.398	30	3	10.000	10	3.72	3.572	3.750	8.07	3.510

Regression equation: Y = 2.841 + 1.679X
Chi-squared is 2.339 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.286mg/cm^2
LD_{50} is 0.193mg/cm^2
95% confidence limits are 0.103 to 0.364mg/cm^2

Appendix Table CCXXXII: Dose mortality effect of *Z. zerumbet* (ap/PetE) extracts against *A. gossypii* after 9h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.147	1.167	30	18	60.000	60	5.25	5.036	5.250	19.11	5.046
0.098	0.991	30	9	30.000	30	4.48	4.753	4.480	18.48	4.753
0.049	0.690	30	7	23.333	23	4.26	4.270	4.252	15.09	4.253
0.025	0.398	30	4	13.333	13	3.87	3.801	3.873	11.10	3.768

Regression equation: Y = 3.107 + 1.661X
Chi-squared is 2.300 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} IS 1.140mg/cm^2
LD_{50} is 0.138mg/cm^2
95% confidence limits are 0.086 to 0.222mg/cm^2

Appendix Table CCXXXIII: Dose mortality effect of *Z. zerumbet* (ap/PetE) extracts against *A. gossypii* after 12h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.147	1.167	30	20	66.667	67	5.44	5.261	5.462	18.81	5.286
0.098	0.991	30	11	36.667	37	4.67	4.967	4.665	19.02	4.984
0.049	0.690	30	10	33.333	33	4.56	4.464	4.570	16.74	4.469
0.025	0.398	30	6	20.000	20	4.16	3.976	4.200	12.15	3.969
0.012	0.079	30	1	3.333	3	3.12	3.444	3.180	7.14	3.424

Regression equation: Y = 3.288 + 1.711X
Chi-squared is 3.766 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} IS 1.000mg/cm^2
LD_{50} is 0.100mg/cm^2
95% confidence limits are 0.070 to 0.144mg/cm^2

Appendix Table CCXXXIV: Dose mortality effect of *Z. zerumbet* (ap/PetE) extracts against *A. gossypii* after 15h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.147	1.167	30	21	70.000	70	5.52	5.433	5.510	18.03	5.406
0.098	0.991	30	14	46.667	47	4.92	5.139	4.915	19.02	5.124
0.049	0.690	30	12	40.000	40	4.75	4.636	4.740	18.03	4.642
0.025	0.398	30	7	23.333	23	4.26	4.147	4.284	14.13	4.174
0.012	0.079	30	2	6.667	7	3.52	3.614	3.529	9.06	3.664

Regression equation: Y = 3.538 + 1.600X
Chi-squared is 1.534 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.914mg/cm^2
LD_{50} is 0.082mg/cm^2
95% confidence limits are 0.058 to 0.116mg/cm^2

Appendix Table CCXXXV: Dose mortality effect of *Z. zerumbet* (ap/PetE) extracts against *A. gossypii* after 18h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.147	1.167	30	23	76.667	77	5.74	5.658	5.730	16.74	5.614
0.098	0.991	30	16	53.333	53	5.08	5.339	5.058	18.48	5.315
0.049	0.690	30	14	46.667	47	4.92	4.793	4.922	18.48	4.804
0.025	0.398	30	9	30.000	30	4.48	4.264	4.490	15.09	4.307
0.012	0.079	30	2	6.667	7	3.52	3.686	3.529	9.06	3.766

Regression equation: Y = 3.631 + 1.699X
Chi-squared is 2.716 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} IS 0.806mg/cm^2
LD_{50} is 0.064mg/cm^2
95% confidence limits are 0.047 to 0.087mg/cm^2

Appendix Table CCXXXVI: Dose mortality effect of *Z. zerumbet* (ap/PetE) extracts against *A. gossypii* after 21h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.147	1.167	30	26	86.667	87	6.13	5.947	6.136	14.13	5.912
0.098	0.991	30	19	63.333	63	5.33	5.591	5.304	17.43	5.565
0.049	0.690	30	15	50.000	50	5.00	4.983	4.990	19.02	4.972
0.025	0.398	30	9	30.000	30	4.48	4.392	4.490	15.96	4.396
0.012	0.079	30	3	10.000	10	3.72	3.748	3.720	10.08	3.768

Regression equation: Y = 3.612 + 1.970X
Chi-squared is 2.067 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.705mg/cm^2
LD_{50} IS 0.051 mg/cm^2
95% confidence limits are 0.039 to 0.066mg/cm^2

Appendix Table CCXXXVII: Dose mortality effect of *Z. zerumbet* (ap/PetE) extracts against *A. gossypii* after 24h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.147	1.167	30	29	96.667	97	6.88	6.137	6.592	12.15	6.140
0.098	0.991	30	20	66.667	67	5.44	5.759	5.414	15.96	5.760
0.049	0.690	30	15	50.000	50	5.00	5.113	4.990	19.02	5.112
0.025	0.398	30	10	33.333	33	4.56	4.486	4.570	16.74	4.482
0.012	0.079	30	4	13.333	13	3.87	3.802	3.873	11.10	3.795

Regression equation: Y = 3.624 + 2.155X
Chi-squared is 4.878 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.638mg/cm^2
LD_{50} is 0.043mg/cm^2
95% confidence limits are 0.034 to 0.055mg/cm^2

Appendix Table CCXXXVIII: Dose mortality effect of *Z. zerumbet* (ap/$CHCl_3$) against *A. gossypii* after 3h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	7	23.333	23	4.26	4.292	4.252	15.09	4.276
0.147	1.167	30	4	13.333	13	3.87	3.815	3.873	11.10	3.817
0.098	0.991	30	1	3.333	3	3.12	3.143	3.116	4.62	3.171

Regression equation: Y = -0.456 + 3.669X
Chi-squared is 0.057 with 1 degree of freedom
No significant heterogeneity
Log LD_{50} is 1.489mg/cm^2
LD_{50} is 0.309mg/cm^2
95% confidence limits are 0.162 to 0.588mg/cm^2

Appendix Table CCXXXIX: Dose mortality effect of *Z. zerumbet*(ap/$CHCl_3$) extracts against *A. gossypii* after 6h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	9	30.000	30	4.48	4.478	4.480	16.74	4.467
0.147	1.167	30	6	20.000	20	4.16	4.201	4.150	15.09	4.196
0.098	0.991	30	4	13.333	13	3.87	3.810	3.873	11.10	3.813
0.049	0.690	30	1	3.333	3	3.12	3.142	3.116	4.62	3.158

Regression equation: Y = 1.656 + 2.175X
Chi-squared is 0.083 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.537mg/cm^2
LD_{50} is 0.344mg/cm^2
95% confidence limits are 0.163 to 0.728mg/cm^2

Appendix Table CCXL: Dose mortality effect of *Z. zerumbet* (ap/$CHCl_3$) extracts against *A. gossypii* after 9h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	12	40.000	40	4.75	4.757	4.740	18.48	4.741
0.147	1.167	30	10	33.333	33	4.56	4.531	4.544	17.43	4.518
0.098	0.991	30	6	20.000	20	4.16	4.213	4.150	15.09	4.205
0.049	0.690	30	3	10.000	10	3.72	3.669	3.730	9.06	3.669
0.025	0.398	30	1	3.333	3	3.12	3.141	3.116	4.62	3.149

Regression equation: Y = 2.441 + 1.780X
Chi-squared is 0.096 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.438mg/cm^2
LD_{50} is 0.274mg/cm^2
95% confidence limits are 0.155 to 0.485mg/cm^2

Appendix Table CCXLI: Dose mortality effect of *Z. zerumbet* (ap/$CHCl_3$) extracts against *A. gossypii* after 12h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	16	53.333	53	5.08	5.076	5.075	19.11	5.077
0.147	1.167	30	13	43.333	43	4.82	4.800	4.818	18.48	4.799
0.098	0.991	30	8	26.667	27	4.39	4.410	4.390	16.74	4.408
0.049	0.690	30	3	10.000	10	3.72	3.745	3.720	10.08	3.739
0.025	0.398	30	1	3.333	3	3.12	3.099	3.135	3.93	3.089

Regression equation: Y = 2.205 + 2.223X
Chi-squared is 0.024 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} IS 1.258mg/cm^2
LD_{50} is 0.181mg/cm^2
95% confidence limits are 0.131 to 0.249mg/cm^2

Appendix Table CCXLII: Dose mortality effect of *Z. zerumbet* (ap/$CHCl_3$) extracts against *A. gossypii* after 15h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	23	76.667	77	5.74	5.504	5.696	17.43	5.510
0.147	1.167	30	16	53.333	53	5.08	5.203	5.098	18.81	5.196
0.098	0.991	30	11	36.667	37	4.67	4.777	4.662	18.48	4.754
0.049	0.690	30	4	13.333	13	3.87	4.051	3.873	13.17	3.997
0.025	0.398	30	2	6.667	7	3.52	3.345	3.572	6.24	3.263

Regression equation: Y = 2.263 + 2.513X
Chi-squared is 1.739 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.089mg/cm^2
LD_{50} is 0.123mg/cm^2
95% confidence limits are 0.099 to 0.153mg/cm^2

Appendix Table CCXLIII: Dose mortality effect of *Z. zerumbet* (ap/$CHCl_3$) extracts against *A. gossypii* after 18h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	27	90.000	90	6.28	5.820	6.140	15.09	5.724
0.147	1.167	30	18	60.000	60	5.25	5.538	5.220	17.43	5.453
0.098	0.991	30	14	46.667	47	4.92	5.140	4.915	19.02	5.071
0.049	0.690	30	7	23.333	23	4.26	4.461	4.270	16.74	4.419
0.025	0.398	30	5	16.667	17	4.05	3.801	4.077	11.10	3.785

Regression equation: Y = 2.922 + 2.168X
Chi-squared is 5.340 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.958mg/cm^2
LD_{50} is 0.091mg/cm^2
95% confidence limits are 0.072 to 0.115mg/cm^2

Appendix Table CCXLIV: Dose mortality effect of *Z. zerumbet* (ap/$CHCl_3$) extracts against *A. gossypii* after 21h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	29	96.667	97	6.88	6.049	6.497	13.17	6.053
0.147	1.167	30	22	73.333	73	5.61	5.729	5.606	15.96	5.734
0.098	0.991	30	15	50.000	50	5.00	5.279	5.020	18.81	5.284
0.049	0.690	30	8	26.667	27	4.39	4.509	4.376	17.43	4.516
0.025	0.398	30	5	16.667	17	4.05	3.761	4.126	10.08	3.769

Regression equation: Y = 2.753 + 2.554X
Chi-squared is 5.794 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.880mg/cm^2
LD_{50} is 0.076mg/cm^2
95% confidence limits are 0.062 to 0.093mg/cm^2

Appendix Table CCXLV: Dose mortality effect of *Z. zerumbet* (ap/$CHCl_3$) extracts against *A. gossypii* after 24h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.147	1.167	30	25	83.333	83	5.95	5.778	5.926	15.96	5.744
0.098	0.991	30	17	56.667	57	5.18	5.360	5.162	18.48	5.331
0.049	0.690	30	10	33.333	33	4.56	4.647	4.551	18.03	4.623
0.025	0.398	30	5	16.667	17	4.05	3.955	4.062	12.15	3.937

Regression equation: Y = 3.002 + 2.350X
Chi-squared is 1.337 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} IS 0.851mg/cm^2
LD_{50} is 0.071mg/cm^2
95% confidence limits are 0.056 to 0.090mg/cm^2

Appendix Table CCXLVI: Dose mortality effect of *Z. zerumbet* (ap/CH_3OH) extracts against *A. gossypii* after 3h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	0.391	30	11	36.667	37	4.67	4.627	4.659	18.03	4.636
0.196	0.292	30	4	13.333	13	3.87	3.947	3.878	12.15	3.938
0.147	0.167	30	1	3.333	3	3.12	3.086	3.135	3.93	3.053

Regression equation: Y = 1.869 + 7.080X
Chi-squared is 0.079 with 1 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.442mg/cm^2
LD_{50} is 0.277mg/cm^2
95% confidence limits are 0.227 to 0.337mg/cm^2

Appendix Table CCXLVII: Dose mortality effect of *Z. zerumbet* (ap/CH_3OH) extracts against *A. gossypii* after 6h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	13	43.333	43	4.82	4.642	4.821	18.03	4.643
0.147	1.167	30	5	16.667	17	4.05	4.250	4.048	15.09	4.252
0.098	0.991	30	2	6.667	7	3.52	3.697	3.529	9.06	3.701
0.049	0.690	30	1	3.333	3	3.12	2.751	3.379	2.28	2.758

Regression equation: Y = 0.598 + 3.130X
Chi-squared is 2.344 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.406mg/cm^2
LD_{50} is 0.255mg/cm^2
95% confidence limits are 0.170 to 0.383mg/cm^2

Appendix Table CCXLVIII: Dose mortality effect of *Z. zerumbet* (ap/CH_3OH) extracts against *A. gossypii* after 9h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	18	60.000	60	5.25	4.849	5.280	18.81	4.853
0.196	1.292	30	6	20.000	20	4.16	4.518	4.180	17.43	4.517
0.147	1.167	30	3	10.000	10	3.72	4.099	3.750	13.17	4.093
0.098	0.991	30	2	6.667	7	3.52	3.509	3.519	8.07	3.494
0.049	0.690	30	1	3.333	3	3.12	2.499	4.268	1.20	2.472

Regression equation: Y = 0.126 + 3.398X
Chi-squared is 10.844 with 3 degrees of freedom
Variance has been adjusted for heterogeneity
Log LD_{50} is 1.434mg/cm^2
LD_{50} is 0.272mg/cm^2
95% confidence limits are 0.161 to 0.460mg/cm^2

Appendix Table CCXLIX: Dose mortality effect of *Z. zerumbet* (ap/CH_3OH) extracts against *A. gossypii* after 12h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	21	70.000	70	5.52	5.062	5.500	19.11	5.072
0.196	1.292	30	8	26.667	27	4.39	4.711	4.402	18.48	4.715
0.147	1.167	30	4	13.333	13	3.87	4.267	3.912	15.09	4.264
0.098	0.991	30	3	10.000	10	3.72	3.640	3.730	9.06	3.628
0.049	0.690	30	1	3.333	3	3.12	2.569	3.860	1.50	2.540

Regression equation: Y = 0.047 + 3.613X
Chi-squared is 9.894 with 3 degrees of freedom
Variance has been adjusted for heterogeneity
Log LD_{50} is 1.371mg/cm^2
LD_{50} is 0.235mg/cm^2
95% confidence limits are 0.161 to 0.343mg/cm^2

Appendix Table CCL: Dose mortality effect of *Z. zerumbet* (ap/CH_3OH) extracts against *A. gossypii* after 15h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	25	83.333	83	5.95	5.433	5.861	18.03	5.442
0.196	1.292	30	13	43.333	43	4.82	5.022	4.825	19.11	5.027
0.147	1.167	30	5	16.667	17	4.05	4.502	4.096	17.43	4.502
0.098	0.991	30	4	13.333	13	3.87	3.770	3.894	10.08	3.762
0.049	0.690	30	1	3.333	3	3.12	2.517	3.860	1.50	2.497

Regression equation: Y = -0.402 + 4.201X
Chi-squared is 9.785 with 3 degrees of freedom
Variance has been adjusted for heterogeneity
Log LD_{50} is 1.286mg/cm^2
LD_{50} is 0.193mg/cm^2
95% confidence limits are 0.150 to 0.249mg/cm^2

Appendix Table CCLI: Dose mortality effect of *Z. zerumbet* (ap/CH_3OH) extracts against *A. gossypii* after 18h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	27	90.000	90	6.28	5.591	6.060	17.43	5.577
0.196	1.292	30	15	50.000	50	5.00	5.237	5.020	18.81	5.232
0.147	1.167	30	8	26.667	27	4.39	4.790	4.402	18.48	4.795
0.098	0.991	30	6	20.000	20	4.16	4.159	4.170	14.13	4.179
0.049	0.690	30	2	6.667	7	3.52	3.081	3.875	3.93	3.125

Regression equation: Y = 0.710 + 3.499X
Chi-squared is 9.968 with 3 degrees of freedom
Variance has been adjusted for heterogeneity
Log LD_{50} is 1.226mg/cm^2
LD_{50} is 0.168mg/cm^2
95% confidence limits are 0.127 to 0.223mg/cm^2

Appendix Table CCLII: Dose mortality effect of *Z. zerumbet* (ap/CH_3OH) extracts against *A. gossypii* after 21h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	29	96.667	97	6.88	5.957	6.516	14.13	5.954
0.196	1.292	30	20	66.667	67	5.44	5.558	5.416	17.43	5.556
0.147	1.167	30	10	33.333	33	4.56	5.053	4.575	19.11	5.052
0.098	0.991	30	8	26.667	27	4.39	4.342	4.394	15.96	4.341
0.049	0.690	30	2	6.667	7	3.52	3.126	3.724	4.62	3.125

Regression equation: Y = 0.339 + 4.037X
Chi-squared is 10.840 with 3 degrees of freedom
Variance has been adjusted for heterogeneity
Log LD_{50} is 1.155mg/cm^2
LD_{50} is 0.143mg/cm^2
95% confidence limits are 0.111 to 0.184mg/cm^2

Appendix Table CCLIII: Dose mortality effect of *Z. zerumbet* (ap/CH_3OH) extracts against *A. gossypii* after 24h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	22	73.333	73	5.61	5.363	5.578	18.48	5.349
0.147	1.167	30	13	43.333	43	4.82	5.070	4.825	19.11	5.053
0.098	0.991	30	10	33.333	33	4.56	4.657	4.551	18.03	4.637
0.049	0.690	30	5	16.667	17	4.05	3.950	4.062	12.15	3.924

Regression equation: Y = 2.290 + 2.367X
Chi-squared is 2.328 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.145mg/cm^2
LD_{50} is 0.140mg/cm^2
95% confidence limits are 0.109 to 0.179mg/cm^2

Appendix Table CCLIV: Dose mortality effect of *Z. zerumbet* (rh/PetE) extracts against *A. gossypii* after 3h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.147	1.167	30	11	36.667	37	4.67	4.723	4.662	18.48	4.698
0.098	0.991	30	8	26.667	27	4.39	4.371	4.394	15.96	4.368
0.049	0.690	30	4	13.333	13	3.87	3.770	3.894	10.08	3.805
0.025	0.398	30	1	3.333	3	3.12	3.186	3.116	4.62	3.257

Regression equation: Y = 2.512 + 1.872X
Chi-squared is 0.207 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.329mg/cm^2
LD_{50} is 0.213mg/cm^2
95% confidence limits are 0.112 to 0.405mg/cm^2

Appendix Table CCLV: Dose mortality effect of *Z. zerumbet* (rh/PetE) extracts against *A. gossypii* after 6h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.147	1.167	30	14	46.667	47	4.92	4.916	4.915	19.02	4.898
0.098	0.991	30	9	30.000	30	4.48	4.511	4.460	17.43	4.500
0.049	0.690	30	4	13.333	13	3.87	3.818	3.873	11.10	3.820
0.025	0.398	30	1	3.333	3	3.12	3.145	3.116	4.62	3.160

Regression equation: Y = 2.261 + 2.259X
Chi-squared is 0.074 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.212mg/cm^2
LD_{50} is 0.163mg/cm^2
95% confidence limits are 0.108 to 0.247mg/cm^2

Appendix Table CCLVI: Dose mortality effect of *Z. zerumbet* (rh/PetE) extracts against *A. gossypii* after 9h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.147	1.167	30	18	60.000	60	5.25	5.023	5.250	19.11	5.048
0.098	0.991	30	10	33.333	33	4.56	4.756	4.558	18.48	4.767
0.049	0.690	30	7	23.333	23	4.26	4.300	4.252	15.09	4.286
0.025	0.398	30	3	10.000	10	3.72	3.857	3.720	11.10	3.819
0.012	0.079	30	2	6.667	7	3.52	3.374	3.572	6.24	3.310

Regression equation: Y = 3.184 + 1.597X
Chi-squared is 2.140 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.137mg/cm^2
LD_{50} is 0.137mg/cm^2
95% confidence limits are 0.086 to 0.220mg/cm^2

Appendix Table CCLVII: Dose mortality effect of *Z. zerumbet* (rh/PetE) extracts against *A. gossypii* after 12h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.147	1.167	30	19	63.333	63	5.33	5.217	5.358	18.81	5.235
0.098	0.991	30	14	46.667	47	4.92	4.967	4.915	19.02	4.977
0.049	0.690	30	8	26.667	27	4.39	4.540	4.376	17.43	4.536
0.025	0.398	30	6	20.000	20	4.16	4.125	4.170	14.13	4.108
0.012	0.079	30	3	10.000	10	3.72	3.672	3.730	9.06	3.641

Regression equation: Y = 3.525 + 1.465X
Chi-squared is 0.931 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.007mg/cm^2
LD_{50} is 0.102mg/cm^2
95% confidence limits are 0.066 to 0.155mg/cm^2

Appendix Table CCLVIII: Dose mortality effect of *Z. zerumbet* (rh/PetE) extracts against *A. gossypii* after 15h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.147	1.167	30	21	70.000	70	5.52	5.519	5.500	17.43	5.515
0.098	0.991	30	18	60.000	60	5.25	5.236	5.280	18.81	5.233
0.049	0.690	30	11	36.667	37	4.67	4.750	4.662	18.48	4.751
0.025	0.398	30	8	26.667	27	4.39	4.279	4.388	15.09	4.283
0.012	0.079	30	3	10.000	10	3.72	3.765	3.720	10.08	3.773

Regression equation: Y = 3.646 + 1.601X
Chi-squared is 0.386 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.845mg/cm^2
LD_{50} is 0.070mg/cm^2
95% confidence limits are 0.050 to 0.097mg/cm^2

Appendix Table CCLIX: Dose mortality effect of *Z. zerumbet* (rh/PetE) extracts against *A. gossypii* after 18h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.147	1.167	30	23	76.667	77	5.74	5.674	5.730	16.74	5.658
0.098	0.991	30	20	66.667	67	5.44	5.399	5.422	18.48	5.384
0.049	0.690	30	12	40.000	40	4.75	4.931	4.740	19.02	4.916
0.025	0.398	30	9	30.000	30	4.48	4.476	4.480	16.74	4.462
0.012	0.079	30	5	16.667	17	4.05	3.980	4.062	12.15	3.967

Regression equation: Y = 3.844 + 1.553X
Chi-squared is 0.821 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.744mg/cm^2
LD_{50} is 0.055mg/cm^2
95% confidence limits are 0.040 to 0.076mg/cm^2

Appendix Table CCLX: Dose mortality effect of *Z. zerumbet* (rh/PetE) extracts against *A. gossypii* after 21h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.147	1.167	30	26	86.667	87	6.13	5.988	6.136	14.13	5.974
0.098	0.991	30	22	73.333	73	5.61	5.681	5.610	16.74	5.667
0.049	0.690	30	15	50.000	50	5.00	5.158	4.990	19.02	5.142
0.025	0.398	30	11	36.667	37	4.67	4.649	4.659	18.03	4.633
0.012	0.079	30	6	20.000	20	4.16	4.094	4.160	13.17	4.077

Regression equation: Y = 3.939 + 1.743X
Chi-squared is 0.969 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.609mg/cm^2
LD_{50} is 0.041mg/cm^2
95% confidence limits are 0.030 to 0.054mg/cm^2

Appendix Table CCLXI: Dose mortality effect of *Z. zerumbet* (rh/PetE) extracts against *A. gossypii* after 24h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.098	0.991	30	23	76.667	77	5.74	5.716	5.734	15.96	5.720
0.049	0.690	30	17	56.667	57	5.18	5.239	5.202	18.81	5.241
0.025	0.398	30	13	43.333	43	4.82	4.775	4.818	18.48	4.776
0.012	0.079	30	7	23.333	23	4.26	4.270	4.252	15.09	4.269

Regression equation: Y = 4.143 + 1.591X
Chi-squared is 0.069 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.539mg/cm^2
LD_{50} is 0.035mg/cm^2
95% confidence limits are 0.025 to 0.049mg/cm^2

Appendix Table CCLXII: Dose mortality effect of *Z. zerumbet* (rh/$CHCl_3$) extracts against *A. gossypii* after 3h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	15	50.000	50	5.00	4.855	5.020	18.81	4.877
0.147	1.167	30	9	30.000	30	4.48	4.605	4.470	18.03	4.612
0.098	0.991	30	6	20.000	20	4.16	4.252	4.150	15.09	4.238
0.049	0.690	30	3	10.000	10	3.72	3.648	3.730	9.06	3.598

Regression equation: Y = 2.132 + 2.124X
Chi-squared is 1.019 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.350mg/cm^2
LD_{50} is 0.224mg/cm^2
95% confidence limits are 0.144 to 0.349mg/cm^2

Appendix Table CCLXIII: Dose mortality effect of *Z. zerumbet* (rh/$CHCl_3$) extracts against *A. gossypii* after 6h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	18	60.000	60	5.25	4.990	5.240	19.02	5.002
0.147	1.167	30	9	30.000	30	4.48	4.735	4.480	18.48	4.736
0.098	0.991	30	7	23.333	23	4.26	4.375	4.266	15.96	4.362
0.049	0.690	30	4	13.333	13	3.87	3.760	3.894	10.08	3.721

Regression equation: Y = 2.251 + 2.129X
Chi-squared is 2.737 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.291mg/cm^2
LD_{50} is 0.195mg/cm^2
95% confidence limits are 0.134 to 0.285mg/cm^2

Appendix Table CCLXIV: Dose mortality effect of *Z. zerumbet* (rh/$CHCl_3$) extracts against *A. gossypii* after 9h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	20	66.667	67	5.44	5.165	5.415	19.02	5.150
0.147	1.167	30	11	36.667	37	4.67	4.955	4.665	19.02	4.942
0.098	0.991	30	10	33.333	33	4.56	4.658	4.551	18.03	4.648
0.049	0.690	30	7	23.333	23	4.26	4.152	4.284	14.13	4.145

Regression equation: Y = 2.993 + 1.669X
Chi-squared is 3.230 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.202mg/cm^2
LD_{50} is 0.159mg/cm^2
95% confidence limits are 0.108 to 0.235mg/cm^2

Appendix Table CCLXV: Dose mortality effect of *Z. zerumbet* (rh/$CHCl_3$) extracts against *A. gossypii* after 12h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	23	76.667	77	5.74	5.345	5.682	18.48	5.309
0.147	1.167	30	12	40.000	40	4.75	5.142	4.740	19.02	5.113
0.098	0.991	30	11	36.667	37	4.67	4.854	4.682	18.81	4.837
0.049	0.690	30	10	33.333	33	4.56	4.363	4.586	15.96	4.366
0.025	0.398	30	4	13.333	13	3.87	3.886	3.873	11.10	3.908

Regression equation: Y = 3.285 + 1.566X
Chi-squared is 6.463 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.095mg/cm^2
LD_{50} is 0.124mg/cm^2
95% confidence limits are 0.088 to 0.176mg/cm^2

Appendix Table CCLXVI: Dose mortality effect of *Z. zerumbet* (rh/$CHCl_3$) extracts against *A. gossypii* after 15h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	24	80.000	80	5.85	5.508	5.780	17.43	5.464
0.147	1.167	30	14	46.667	47	4.92	5.286	4.942	18.81	5.253
0.098	0.991	30	13	43.333	43	4.82	4.974	4.815	19.02	4.957
0.049	0.690	30	11	36.667	37	4.67	4.440	4.690	16.74	4.450
0.025	0.398	30	4	13.333	13	3.87	3.922	3.878	12.15	3.958

Regression equation: Y = 3.289 + 1.683X
Chi-squared is 4.991 with 3 degrees of freedom
No significant heterogeneity
LOG LD_{50} is 1.017mg/cm^2
LD_{50} is 0.104mg/cm^2
95% confidence limits are 0.077 to 0.140mg/cm^2

Appendix Table CCLXVII: Dose mortality effect of *Z. zerumbet* (rh/$CHCl_3$) extracts against *A. gossypii* after 18h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	27	90.000	90	6.28	5.892	6.140	15.09	5.794
0.147	1.167	30	18	60.000	60	5.25	5.612	5.220	16.74	5.534
0.098	0.991	30	15	50.000	50	5.00	5.217	5.020	18.81	5.167
0.049	0.690	30	12	40.000	40	4.75	4.542	4.740	17.43	4.541
0.025	0.398	30	4	13.333	13	3.87	3.886	3.873	11.10	3.933

Regression equation: Y = 3.105 + 2.081X
Chi-squared is 4.596 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.911mg/cm^2
LD_{50} is 0.081mg/cm^2
95% confidence limits are 0.064 to 0.104mg/cm^2

Appendix Table CCLXVIII: Dose mortality effect of *Z. zerumbet* (rh/$CHCl_3$) extracts against *A. gossypii* after 21h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.147	1.167	30	20	66.667	67	5.44	5.498	5.429	18.03	5.504
0.098	0.991	30	18	60.000	60	5.25	5.202	5.280	18.81	5.206
0.049	0.690	30	12	40.000	40	4.75	4.696	4.740	18.03	4.697
0.025	0.398	30	6	20.000	20	4.16	4.205	4.150	15.09	4.203

Regression equation: Y = 3.529 + 1.692X
Chi-squared is 0.279 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.869mg/cm^2
LD_{50} is 0.074mg/cm^2
95% confidence limits are 0.054 to 0.102mg/cm^2

Appendix Table CCLXIX: Dose mortality effect of *Z. zerumbet* (rh/$CHCl_3$) extracts against *A. gossypii* after 24h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.147	1.167	30	23	76.667	77	5.74	5.774	5.734	15.96	5.765
0.098	0.991	30	20	66.667	67	5.44	5.411	5.429	18.03	5.406
0.049	0.690	30	13	43.333	43	4.82	4.789	4.818	18.48	4.793
0.025	0.398	30	6	20.000	20	4.16	4.186	4.170	14.13	4.197

Regression equation: Y = 3.386 + 2.038X
Chi-squared is 0.047 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.792mg/cm^2
LD_{50} is 0.062mg/cm^2
95% confidence limits are 0.047 to 0.081mg/cm^2

Appendix Table CCLXX: Dose mortality effect of *Z. zerumbet* (rh/CH_3OH) extracts against *A. gossypii* after 3h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	11	36.667	37	4.67	4.628	4.659	18.03	4.617
0.196	1.292	30	6	20.000	20	4.16	4.260	4.150	15.09	4.255
0.147	1.167	30	4	13.333	13	3.87	3.794	3.894	10.08	3.796
0.098	0.991	30	1	3.333	3	3.12	3.138	3.116	4.62	3.150

Regression equation: Y = -0.486 + 3.669X
Chi-squared is 0.299 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} IS 1.495mg/cm^2
LD_{50} is 0.313mg/cm^2
95% confidence limits are 0.217 to 0.450mg/cm^2

Appendix Table CCLXXI: Dose mortality effect of *Z. zerumbet* (rh/CH_3OH) extracts against *A. gossypii* after 6h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	13	43.333	43	4.82	4.822	4.838	18.81	4.816
0.196	1.292	30	9	30.000	30	4.48	4.565	4.460	17.43	4.564
0.147	1.167	30	8	26.667	27	4.39	4.240	4.388	15.09	4.245
0.098	0.991	30	3	10.000	10	3.72	3.783	3.720	10.08	3.795

Regression equation: Y = 1.264 + 2.553X
Chi-squared is 0.563 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.463mg/cm^2
LD_{50} is 0.290mg/cm^2
95% confidence limits are 0.190 to 0.444mg/cm^2

Appendix Table CCLXXII: Dose mortality effect of *Z. zerumbet* (rh/CH_3OH) extracts against *A. gossypii* after 9h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	17	56.667	57	5.18	5.046	5.175	19.11	5.059
0.196	1.292	30	12	40.000	40	4.75	4.821	4.760	18.81	4.825
0.147	1.167	30	9	30.000	30	4.48	4.535	4.460	17.43	4.529
0.098	0.991	30	5	16.667	17	4.05	4.133	4.056	14.13	4.112
0.049	0.690	30	2	6.667	7	3.52	3.445	3.540	7.14	3.399

Regression equation: Y = 1.763 + 2.369X
Chi-squared is 0.607 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.366mg/cm^2
LD_{50} is 0.232mg/cm^2
95% confidence limits are 0.173 to 0.312mg/cm^2

Appendix Table CCLXXIII: Dose mortality effect of *Z. zerumbet* (rh/CH_3OH) extracts against *A. gossypii* after 12h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	19	63.333	63	5.33	5.298	5.358	18.81	5.311
0.196	1.292	30	15	50.000	50	5.00	5.046	5.000	19.11	5.054
0.147	1.167	30	12	40.000	40	4.75	4.727	4.740	18.48	4.729
0.098	0.991	30	7	23.333	23	4.26	4.278	4.252	15.09	4.271
0.049	0.690	30	2	6.667	7	3.52	3.510	3.519	8.07	3.488

Regression equation: Y = 1.693 + 2.601X
Chi-squared is 0.113 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.271mg/cm^2
LD_{50} is 0.187mg/cm^2
95% confidence limits are 0.150 to 0.232mg/cm^2

Appendix Table CCLXXIV: Dose mortality effect of *Z. zerumbet* (rh/CH_3OH) extracts against *A. gossypii* after 15h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	21	70.000	70	5.52	5.436	5.510	18.03	5.428
0.196	1.292	30	17	56.667	57	5.18	5.191	5.165	19.02	5.184
0.147	1.167	30	12	40.000	40	4.75	4.881	4.760	18.81	4.874
0.098	0.991	30	9	30.000	30	4.48	4.444	4.480	16.74	4.438
0.049	0.690	30	3	10.000	10	3.72	3.697	3.730	9.06	3.693

Regression equation: Y = 1.983 + 2.477X
Chi-squared is 0.415 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.218mg/cm^2
LD_{50} is 0.165mg/cm^2
95% confidence limits are 0.134 to 0.204mg/cm^2

Appendix Table CCLXXV: Dose mortality effect of *Z. zerumbet* (rh/CH_3OH) extracts against *A. gossypii* after 18h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	23	76.667	77	5.74	5.698	5.730	16.74	5.684
0.196	1.292	30	22	73.333	73	5.61	5.455	5.591	18.03	5.441
0.147	1.167	30	14	46.667	47	4.92	5.148	4.915	19.02	5.132
0.098	0.991	30	11	36.667	37	4.67	4.715	4.662	18.48	4.697
0.049	0.690	30	5	16.667	17	4.05	3.974	4.062	12.15	3.954

Regression equation: Y = 2.250 + 2.469X
Chi-squared is 1.504 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.114mg/cm^2
LD_{50} is 0.130mg/cm^2
95% confidence limits are 0.106 to 0.159mg/cm^2

Appendix Table CCLXXVI: Dose mortality effect of *Z. zerumbet* (rh/CH_3OH) extracts against *A. gossypii* after 21h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.246	1.391	30	26	86.667	87	6.13	5.983	6.136	14.13	5.962
0.196	1.292	30	23	76.667	77	5.74	5.699	5.730	16.74	5.680
0.147	1.167	30	16	53.333	53	5.08	5.339	5.058	18.48	5.323
0.098	0.991	30	13	43.333	43	4.82	4.832	4.838	18.81	4.820
0.049	0.690	30	5	16.667	17	4.05	3.966	4.062	12.15	3.959

Regression equation: Y = 1.987 + 2.858X
Chi-squared is 1.901 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.054mg/cm^2
LD_{50} is 0.113mg/cm^2
95% confidence limits are 0.094 to 0.136mg/cm^2

Appendix Table CCLXXVII: Dose mortality effect of *Z. zerumbet* (rh/CH_3OH) extracts against *A. gossypii* after 24h of exposure

Dose	Ldos (+2)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.196	1.292	30	26	86.667	87	6.13	5.939	6.136	14.13	5.907
0.147	1.167	30	19	63.333	63	5.33	5.558	5.304	17.43	5.533
0.098	0.991	30	15	50.000	50	5.00	5.021	5.000	19.11	5.007
0.049	0.690	30	6	20.000	20	4.16	4.102	4.170	14.13	4.107

Regression equation: Y = 2.043 + 2.990X
Chi-squared is 1.716 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.989mg/cm^2
LD_{50} is 0.097mg/cm^2
95% confidence limits are 0.080 to 0.118mg/cm^2

Appendix Table CCLXXVIII: Cytotoxicity effect of *E. nummularius* (wp/PetE) extracts against *A. salina* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	8	26.667	27	4.39	4.381	4.394	15.96	4.366
50.000	1.699	30	7	23.333	23	4.26	4.293	4.252	15.09	4.289
25.000	1.398	30	6	20.000	20	4.16	4.206	4.150	15.09	4.212
12.500	1.097	30	5	16.667	17	4.05	4.118	4.056	14.13	4.135
6.250	0.796	30	8	26.667	27	4.39	4.030	4.447	13.17	4.058
3.125	0.495	30	3	10.000	10	3.72	3.942	3.740	12.15	3.981

Regression equation: Y = 3.855 + 0.256X
Chi-squared is 2.878 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 4.477ppm
LC_{50} is 29991.140ppm
95% confidence limits are 0.170 to 5.306E+09ppm

Appendix Table CCLXXIX: Cytotoxicity effect of *E. nummularius* (wp/PetE) extracts against *A. salina* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	13	43.333	43	4.82	4.710	4.818	18.48	4.698
50.000	1.699	30	9	30.000	30	4.48	4.584	4.460	17.43	4.581
25.000	1.398	30	7	23.333	23	4.26	4.459	4.270	16.74	4.463
12.500	1.097	30	8	26.667	27	4.39	4.334	4.394	15.96	4.346
6.250	0.796	30	10	33.333	33	4.56	4.209	4.592	15.09	4.228
3.125	0.495	30	4	13.333	13	3.87	4.084	3.873	13.17	4.111

Regression equation: Y = 3.918 + 0.390X
Chi-squared is 3.922 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.775ppm
LC_{50} is 594.987ppm
95% confidence limits are 16.143 to 21929.030ppm

Appendix Table CCLXXX: Cytotoxicity effect of *E. nummularius* (wp/PetE) extracts against *A. salina* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	15	50.000	50	5.00	4.906	4.990	19.02	4.892
50.000	1.699	30	12	40.000	40	4.75	4.799	4.740	18.48	4.789
25.000	1.398	30	9	30.000	30	4.48	4.692	4.470	18.03	4.687
12.500	1.097	30	11	36.667	37	4.67	4.585	4.656	17.43	4.584
6.250	0.796	30	11	36.667	37	4.67	4.478	4.690	16.74	4.481
3.125	0.495	30	7	23.333	23	4.26	4.370	4.266	15.96	4.379

Regression equation: Y = 4.210 + 0.341X
Chi-squared is 2.095 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.318ppm
LC_{50} is 207.889ppm
95% confidence limits are 11.231 to 3847.972ppm

Appendix Table CCLXXXI: Cytotoxicity effect of *E. nummularius* (wp/PetE) extracts against *A. salina* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	20	66.667	67	5.44	5.306	5.422	18.48	5.286
50.000	1.699	30	16	53.333	53	5.08	5.127	5.065	19.02	5.110
25.000	1.398	30	12	40.000	40	4.75	4.949	4.740	19.02	4.935
12.500	1.097	30	12	40.000	40	4.75	4.771	4.740	18.48	4.759
6.250	0.796	30	12	40.000	40	4.75	4.593	4.740	17.43	4.584
3.125	0.495	30	8	26.667	27	4.39	4.414	4.390	16.74	4.408

Regression equation: Y = 4.120 + 0.583X
Chi-squared is 1.542 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.510ppm
LC_{50} is 32.328ppm
95% confidence limits are 14.223 to 73.476ppm

Appendix Table CCLXXXII: Cytotoxicity effect of *E. nummularius* (wp/PetE) extracts against *A. salina* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	23	76.667	77	5.74	5.426	5.699	18.03	5.401
50.000	1.699	30	16	53.333	53	5.08	5.279	5.098	18.81	5.262
25.000	1.398	30	13	43.333	43	4.82	5.133	4.815	19.02	5.122
12.500	1.097	30	16	53.333	53	5.08	4.987	5.065	19.02	4.983
6.250	0.796	30	13	43.333	43	4.82	4.841	4.838	18.81	4.844
3.125	0.495	30	13	43.333	43	4.82	4.694	4.821	18.03	4.704

Regression equation: Y = 4.475 + 0.463X
Chi-squared is 4.275 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.134ppm
LC_{50} is 13.601ppm
95% confidence limits are 5.286 to 34.991ppm

Appendix Table CCLXXXIII: Cytotoxicity effect of *E. nummularius* (wp/$CHCl_3$) extracts against *A. salina* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	13	43.333	43	4.82	4.780	4.818	18.48	4.779
200.000	2.301	30	10	33.333	33	4.56	4.608	4.551	18.03	4.605
100.000	2.000	30	9	30.000	30	4.48	4.436	4.480	16.74	4.431
50.000	1.699	30	6	20.000	20	4.16	4.264	4.150	15.09	4.256
25.000	1.398	30	6	20.000	20	4.16	4.092	4.160	13.17	4.082

Regression equation: Y = 3.272 + 0.579X
Chi-squared is 0.372 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.983ppm
LC_{50} is 961.694ppm
95% confidence limits are 116.728 to 7923.193ppm

Appendix Table CCLXXXIV: Cytotoxicity effect of *E. nummularius* (wp/$CHCl_3$) extracts against *A. salina* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	18	60.000	60	5.25	5.084	5.250	19.11	5.094
200.000	2.301	30	12	40.000	40	4.75	4.885	4.760	18.81	4.888
100.000	2.000	30	10	33.333	33	4.56	4.686	4.551	18.03	4.683
50.000	1.699	30	9	30.000	30	4.48	4.487	4.480	16.74	4.477
25.000	1.398	30	8	26.667	27	4.39	4.288	4.388	15.09	4.272

Regression equation: Y = 3.317 + 0.683X
Chi-squared is 1.293 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.465ppm
LC_{50} is 291.519ppm
95% confidence limits are 106.257 to 799.790ppm

Appendix Table CCLXXXV: Cytotoxicity effect of *E. nummularius* (wp/$CHCl_3$) extracts against *A. salina* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	23	76.667	77	5.74	5.484	5.699	18.03	5.461
200.000	2.301	30	14	46.667	47	4.92	5.231	4.942	18.81	5.215
100.000	2.000	30	14	46.667	47	4.92	4.978	4.915	19.02	4.969
50.000	1.699	30	12	40.000	40	4.75	4.725	4.740	18.48	4.723
25.000	1.398	30	10	33.333	33	4.56	4.472	4.570	16.74	4.477

Regression equation: Y = 3.334 + 0.818X
Chi-squared is 2.629 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.038ppm
LC_{50} is 109.120ppm
95% confidence limits are 61.112 to 194.839ppm

Appendix Table CCLXXXVI: Cytotoxicity effect of *E. nummularius* (wp/$CHCl_3$) extracts against *A. salina* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	27	90.000	90	6.28	6.230	6.230	11.10	6.198
200.000	2.301	30	24	80.000	80	5.85	5.907	5.870	14.13	5.886
100.000	2.000	30	22	73.333	73	5.61	5.584	5.584	17.43	5.573
50.000	1.699	30	17	56.667	57	5.18	5.261	5.202	18.81	5.261
25.000	1.398	30	15	50.000	50	5.00	4.938	4.990	19.02	4.948

Regression equation: Y = 3.497 + 1.038X
Chi-squared is 0.115 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.448ppm
LC_{50} is 28.035ppm
95% confidence limits are 13.327 to 58.977ppm

Appendix Table CCLXXXVII: Cytotoxicity effect of *E. nummularius* (wp/$CHCl_3$) extracts against *A. salina* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	28	93.333	93	6.48	6.360	6.424	10.08	6.290
200.000	2.301	30	24	80.000	80	5.85	6.039	5.800	13.17	5.989
100.000	2.000	30	23	76.667	77	5.74	5.718	5.734	15.96	5.688
50.000	1.699	30	20	66.667	67	5.44	5.397	5.422	18.48	5.387
25.000	1.398	30	16	53.333	53	5.08	5.076	5.075	19.11	5.086

Regression equation: Y = 3.689 + 1.000X
Chi-squared is 0.710 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.311ppm
LC_{50} is 20.485ppm
95% confidence limits are 8.226 to 51.011ppm

Appendix TableCCLXXXVIII: Cytotoxicity effect of *E. nummularius* (wp/CH_3OH) extracts against *A. salina* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	6	20.000	20	4.16	4.164	4.170	14.13	4.162
200.000	2.301	30	4	13.333	13	3.87	3.921	3.878	12.15	3.926
100.000	2.000	30	3	10.000	10	3.72	3.678	3.730	9.06	3.691
50.000	1.699	30	2	6.667	7	3.52	3.435	3.540	7.14	3.456
25.000	1.398	30	1	3.333	3	3.12	3.192	3.116	4.62	3.220

Regression equation: Y = 2.127 + 0.782X
Chi-squared is 0.144 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 3.674ppm
LC_{50} is 4716.815ppm
95% confidence limits are 169.616 to 131168.900ppm

Appendix Table CCLXXXIX: Cytotoxicity effect of *E. nummularius* (wp/CH_3OH) extracts against *A. salina* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	10	33.333	33	4.56	4.662	4.551	18.03	4.660
200.000	2.301	30	8	26.667	27	4.39	4.414	4.390	16.74	4.412
100.000	2.000	30	8	26.667	27	4.39	4.165	4.436	14.13	4.163
50.000	1.699	30	4	13.333	13	3.87	3.916	3.878	12.15	3.914
25.000	1.398	30	3	10.000	10	3.72	3.668	3.730	9.06	3.665
12.500	1.097	30	1	3.333	3	3.12	3.419	3.180	7.14	3.416

Regression equation: Y = 2.509 + 0.827X
Chi-squared is 1.731 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 3.013ppm
LC_{50} is 1029.678ppm
95% confidence limits are 246.416 to 4302.630ppm

Appendix Table CCXC: Cytotoxicity effect of *E. nummularius* (wp/CH_3OH) extracts against *A. salina* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	20	66.667	67	5.44	5.280	5.462	18.81	5.299
200.000	2.301	30	14	46.667	47	4.92	4.960	4.915	19.02	4.970
100.000	2.000	30	9	30.000	30	4.48	4.640	4.470	18.03	4.641
50.000	1.699	30	6	20.000	20	4.16	4.320	4.170	15.96	4.312
25.000	1.398	30	6	20.000	20	4.16	4.000	4.200	12.15	3.983
12.500	1.097	30	3	10.000	10	3.72	3.680	3.730	9.06	3.654

Regression equation: Y = 2.455 + 1.093X
Chi-squared is 2.031 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} IS 2.328ppm
LC_{50} is 213.030ppm
95% confidence limits are 124.660 to 364.046ppm

Appendix Table CCXCI: Cytotoxicity effect of *E.nummularius* (wp/CH_3OH) extracts against *A. salina* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	22	73.333	73	5.61	5.428	5.591	18.03	5.418
200.000	2.301	30	16	53.333	53	5.08	5.140	5.065	19.02	5.129
100.000	2.000	30	12	40.000	40	4.75	4.852	4.760	18.81	4.840
50.000	1.699	30	8	26.667	27	4.39	4.564	4.376	17.43	4.550
25.000	1.398	30	7	23.333	23	4.26	4.277	4.252	15.09	4.261
12.500	1.097	30	6	20.000	20	4.16	3.989	4.200	12.15	3.972

Regression equation: Y = 2.917 + 0.961X
Chi-squared is 1.899 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.167ppm
LC_{50} is 146.837ppm
95% confidence limits are 86.722 to 248.623ppm

Appendix Table CCXCII: Cytotoxicity effect of *E. nummularius* (wp/CH_3OH) extracts against *A. salina* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	27	90.000	90	6.28	5.940	6.250	14.13	5.876
200.000	2.301	30	20	66.667	67	5.44	5.548	5.416	17.43	5.497
100.000	2.000	30	14	46.667	47	4.92	5.157	4.915	19.02	5.119
50.000	1.699	30	9	30.000	30	4.48	4.766	4.480	18.48	4.740
25.000	1.398	30	8	26.667	27	4.39	4.375	4.394	15.96	4.362
12.500	1.097	30	7	23.333	23	4.26	3.984	4.338	12.15	3.983

Regression equation: Y = 2.604 + 1.258X
Chi-squared is 5.681 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.905ppm
LC_{50} is 80.432ppm
95% confidence limits are 55.841 to 115.854ppm

Appendix Table CCXCIII: Cytotoxicity effect of *L. camara* (ap/PetE) extracts against *A. salina* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	9	30.000	30	4.48	4.428	4.480	16.74	4.439
50.000	1.699	30	5	16.667	17	4.05	4.103	4.056	14.13	4.109
25.000	1.398	30	3	10.000	10	3.72	3.778	3.720	10.08	3.778
12.500	1.097	30	2	6.667	7	3.52	3.453	3.540	7.14	3.448
6.250	0.796	30	1	3.333	3	3.12	3.128	3.116	4.62	3.118

Regression equation: Y = 2.245 + 1.097X
Chi-squared is 0.162 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.512ppm
LC_{50} is 324.814ppm
95% confidence limits are 74.339 to 1419.231ppm

Appendix Table CCXCIV: Cytotoxicity effect of *L. camara* (ap/PetE) extracts against *A. salina* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	24	80.000	80	5.85	5.590	5.780	17.43	5.549
50.000	1.699	30	13	43.333	43	4.82	5.098	4.825	19.11	5.061
25.000	1.398	30	9	30.000	30	4.48	4.606	4.470	18.03	4.574
12.500	1.097	30	6	20.000	20	4.16	4.114	4.170	14.13	4.087
6.250	0.796	30	3	10.000	10	3.72	3.622	3.730	9.06	3.599

Regression equation: Y = 2.311 + 1.619X
Chi-squared is 2.448 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.661ppm
LC_{50} is 45.819ppm
95% confidence limits are 32.377 to 64.841ppm

Appendix Table CCXCV: Cytotoxicity effect of *L. camara* (ap/PetE) extracts against *A. salina* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	26	86.667	87	6.13	5.918	6.136	14.13	5.888
50.000	1.699	30	18	60.000	60	5.25	5.425	5.240	18.03	5.399
25.000	1.398	30	12	40.000	40	4.75	4.932	4.740	19.02	4.910
12.500	1.097	30	9	30.000	30	4.48	4.439	4.480	16.74	4.421
6.250	0.796	30	5	16.667	17	4.05	3.946	4.062	12.15	3.932

Regression equation: Y = 2.639 + 1.624X
Chi-squared is 2.138 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.454ppm
LC_{50} is 28.415ppm
95% confidence limits are 20.804 to 38.810ppm

Appendix Table CCXCVI: Cytotoxicity effect of *L. camara* (ap/PetE) extracts against *A. salina* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	29	96.667	97	6.88	6.399	6.656	10.08	6.415
50.000	1.699	30	23	76.667	77	5.74	5.910	5.756	14.13	5.921
25.000	1.398	30	19	63.333	63	5.33	5.420	5.321	18.03	5.427
12.500	1.097	30	15	50.000	50	5.00	4.930	4.990	19.02	4.932
6.250	0.796	30	9	30.000	30	4.48	4.440	4.480	16.74	4.438

Regression equation: Y = 3.130 + 1.643X
Chi-squared is 1.262 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.138ppm
LC_{50} is 13.748ppm
95% confidence limits are 9.740 to 19.404ppm

Appendix Table CCXCVII: Cytotoxicity effect of *L. camara* (ap/PetE) extracts against *A. salina* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
50.000	1.699	30	25	83.333	83	5.95	6.117	5.948	12.15	6.130
25.000	1.398	30	24	80.000	80	5.85	5.599	5.780	17.43	5.596
12.500	1.097	30	16	53.333	53	5.08	5.081	5.075	19.11	5.063
6.250	0.796	30	9	30.000	30	4.48	4.563	4.460	17.43	4.530

Regression equation: Y = 3.120 + 1.772X
Chi-squared is 1.076 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.061ppm
LC_{50} is 11.515ppm
95% confidence limits are 8.159 to 16.251ppm

Appendix Table CCXCVIII: Cytotoxicity effect of *L. camara* (ap/$CHCl_3$) extracts against *A. salina* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	8	26.667	27	4.39	4.469	4.390	16.74	4.479
50.000	1.699	30	7	23.333	23	4.26	4.257	4.252	15.09	4.257
25.000	1.398	30	6	20.000	20	4.16	4.045	4.160	13.17	4.035
12.500	1.097	30	5	16.667	17	4.05	3.832	4.077	11.10	3.813
6.250	0.796	30	1	3.333	3	3.12	3.620	3.261	9.06	3.592

Regression equation: Y = 3.005 + 0.737X
Chi-squared is 2.099 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.707ppm
LC_{50} is 508.798ppm
95% confidence limits are 48.258 to 5364.418ppm

Appendix Table CCXCIX: Cytotoxicity effect of *L. camara* (ap/$CHCl_3$) extracts against *A. salina* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	18	60.000	60	5.25	5.395	5.240	18.48	5.392
50.000	1.699	30	16	53.333	53	5.08	5.038	5.075	19.11	5.037
25.000	1.398	30	13	43.333	43	4.82	4.682	4.821	18.03	4.683
12.500	1.097	30	10	33.333	33	4.56	4.325	4.586	15.96	4.328
6.250	0.796	30	2	6.667	7	3.52	3.968	3.602	12.15	3.973

Regression equation: Y = 3.036 + 1.178X
Chi-squared is 3.537 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.667ppm
LC_{50} is 46.466ppm
95% confidence limits are 28.994 to 74.466ppm

Appendix Table CCC: Cytotoxicity effect of *L. camara* (ap/$CHCl_3$) extracts against *A. salina* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	24	80.000	80	5.85	6.016	5.800	13.17	5.987
50.000	1.699	30	22	73.333	73	5.61	5.541	5.584	17.43	5.533
25.000	1.398	30	17	56.667	57	5.18	5.066	5.175	19.11	5.078
12.500	1.097	30	13	43.333	43	4.82	4.591	4.824	17.43	4.624
6.250	0.796	30	4	13.333	13	3.87	4.116	3.904	14.13	4.170

Regression equation: Y = 2.969 + 1.509X
Chi-squared is 2.380 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.346ppm
LC_{50} is 22.178ppm
95% confidence limits are 15.884 to 30.967ppm

Appendix Table CCCI: Cytotoxicity effect of *L. camara* (ap/$CHCl_3$) extracts against *A. salina* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	27	90.000	90	6.28	6.344	6.250	10.08	6.322
50.000	1.699	30	24	80.000	80	5.85	5.873	5.800	15.09	5.859
25.000	1.398	30	20	66.667	67	5.44	5.402	5.429	18.03	5.396
12.500	1.097	30	17	56.667	57	5.18	4.931	5.165	19.02	4.934
6.250	0.796	30	7	23.333	23	4.26	4.460	4.270	16.74	4.471

Regression equation: Y = 3.248 + 1.537X
Chi-squared is 1.818 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.140ppm
LC_{50} is 13.802ppm
95% confidence limits are 9.562 to 19.924ppm

Appendix Table CCCII: Cytotoxicity effect of *L. camara* (ap/$CHCl_3$) extracts against *A. salina* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
50.000	1.699	30	27	90.000	90	6.28	6.253	6.230	11.10	6.219
25.000	1.398	30	22	73.333	73	5.61	5.701	5.606	15.96	5.678
12.500	1.097	30	18	60.000	60	5.25	5.149	5.240	19.02	5.137
6.250	0.796	30	10	33.333	33	4.56	4.597	4.544	17.43	4.597

Regression equation: Y = 3.166 + 1.797X
Chi-squared is 0.333 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.020ppm
LC_{50} is 10.481ppm
95% confidence limits are 7.316 to 15.016ppm

Appendix Table CCCIII: Cytotoxicity effect of *L. camara* (ap/CH_3OH) extracts against *A. salina* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	11	36.667	37	4.67	4.714	4.662	18.48	4.715
100.000	2.000	30	10	33.333	33	4.56	4.455	4.570	16.74	4.458
50.000	1.699	30	6	20.000	20	4.16	4.196	4.170	14.13	4.202
25.000	1.398	30	4	13.333	13	3.87	3.937	3.878	12.15	3.945
12.500	1.097	30	3	10.000	10	3.72	3.678	3.730	9.06	3.689

Regression equation: Y = 2.755 + 0.852X
Chi-squared is 0.345 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.636ppm
LC_{50} is 432.490ppm
95% confidence limits are 103.267 to 1811.301ppm

Appendix Table CCCIV: Cytotoxicity effect of *L. camara* (ap/CH_3OH) extracts against *A. salina* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	15	50.000	50	5.00	4.932	4.990	19.02	4.925
100.000	2.000	30	10	33.333	33	4.56	4.636	4.551	18.03	4.630
50.000	1.699	30	7	23.333	23	4.26	4.340	4.266	15.96	4.336
25.000	1.398	30	6	20.000	20	4.16	4.044	4.160	13.17	4.041
12.500	1.097	30	3	10.000	10	3.72	3.748	3.720	10.08	3.746

Regression equation: Y = 2.672 + 0.979X
Chi-squared is 0.465 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.378ppm
LC_{50} is 238.550ppm
95% confidence limits are 94.570 to 601.736ppm

Appendix Table CCCV: Cytotoxicity effect of *L. camara* (ap/CH_3OH) extracts against *A. salina* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	19	63.333	63	5.33	5.162	5.315	19.02	5.163
100.000	2.000	30	12	40.000	40	4.75	4.892	4.760	18.81	4.888
50.000	1.699	30	9	30.000	30	4.48	4.622	4.470	18.03	4.614
25.000	1.398	30	8	26.667	27	4.39	4.352	4.394	15.96	4.340
12.500	1.097	30	6	20.000	20	4.16	4.082	4.160	13.17	4.065

Regression equation: Y = 3.065 + 0.912X
Chi-squared is 1.290 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.122ppm
LC_{50} is 132.535ppm
95% confidence limits are 64.420 to 272.672ppm

Appendix Table CCCVI: Cytotoxicity effect of *L. camara* (ap/CH_3OH) extracts against *A. salina* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	23	76.667	77	5.74	5.452	5.699	18.03	5.425
100.000	2.000	30	13	43.333	43	4.82	5.102	4.815	19.02	5.078
50.000	1.699	30	10	33.333	33	4.56	4.752	4.558	18.48	4.731
25.000	1.398	30	9	30.000	30	4.48	4.402	4.480	16.74	4.383
12.500	1.097	30	6	20.000	20	4.16	4.052	4.160	13.17	4.036

Regression equation: Y = 2.771 + 1.153X
Chi-squared is 3.576 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.933ppm
LC_{50} is 85.608ppm
95% confidence limits are 53.667 to 136.561ppm

Appendix Table CCCVII: Cytotoxicity effect of *L. camara* (ap/CH_3OH) extracts against *A. salina* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	25	83.333	83	5.95	5.714	5.926	15.96	5.667
100.000	2.000	30	16	53.333	53	5.08	5.335	5.058	18.48	5.301
50.000	1.699	30	13	43.333	43	4.82	4.956	4.815	19.02	4.935
25.000	1.398	30	11	36.667	37	4.67	4.577	4.656	17.43	4.569
12.500	1.097	30	7	23.333	23	4.26	4.198	4.284	14.13	4.204

Regression equation: Y = 2.871 + 1.215X
Chi-squared is 2.661 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.752ppm
LC_{50} is 56.523ppm
95% confidence limits are 37.722 to 84.694ppm

Appendix Table CCCVIII: Cytotoxicity effect of *L. camara* (r/PetE) extracts against *A. salina* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	6	20.000	20	4.16	4.128	4.170	14.13	4.143
50.000	1.699	30	4	13.333	13	3.87	3.921	3.878	12.15	3.928
25.000	1.398	30	3	10.000	10	3.72	3.714	3.720	10.08	3.714
12.500	1.097	30	2	6.667	7	3.52	3.507	3.519	8.07	3.499

Regression equation: Y = 2.717 + 0.713X
Chi-squared is 0.045 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 3.203ppm
LC_{50} is 1595.095ppm
95% confidence limits are 14.936 to 170344.700ppm

Appendix Table CCCIX: Cytotoxicity effect of *L. camara* (r/PetE) extracts against *A. salina* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	16	53.333	53	5.08	4.980	5.065	19.02	4.966
50.000	1.699	30	11	36.667	37	4.67	4.768	4.662	18.48	4.757
25.000	1.398	30	9	30.000	30	4.48	4.556	4.460	17.43	4.548
12.500	1.097	30	8	26.667	27	4.39	4.344	4.394	15.96	4.339
6.250	0.796	30	6	20.000	20	4.16	4.132	4.170	14.13	4.130

Regression equation: Y = 3.578 + 0.694X
Chi-squared is 0.559 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.048ppm
LC_{50} is 111.786ppm
95% confidence limits are 32.363 to 386.121ppm

Appendix Table CCCX: Cytotoxicity effect of *L. camara* (r/PetE) extracts against *A. salina* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	21	70.000	70	5.52	5.498	5.510	18.03	5.502
50.000	1.699	30	19	63.333	63	5.33	5.232	5.358	18.81	5.233
25.000	1.398	30	12	40.000	40	4.75	4.966	4.740	19.02	4.963
12.500	1.097	30	12	40.000	40	4.75	4.700	4.740	18.03	4.694
6.250	0.796	30	9	30.000	30	4.48	4.434	4.480	16.74	4.425

Regression equation: Y = 3.714 + 0.894X
Chi-squared is 1.335 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.439ppm
LC_{50} is 27.467ppm
95% confidence limits are 16.142 to 46.739ppm

Appendix Table CCCXI: Cytotoxicity effect of *L. camara* (r/PetE) extracts against *A. salina* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	25	83.333	83	5.95	5.938	5.984	14.13	5.951
50.000	1.699	30	22	73.333	73	5.61	5.591	5.584	17.43	5.600
25.000	1.398	30	17	56.667	57	5.18	5.244	5.202	18.81	5.250
12.500	1.097	30	14	46.667	47	4.92	4.897	4.942	18.81	4.899
6.250	0.796	30	10	33.333	33	4.56	4.550	4.544	17.43	4.549

Regression equation: Y = 3.622 + 1.165X
Chi-squared is 0.098 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.183ppm
LC_{50} is 15.254ppm
95% confidence limits are 9.656 to 24.098ppm

Appendix TableCCCXII: Cytotoxicity effect of *L. camara* (r/PetE) extracts against *A. salina* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
50.000	1.699	30	23	76.667	77	5.74	5.716	5.734	15.96	5.707
25.000	1.398	30	19	63.333	63	5.33	5.362	5.318	18.48	5.353
12.500	1.097	30	15	50.000	50	5.00	5.008	5.000	19.11	5.000
6.250	0.796	30	11	36.667	37	4.67	4.654	4.659	18.03	4.647

Regression equation: Y = 3.713 + 1.174X
Chi-squared is 0.038 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.097ppm
LC_{50} is 12.497ppm
95% confidence limits are 7.642 to 20.437ppm

Appendix Table CCCXIII: Cytotoxicity effect of *L. camara* (r/$CHCl_3$) extracts against *A. salina* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	17	56.667	57	5.18	5.204	5.202	18.81	5.207
100.000	2.000	30	13	43.333	43	4.82	4.869	4.838	18.81	4.879
50.000	1.699	30	10	33.333	33	4.56	4.534	4.544	17.43	4.552
25.000	1.398	30	8	26.667	27	4.39	4.199	4.436	14.13	4.225
12.500	1.097	30	3	10.000	10	3.72	3.864	3.720	11.10	3.898

Regression equation: Y = 2.705 + 1.087X
Chi-squared is 1.014 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.111ppm
LC_{50} is 129.074ppm
95% confidence limits are 70.805 to 235.294ppm

Appendix Table CCCXIV: Cytotoxicity effect of *L. camara* (r/$CHCl_3$) extracts against *A. salina* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	29	96.667	97	6.88	6.432	6.759	9.06	6.431
100.000	2.000	30	22	73.333	73	5.61	5.842	5.562	15.09	5.843
50.000	1.699	30	17	56.667	57	5.18	5.252	5.202	18.81	5.254
25.000	1.398	30	13	43.333	43	4.82	4.662	4.821	18.03	4.666
12.500	1.097	30	5	16.667	17	4.05	4.073	4.037	13.17	4.078

Regression equation: Y = 1.935 + 1.954X
Chi-squared is 2.670 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.569ppm
LC_{50} is 37.045ppm
95% confidence limits are 28.147 to 48.756ppm

Appendix Table CCCXV: Cytotoxicity effect of *L. camara* (r/$CHCl_3$) extracts against *A. salina* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	29	96.667	97	6.88	6.956	6.844	4.62	6.981
100.000	2.000	30	27	90.000	90	6.28	6.284	6.230	11.10	6.299
50.000	1.699	30	23	76.667	77	5.74	5.612	5.730	16.74	5.617
25.000	1.398	30	15	50.000	50	5.00	4.940	4.990	19.02	4.935
12.500	1.097	30	6	20.000	20	4.16	4.268	4.150	15.09	4.252

Regression equation: Y = 1.766 + 2.266X
Chi-squared is 0.571 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.427ppm
LC_{50} is 26.716ppm
95% confidence limits are 20.557 to 34.720ppm

Appendix Table CCCXVI: Cytotoxicity effect of *L. camara* (r/$CHCl_3$) extracts against *A. salina* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	27	90.000	90	6.28	6.358	6.250	10.08	6.362
50.000	1.699	30	24	80.000	80	5.85	5.751	5.830	15.96	5.745
25.000	1.398	30	17	56.667	57	5.18	5.144	5.165	19.02	5.129
12.500	1.097	30	9	30.000	30	4.48	4.537	4.460	17.43	4.512

Regression equation: Y = 2.265 + 2.048X
Chi-squared is 0.313 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.335ppm
LC_{50} is 21.630ppm
95% confidence limits are 15.865 to 29.489ppm

Appendix Table CCCXVII: Cytotoxicity effect of *L. camara* (r/$CHCl_3$) extracts against *A. salina* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	28	93.333	93	6.48	6.526	6.451	8.07	6.558
50.000	1.699	30	25	83.333	83	5.95	5.932	5.984	14.13	5.948
25.000	1.398	30	20	66.667	67	5.44	5.338	5.422	18.48	5.338
12.500	1.097	30	11	36.667	37	4.67	4.744	4.662	18.48	4.728

Regression equation: Y = 2.504 + 2.027X
Chi-squared is 0.321 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.231ppm
LC_{50} is 17.035ppm
95% confidence limits are 11.899 to 24.388ppm

Appendix Table CCCXVIII: Cytotoxicity effect of *L. camara* (r/CH_3OH) extracts against *A. salina* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	16	53.333	53	5.08	4.891	5.098	18.81	4.928
100.000	2.000	30	7	23.333	23	4.26	4.507	4.264	17.43	4.518
50.000	1.699	30	5	16.667	17	4.05	4.123	4.056	14.13	4.108
25.000	1.398	30	4	13.333	13	3.87	3.739	3.894	10.08	3.699

Regression equation: Y = 1.796 + 1.361X
Chi-squared is 2.094 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.354ppm
LC_{50} is 225.929ppm
95% confidence limits are 110.841 to 460.514ppm

Appendix TableCCCXIX: Cytotoxicity effect of *L. camara* (r/CH_3OH) extracts against *A. salina* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	28	93.333	93	6.48	6.203	6.383	11.10	6.186
100.000	2.000	30	18	60.000	60	5.25	5.587	5.220	17.43	5.575
50.000	1.699	30	17	56.667	57	5.18	4.971	5.165	19.02	4.964
25.000	1.398	30	9	30.000	30	4.48	4.356	4.490	15.96	4.354
12.500	1.097	30	2	6.667	7	3.52	3.740	3.546	10.08	3.743

Regression equation: Y = 1.519 + 2.028X
Chi-squared is 4.083 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.716ppm
LC_{50} is 52.056ppm
95% confidence limits are 40.162 to 67.472ppm

Appendix Table CCCXX: Cytotoxicity effect of *L. camara* (r/CH_3OH) extracts against *A. salina* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	29	96.667	97	6.88	6.746	6.822	6.24	6.677
100.000	2.000	30	23	76.667	77	5.74	5.996	5.756	14.13	5.960
50.000	1.699	30	19	63.333	63	5.33	5.246	5.358	18.81	5.243
25.000	1.398	30	10	33.333	33	4.56	4.496	4.570	16.74	4.526
12.500	1.097	30	3	10.000	10	3.72	3.746	3.720	10.08	3.810

Regression equation: Y = 1.197 + 2.381X
Chi-squared is 1.080 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.597ppm
LC_{50} is 39.515 ppm
95% confidence limits are 31.208 to 50.033ppm

Appendix Table CCCXXI: Cytotoxicity effect of *L. camara* (r/CH_3OH) extracts against *A. salina* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	27	90.000	90	6.28	6.360	6.250	10.08	6.368
50.000	1.699	30	23	76.667	77	5.74	5.650	5.730	16.74	5.653
25.000	1.398	30	15	50.000	50	5.00	4.940	4.990	19.02	4.938
12.500	1.097	30	6	20.000	20	4.16	4.230	4.150	15.09	4.222

Regression equation: Y = 1.616 + 2.376X
Chi-squared is 0.372 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.424ppm
LC_{50} is 26.555ppm
95% confidence limits are 20.647 to 34.153ppm

Appendix Table CCCXXII: Cytotoxicity effect of *L. camara* (r/CH_3OH) extracts against *A. salina* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	28	93.333	93	6.48	6.515	6.451	8.07	6.536
50.000	1.699	30	25	83.333	83	5.95	5.910	5.984	14.13	5.920
25.000	1.398	30	19	63.333	63	5.33	5.305	5.318	18.48	5.304
12.500	1.097	30	11	36.667	37	4.67	4.700	4.662	18.48	4.688

Regression equation: Y = 2.442 + 2.047X
Chi-squared is 0.132 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.249ppm
LC_{50} is 17.761ppm
95% confidence limits are 12.571 to 25.093ppm

Appendix Table CCCXXIII: Cytotoxicity effect of *M. piperita* (wp/PetE) extracts against *A. salina* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	11	36.667	37	4.67	4.634	4.659	18.03	4.616
50.000	1.699	30	7	23.333	23	4.26	4.394	4.266	15.96	4.394
25.000	1.398	30	6	20.000	20	4.16	4.154	4.170	14.13	4.171
12.500	1.097	30	6	20.000	20	4.16	3.914	4.200	12.15	3.948
6.250	0.796	30	2	6.667	7	3.52	3.674	3.529	9.06	3.725

Regression equation: Y = 3.137 + 0.740X
Chi-squared is 1.413 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.518ppm
LC_{50} is 329.968ppm
95% confidence limits are 46.135 to 2360.012ppm

Appendix Table CCCXXIV: Cytotoxicity effect of *M. piperita* (wp/PetE) extracts against *A. salina* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	27	90.000	90	6.28	5.676	6.120	16.74	5.692
50.000	1.699	30	12	40.000	40	4.75	5.204	4.760	18.81	5.214
25.000	1.398	30	10	33.333	33	4.56	4.732	4.558	18.48	4.736
12.500	1.097	30	9	30.000	30	4.48	4.259	4.490	15.09	4.258
6.250	0.796	30	4	13.333	13	3.87	3.787	3.894	10.08	3.780

Regression equation: Y = 2.516 + 1.588X
Chi-squared is 8.472 with 3 degrees of freedom
Variance has been adjusted for heterogeneity
Log LC_{50} is 1.564ppm
LC_{50} is 36.670ppm
95% confidence limits are 21.071 to 63.817ppm

Appendix Table CCCXXV: Cytotoxicity effect of *M. piperita* (wp/PetE) extracts against *A. salina* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	29	96.667	97	6.88	6.042	6.497	13.17	6.052
50.000	1.699	30	16	53.333	53	5.08	5.538	5.024	17.43	5.541
25.000	1.398	30	15	50.000	50	5.00	5.035	5.000	19.11	5.030
12.500	1.097	30	11	36.667	37	4.67	4.531	4.656	17.43	4.519
6.250	0.796	30	7	23.333	23	4.26	4.027	4.283	13.17	4.008
3.125	0.495	30	1	3.333	3	3.12	3.523	3.211	8.07	3.497

Regression equation: Y = 2.657 + 1.697X
Chi-squared is 9.267 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.380ppm
LC_{50} is 24.011ppm
95% confidence limits are 18.045 to 31.948ppm

Appendix Table CCCXXVI: Cytotoxicity effect of *M.piperita* (wp/PetE) extracts against *A. salina* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
50.000	1.699	30	22	73.333	73	5.61	5.642	5.610	16.74	5.647
25.000	1.398	30	18	60.000	60	5.25	5.236	5.280	18.81	5.248
12.500	1.097	30	12	40.000	40	4.75	4.830	4.760	18.81	4.849
6.250	0.796	30	11	36.667	37	4.67	4.424	4.690	16.74	4.450
3.125	0.495	30	4	13.333	13	3.87	4.018	3.873	13.17	4.050

Regression equation: Y = 3.394 + 1.326X
Chi-squared is 1.573 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.211ppm
LC_{50} is 16.253ppm
95% confidence limits are 11.137 to 23.719ppm

Appendix Table CCCXXVII: Cytotoxicity effect of *M. piperita* (wp/PetE) extracts against *A. salina* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
50.000	1.699	30	27	90.000	90	6.28	6.252	6.230	11.10	6.199
25.000	1.398	30	21	70.000	70	5.52	5.718	5.510	15.96	5.696
12.500	1.097	30	18	60.000	60	5.25	5.184	5.240	19.02	5.193
6.250	0.796	30	15	50.000	50	5.00	4.650	5.010	18.03	4.691
3.125	0.495	30	4	13.333	13	3.87	4.116	3.904	14.13	4.188

Regression equation: Y = 3.362 + 1.670X
Chi-squared is 3.583 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 0.981ppm
LC_{50} is 9.573ppm
95% confidence limits are 7.003 to 13.084ppm

Appendix Table CCCXXVIII: Cytotoxicity effect of *M. piperita* (wp/$CHCl_3$) extracts against *A. salina* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	21	70.000	70	5.52	5.284	5.540	18.81	5.308
50.000	1.699	30	10	33.333	33	4.56	4.898	4.578	18.81	4.906
25.000	1.398	30	9	30.000	30	4.48	4.512	4.460	17.43	4.504
12.500	1.097	30	7	23.333	23	4.26	4.126	4.284	14.13	4.102

Regression equation: Y = 2.638 + 1.335X
Chi-squared is 3.538 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.769ppm
LC_{50} is 58.807ppm
95% confidence limits are 36.827 to 93.905ppm

Appendix Table CCCXXIX: Cytotoxicity effect of *M. piperita* (wp/$CHCl_3$) extracts against *A. salina* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	28	93.333	93	6.48	6.404	6.491	9.06	6.338
50.000	1.699	30	20	66.667	67	5.44	5.614	5.430	16.74	5.589
25.000	1.398	30	13	43.333	43	4.82	4.824	4.838	18.81	4.840
12.500	1.097	30	7	23.333	23	4.26	4.034	4.283	13.17	4.092
6.250	0.796	30	1	3.333	3	3.12	3.244	3.121	5.40	3.343

Regression equation: Y = 1.364 + 2.487X
Chi-squared is 1.385 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.462ppm
LC_{50} is 28.980ppm
95% confidence limits are 23.061 to 36.418ppm

Appendix Table CCCXXX: Cytotoxicity effect of *M. piperita* (wp/$CHCl_3$) extracts against *A. salina* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	29	96.667	97	6.88	6.256	6.587	11.10	6.260
50.000	1.699	30	20	66.667	67	5.44	5.669	5.430	16.74	5.678
25.000	1.398	30	14	46.667	47	4.92	5.083	4.925	19.11	5.096
12.500	1.097	30	12	40.000	40	4.75	4.496	4.780	16.74	4.514
6.250	0.796	30	4	13.333	13	3.87	3.910	3.878	12.15	3.933

Regression equation: Y = 2.395 + 1.933X
Chi-squared is 3.995 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.348ppm
LC_{50} is 22.295ppm
95% confidence limits are 17.025 to 29.196ppm

Appendix Table CCCXXXI: Cytotoxicity effect of *M. piperita* (wp/$CHCl_3$) extracts against *A. salina* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
50.000	1.699	30	22	73.333	73	5.61	5.717	5.606	15.96	5.703
25.000	1.398	30	17	56.667	57	5.18	5.169	5.165	19.02	5.176
12.500	1.097	30	14	46.667	47	4.92	4.621	4.929	18.03	4.649
6.250	0.796	30	4	13.333	13	3.87	4.073	3.873	13.17	4.123

Regression equation: Y = 2.731 + 1.749X
Chi-squared is 2.382 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.297ppm
LC_{50} is 19.830ppm
95% confidence limits are 14.422 to 27.265ppm

Appendix Table CCCXXXII: Cytotoxicity effect of *M. piperita* (wp/$CHCl_3$) extracts against *A. salina* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
50.000	1.699	30	26	86.667	87	6.13	6.089	6.087	13.17	6.037
25.000	1.398	30	19	63.333	63	5.33	5.513	5.304	17.43	5.486
12.500	1.097	30	17	56.667	57	5.18	4.937	5.165	19.02	4.934
6.250	0.796	30	7	23.333	23	4.26	4.361	4.266	15.96	4.383

Regression equation: Y = 2.925 + 1.832X
Chi-squared is 1.839 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.133ppm
LC_{50} is 13.573ppm
95% confidence limits are 9.891 to 18.626ppm

Appendix Table CCCXXXIII: Cytotoxicity effect of *M. piperita* (wp/CH_3OH) extracts against *A. salina* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	13	43.333	43	4.82	4.907	4.815	19.02	4.883
200.000	2.301	30	11	36.667	37	4.67	4.594	4.656	17.43	4.587
100.000	2.000	30	8	26.667	27	4.39	4.281	4.388	15.09	4.290
50.000	1.699	30	4	13.333	13	3.87	3.968	3.878	12.15	3.993

Regression equation: Y = 2.317 + 0.986X
Chi-squared is 0.479 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.720ppm
LC_{50} is 525.030ppm
95% confidence limits are 180.989 to 1523.052ppm

Appendix Table CCCXXXIV: Cytotoxicity effect of *M. piperita* (wp/CH_3OH) extracts against *A. salina* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	18	60.000	60	5.25	5.335	5.240	18.48	5.338
200.000	2.301	30	14	46.667	47	4.92	4.889	4.942	18.81	4.887
100.000	2.000	30	9	30.000	30	4.48	4.444	4.480	16.74	4.435
50.000	1.699	30	6	20.000	20	4.16	3.999	4.200	12.15	3.984
25.000	1.398	30	1	3.333	3	3.12	3.554	3.211	8.07	3.533

Regression equation: Y = 1.438 + 1.499X
Chi-squared is 1.670 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.377ppm
LC_{50} is 238.022ppm
95% confidence limits are 156.184 to 362.742ppm

Appendix Table CCCXXXV: Cytotoxicity effect of *M. piperita* (wp/CH_3OH) extracts against *A. salina* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	21	70.000	70	5.52	5.484	5.510	18.03	5.472
200.000	2.301	30	16	53.333	53	5.08	5.121	5.065	19.02	5.110
100.000	2.000	30	12	40.000	40	4.75	4.758	4.740	18.48	4.748
50.000	1.699	30	8	26.667	27	4.39	4.395	4.394	15.96	4.385
25.000	1.398	30	5	16.667	17	4.05	4.032	4.037	13.17	4.023

Regression equation: Y = 2.341 + 1.204X
Chi-squared is 0.069 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.210ppm
LC_{50} is 162.029ppm
95% confidence limits are 104.473 to 251.292ppm

Appendix Table CCCXXXVI: Cytotoxicity effect of *M. piperita* (wp/CH_3OH) extracts against *A. salina* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	24	80.000	80	5.85	5.706	5.830	15.96	5.696
200.000	2.301	30	17	56.667	57	5.18	5.276	5.202	18.81	5.268
100.000	2.000	30	11	36.667	37	4.67	4.846	4.682	18.81	4.840
50.000	1.699	30	9	30.000	30	4.48	4.416	4.480	16.74	4.412
25.000	1.398	30	5	16.667	17	4.05	3.986	4.062	12.15	3.984

Regression equation: Y = 1.997 + 1.422X
Chi-squared is 0.990 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.112ppm
LC_{50} is 129.544ppm
95% confidence limits are 90.751 to 184.919ppm

Appendix Table CCCXXXVII: Cytotoxicity effect of *M. piperita* (wp/CH_3OH) extracts against *A. salina* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	26	86.667	87	6.13	6.052	6.087	13.17	6.014
200.000	2.301	30	20	66.667	67	5.44	5.609	5.430	16.74	5.582
100.000	2.000	30	18	60.000	60	5.25	5.166	5.240	19.02	5.150
50.000	1.699	30	12	40.000	40	4.75	4.723	4.740	18.48	4.718
25.000	1.398	30	7	23.333	23	4.26	4.280	4.252	15.09	4.286

Regression equation: Y = 2.280 + 1.435X
Chi-squared is 0.638 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.895ppm
LC_{50} is 78.572ppm
95% confidence limits are 55.163 to 111.916ppm

Appendix Table CCCXXXVIII: Cytotoxicity effect of *Mi. pudica* (wp/PetE) extracts against *A. salina* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	10	33.333	33	4.56	4.648	4.551	18.03	4.608
50.000	1.699	30	7	23.333	23	4.26	4.286	4.252	15.09	4.278
25.000	1.398	30	6	20.000	20	4.16	3.924	4.200	12.15	3.949
12.500	1.097	30	2	6.667	7	3.52	3.562	3.519	8.07	3.620
6.250	0.796	30	1	3.333	3	3.12	3.200	3.116	4.62	3.291

Regression equation: Y = 2.421 + 1.093X
Chi-squared is 1.056 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.359ppm
LC_{50} is 228.574ppm
95% confidence limits are 66.397 to 786.869ppm

Appendix Table CCCXXXIX: Cytotoxicity effect of *Mi. pudica* (wp/PetE) extracts against *A. salina* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	21	70.000	70	5.52	5.434	5.510	18.03	5.424
50.000	1.699	30	11	36.667	37	4.67	4.859	4.682	18.81	4.852
25.000	1.398	30	8	26.667	27	4.39	4.284	4.388	15.09	4.280
12.500	1.097	30	3	10.000	10	3.72	3.709	3.720	10.08	3.709
6.250	0.796	30	1	3.333	3	3.12	3.134	3.116	4.62	3.137

Regression equation: Y = 1.626 + 1.899X
Chi-squared is 0.856 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.777ppm
LC_{50} is 59.827ppm
95% confidence limits are 42.662 to 83.899ppm

Appendix Table CCCXL: Cytotoxicity effect of *Mi. pudica* (wp/PetE) extracts against *A. salina* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	22	73.333	73	5.61	5.593	5.584	17.43	5.576
50.000	1.699	30	14	46.667	47	4.92	5.068	4.925	19.11	5.051
25.000	1.398	30	11	36.667	37	4.67	4.544	4.656	17.43	4.526
12.500	1.097	30	6	20.000	20	4.16	4.020	4.160	13.17	4.001
6.250	0.796	30	1	3.333	3	3.12	3.496	3.180	7.14	3.475

Regression equation: Y = 2.087 + 1.744X
Chi-squared is 1.558 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.670ppm
LC_{50} is 46.757ppm
95% confidence limits are 33.732 to 64.812ppm

Appendix Table CCCXLI: Cytotoxicity effect of *Mi. pudica* (wp/PetE) extracts against *A. salina* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	23	76.667	77	5.74	5.664	5.730	16.74	5.643
50.000	1.699	30	15	50.000	50	5.00	5.186	4.990	19.02	5.173
25.000	1.398	30	13	43.333	43	4.82	4.708	4.818	18.48	4.702
12.500	1.097	30	7	23.333	23	4.26	4.230	4.252	15.09	4.232
6.250	0.796	30	3	10.000	10	3.72	3.752	3.720	10.08	3.762

Regression equation: Y = 2.519 + 1.562 X
Chi-squared is 1.033 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.588ppm
LC_{50} is 38.768ppm
95% confidence limits are 27.593 to 54.470ppm

Appendix Table CCCXLII: Cytotoxicity effect of *Mi. pudica* (wp/PetE) extracts against *A. salina* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	28	93.333	93	6.48	6.358	6.424	10.08	6.295
50.000	1.699	30	22	73.333	73	5.61	5.714	5.606	15.96	5.670
25.000	1.398	30	15	50.000	50	5.00	5.070	5.000	19.11	5.044
12.500	1.097	30	8	26.667	27	4.39	4.426	4.390	16.74	4.418
6.250	0.796	30	4	13.333	13	3.87	3.782	3.894	10.08	3.792

Regression equation: Y = 2.138 + 2.079X
Chi-squared is 0.385 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.377ppm
LC_{50} is 23.815ppm
95% confidence limits are 18.432 to 30.769ppm

Appendix Table CCCXLIII: Cytotoxicity effect of *Mi. pudica* (wp/$CHCl_3$) extracts against *A. salina* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	18	60.000	60	5.25	5.032	5.250	19.11	5.057
100.000	2.000	30	10	33.333	33	4.56	4.705	4.558	18.48	4.713
50.000	1.699	30	6	20.000	20	4.16	4.378	4.170	15.96	4.368
25.000	1.398	30	5	16.667	17	4.05	4.051	4.037	13.17	4.024
12.500	1.097	30	4	13.333	13	3.87	3.724	3.894	10.08	3.679

Regression equation: Y = 2.424 + 1.145X
Chi-squared is 2.247 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.251ppm
LC_{50} is 178.222ppm
95% confidence limits are 90.457 to 351.137ppm

Appendix Table CCCXLIV: Cytotoxicity effect of *Mi. pudica* (wp/$CHCl_3$) extracts against *A. salina* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	26	86.667	87	6.13	5.782	6.054	15.96	5.741
100.000	2.000	30	15	50.000	50	5.00	5.246	5.020	18.81	5.206
50.000	1.699	30	8	26.667	27	4.39	4.710	4.402	18.48	4.671
25.000	1.398	30	6	20.000	20	4.16	4.174	4.170	14.13	4.136
12.500	1.097	30	4	13.333	13	3.87	3.638	3.931	9.06	3.600

Regression equation: Y = 1.650 + 1.778X
Chi-squared is 4.554 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.884ppm
LC_{50} is 76.568ppm
95% confidence limits are 56.605 to 103.571ppm

Appendix Table CCCXLV: Cytotoxicity effect of *Mi. pudica* (wp/$CHCl_3$) extracts against *A. salina* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	27	90.000	90	6.28	6.104	6.270	12.15	6.046
100.000	2.000	30	20	66.667	67	5.44	5.526	5.416	17.43	5.482
50.000	1.699	30	11	36.667	37	4.67	4.948	4.665	19.02	4.918
25.000	1.398	30	9	30.000	30	4.48	4.370	4.490	15.96	4.353
12.500	1.097	30	4	13.333	13	3.87	3.792	3.894	10.08	3.789

Regression equation: Y = 1.733 + 1.874X
Chi-squared is 2.307 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.743ppm
LC_{50} is 55.318ppm
95% confidence limits are 41.845 to 73.129ppm

Appendix Table CCCXLVI: Cytotoxicity effect of *Mi. pudica* (wp/$CHCl_3$) extracts against *A. salina* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	28	93.333	93	6.48	6.057	6.333	13.17	6.016
100.000	2.000	30	20	66.667	67	5.44	5.542	5.416	17.43	5.518
50.000	1.699	30	12	40.000	40	4.75	5.026	4.750	19.11	5.020
25.000	1.398	30	9	30.000	30	4.48	4.511	4.460	17.43	4.521
12.500	1.097	30	7	23.333	23	4.26	3.996	4.338	12.15	4.023

Regression equation: Y = 2.208 + 1.655X
Chi-squared is 4.163 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.687ppm
LC_{50} is 48.650ppm
95% confidence limits are 35.803 to 66.108ppm

Appendix Table CCCXLVII: Cytotoxicity effect of *Mi. pudica* (wp/$CHCl_3$) extracts against *A. salina* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	29	96.667	97	6.88	6.269	6.587	11.10	6.229
100.000	2.000	30	22	73.333	73	5.61	5.766	5.606	15.96	5.742
50.000	1.699	30	15	50.000	50	5.00	5.264	5.020	18.81	5.255
25.000	1.398	30	12	40.000	40	4.75	4.761	4.740	18.48	4.768
12.500	1.097	30	9	30.000	30	4.48	4.259	4.490	15.09	4.281

Regression equation: Y = 2.507 + 1.618X
Chi-squared is 3.430 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.541ppm
LC_{50} is 34.767ppm
95% confidence limits are 25.079 to 48.195ppm

Appendix TableCCCXLVIII: Cytotoxicity effect of *Mi. pudica* (wp/CH_3OH) extracts against *A. salina* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	11	36.667	37	4.67	4.564	4.656	17.43	4.567
200.000	2.301	30	6	20.000	20	4.16	4.313	4.170	15.96	4.310
100.000	2.000	30	5	16.667	17	4.05	4.062	4.037	13.17	4.052
50.000	1.699	30	4	13.333	13	3.87	3.811	3.873	11.10	3.794

Regression equation: Y = 2.341 + 0.856X
Chi-squared is 0.520 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 3.108ppm
LC_{50} is 1282.236ppm
95% confidence limits are 170.560 to 9639.580ppm

Appendix Table CCCXLIX: Cytotoxicity effect of *Mi. pudica* (wp/CH_3OH) extracts against *A. salina* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	15	50.000	50	5.00	5.020	5.000	19.11	5.004
200.000	2.301	30	11	36.667	37	4.67	4.723	4.662	18.48	4.719
100.000	2.000	30	9	30.000	30	4.48	4.426	4.480	16.74	4.433
50.000	1.699	30	7	23.333	23	4.26	4.129	4.284	14.13	4.148
25.000	1.398	30	3	10.000	10	3.72	3.832	3.720	11.10	3.862

Regression equation: Y = 2.535 + 0.949X
Chi-squared is 0.583 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.597ppm
LC_{50} is 395.636ppm
95% confidence limits are 167.372 to 935.214ppm

Appendix Table CCCL: Cytotoxicity effect of *Mi. pudica* (wp/CH_3OH) extracts against *A. salina* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	22	73.333	73	5.61	5.552	5.584	17.43	5.529
200.000	2.301	30	16	53.333	53	5.08	5.188	5.065	19.02	5.175
100.000	2.000	30	13	43.333	43	4.82	4.824	4.838	18.81	4.820
50.000	1.699	30	10	33.333	33	4.56	4.460	4.570	16.74	4.465
25.000	1.398	30	5	16.667	17	4.05	4.096	4.037	13.17	4.110

Regression equation: Y = 2.463 + 1.178X
Chi-squared is 0.542 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.153ppm
LC_{50} is 142.187ppm
95% confidence limits are 92.397 to 218.807ppm

Appendix Table CCCLI: Cytotoxicity effect of *Mi. pudica* (wp/CH_3OH) extracts against *A. salina* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	26	86.667	87	6.13	6.038	6.087	13.17	5.980
200.000	2.301	30	20	66.667	67	5.44	5.575	5.416	17.43	5.536
100.000	2.000	30	16	53.333	53	5.08	5.112	5.065	19.02	5.092
50.000	1.699	30	12	40.000	40	4.75	4.649	4.740	18.03	4.648
25.000	1.398	30	6	20.000	20	4.16	4.186	4.170	14.13	4.203

Regression equation: Y = 2.141 + 1.476X
Chi-squared is 0.584 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.938ppm
LC_{50} is 86.651ppm
95% confidence limits are 61.605 to 121.880ppm

Appendix Table CCCLII: Cytotoxicity effect of *P. hysterophorus* (wp/PetE) extracts against *A. salina* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	12	40.000	40	4.75	4.778	4.740	18.48	4.764
100.000	2.000	30	10	33.333	33	4.56	4.551	4.544	17.43	4.541
50.000	1.699	30	8	26.667	27	4.39	4.324	4.394	15.96	4.319
25.000	1.398	30	5	16.667	17	4.05	4.097	4.037	13.17	4.097
12.500	1.097	30	4	13.333	13	3.87	3.870	3.873	11.10	3.875

Regression equation: Y = 3.065 + 0.738X
Chi-squared is 0.147 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.621ppm
LC_{50} is 418.086ppm
95% confidence limits are 84.846 to 2060.159ppm

Appendix Table CCCLIII: Cytotoxicity effect of *P. hysterophorus* (wp/PetE) extracts against *A. salina* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	23	76.667	77	5.74	5.620	5.730	16.74	5.597
100.000	2.000	30	15	50.000	50	5.00	5.185	4.990	19.02	5.169
50.000	1.699	30	12	40.000	40	4.75	4.750	4.740	18.48	4.741
25.000	1.398	30	8	26.667	27	4.39	4.315	4.394	15.96	4.312
12.500	1.097	30	4	13.333	13	3.87	3.880	3.873	11.10	3.884

Regression equation: Y = 2.324 + 1.422X
Chi-squared is 1.012 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.881ppm
LC_{50} is 76.099ppm
95% confidence limits are 52.576 to 110.146ppm

Appendix Table CCCLIV: Cytotoxicity effect of *P. hysterophorus* (wp/PetE) extracts against *A. salina* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	24	80.000	80	5.85	5.870	5.800	15.09	5.842
100.000	2.000	30	20	66.667	67	5.44	5.427	5.429	18.03	5.404
50.000	1.699	30	16	53.333	53	5.08	4.984	5.065	19.02	4.966
25.000	1.398	30	8	26.667	27	4.39	4.541	4.376	17.43	4.528
12.500	1.097	30	6	20.000	20	4.16	4.098	4.160	13.17	4.090

Regression equation: Y = 2.494 + 1.455 X
Chi-squared is 0.691 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.723ppm
LC_{50} is 52.790ppm
95% confidence limits are 37.533 to 74.249ppm

Appendix Table CCCLV: Cytotoxicity effect of *P. hysterophorus* (wp/PetE) extracts against *A. salina* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	26	86.667	87	6.13	6.104	6.132	12.15	6.097
100.000	2.000	30	21	70.000	70	5.52	5.625	5.520	16.74	5.621
50.000	1.699	30	18	60.000	60	5.25	5.146	5.240	19.02	5.145
25.000	1.398	30	11	36.667	37	4.67	4.667	4.659	18.03	4.670
12.500	1.097	30	6	20.000	20	4.16	4.188	4.170	14.13	4.194

Regression equation: Y = 2.459 + 1.581X
Chi-squared is 0.366 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.607ppm
LC_{50} is 40.454ppm
95% confidence limits are 29.252 to 55.946ppm

Appendix Table CCCLVI: Cytotoxicity effect of *P. hysterophorus* (wp/PetE) extracts against *A. salina* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	28	93.333	93	6.48	6.454	6.491	9.06	6.466
100.000	2.000	30	24	80.000	80	5.85	5.943	5.870	14.13	5.951
50.000	1.699	30	21	70.000	70	5.52	5.432	5.510	18.03	5.436
25.000	1.398	30	14	46.667	47	4.92	4.921	4.915	19.02	4.922
12.500	1.097	30	8	26.667	27	4.39	4.410	4.390	16.74	4.407

Regression equation: Y = 2.531 + 1.710X
Chi-squared is 0.202 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.444ppm
LC_{50} is 27.782ppm
95% confidence limits are 19.980 to 38.629ppm

Appendix Table CCCLVII: Cytotoxicity effect of *P. hysterophorus* (wp/$CHCl_3$) extracts against *A. salina* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	13	43.333	43	4.82	4.920	4.815	19.02	4.921
100.000	2.000	30	11	36.667	37	4.67	4.577	4.656	17.43	4.568
50.000	1.699	30	7	23.333	23	4.26	4.233	4.252	15.09	4.216
25.000	1.398	30	5	16.667	17	4.05	3.890	4.077	11.10	3.864
12.500	1.097	30	1	3.333	3	3.12	3.547	3.211	8.07	3.512

Regression equation: Y = 2.228 + 1.170X
Chi-squared is 1.599 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.369ppm
LC_{50} is 233.829ppm
95% confidence limits are 107.394 to 509.118ppm

Appendix Table CCCLVIII: Cytotoxicity effect of *P. hysterophorus* (wp/$CHCl_3$) extracts against *A. salina* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	24	80.000	80	5.85	5.686	5.820	16.74	5.686
100.000	2.000	30	13	43.333	43	4.82	5.125	4.815	19.02	5.122
50.000	1.699	30	12	40.000	40	4.75	4.565	4.740	17.43	4.558
25.000	1.398	30	6	20.000	20	4.16	4.004	4.160	13.17	3.993
12.500	1.097	30	1	3.333	3	3.12	3.443	3.180	7.14	3.429

Regression equation: Y = 1.373 + 1.875X
Chi-squared is 3.480 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.935ppm
LC_{50} is 86.089ppm
95% confidence limits are 63.948 to 115.898ppm

Appendix Table CCCLIX: Cytotoxicity effect of *P. hysterophorus* (wp/$CHCl_3$) extracts against *A. salina* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	25	83.333	83	5.95	5.725	5.926	15.96	5.739
100.000	2.000	30	13	43.333	43	4.82	5.168	4.815	19.02	5.170
50.000	1.699	30	12	40.000	40	4.75	4.611	4.740	18.03	4.601
25.000	1.398	30	7	23.333	23	4.26	4.053	4.283	13.17	4.033
12.500	1.097	30	1	3.333	3	3.12	3.496	3.180	7.14	3.464

Regression equation: Y = 1.393 + 1.889X
Chi-squared is 4.705 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.910ppm
LC_{50} is 81.277ppm
95% confidence limits are 60.728 to 108.778ppm

Appendix Table CCCLX: Cytotoxicity effect of *P. hysterophorus* (wp/$CHCl_3$) extracts against *A. salina* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	27	90.000	90	6.28	6.056	6.210	13.17	5.963
100.000	2.000	30	16	53.333	53	5.08	5.475	5.051	18.03	5.417
50.000	1.699	30	15	50.000	50	5.00	4.894	5.020	18.81	4.871
25.000	1.398	30	8	26.667	27	4.39	4.313	4.394	15.96	4.325
12.500	1.097	30	3	10.000	10	3.72	3.732	3.720	10.08	3.779

Regression equation: Y = 1.789 + 1.814X
Chi-squared is 3.747 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.770ppm
LC_{50} is 58.931ppm
95% confidence limits are 44.239 to 78.501ppm

Appendix Table CCCLXI: Cytotoxicity effect of *P. hysterophorus* (wp/$CHCl_3$) extracts against *A. salina* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	27	90.000	90	6.28	6.166	6.270	12.15	6.141
100.000	2.000	30	21	70.000	70	5.52	5.616	5.520	16.74	5.594
50.000	1.699	30	15	50.000	50	5.00	5.066	5.000	19.11	5.048
25.000	1.398	30	9	30.000	30	4.48	4.516	4.460	17.43	4.501
12.500	1.097	30	5	16.667	17	4.05	3.966	4.062	12.15	3.955

Regression equation: Y = 1.963 + 1.816X
Chi-squared is 0.508 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.673ppm
LC_{50} is 47.061ppm
95% confidence limits are 35.472 to 62.436ppm

Appendix Table CCCLXII: Cytotoxicity effect of *P. hysterophorus* (wp/CH_3OH) extracts against *A. salina* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	13	43.333	43	4.82	4.968	4.815	19.02	4.946
100.000	2.000	30	13	43.333	43	4.82	4.631	4.821	18.03	4.625
50.000	1.699	30	7	23.333	23	4.26	4.294	4.252	15.09	4.304
25.000	1.398	30	5	16.667	17	4.05	3.957	4.062	12.15	3.983
12.500	1.097	30	2	6.667	7	3.52	3.620	3.529	9.06	3.662

Regression equation: Y = 2.493 + 1.066X
Chi-squared is 1.296 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} Is 2.352ppm
LC_{50} is 224.663ppm
95% confidence limits are 98.071 to 514.660ppm

Appendix Table CCCLXIII: Cytotoxicity effect of *P. hysterophorus* (wp/CH_3OH) extracts against *A. salina* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	25	83.333	83	5.95	6.074	5.923	13.17	6.063
100.000	2.000	30	23	76.667	77	5.74	5.440	5.699	18.03	5.434
50.000	1.699	30	10	33.333	33	4.56	4.806	4.578	18.81	4.804
25.000	1.398	30	7	23.333	23	4.26	4.172	4.284	14.13	4.175
12.500	1.097	30	2	6.667	7	3.52	3.538	3.519	8.07	3.546

Regression equation: Y = 1.253 + 2.090X
Chi-squared is 2.665 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.793ppm
LC_{50} is 62.016ppm
95% confidence limits are 48.049 to 80.041ppm

Appendix Table CCCLXIV: Cytotoxicity effect of *P. hysterophorus* (wp/CH_3OH) extracts against *A. salina* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	28	93.333	93	6.48	6.474	6.491	9.06	6.453
100.000	2.000	30	25	83.333	83	5.95	5.775	5.926	15.96	5.755
50.000	1.699	30	12	40.000	40	4.75	5.076	4.750	19.11	5.056
25.000	1.398	30	9	30.000	30	4.48	4.377	4.490	15.96	4.357
12.500	1.097	30	3	10.000	10	3.72	3.678	3.730	9.06	3.658

Regression equation: Y = 1.112 + 2.321X
Chi-squared is 2.598 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.675ppm
LC_{50} is 47.302ppm
95% confidence limits are 37.421 to 59.791ppm

Appendix Table CCCLXV: Cytotoxicity effect of *P. hysterophorus* (wp/CH_3OH) extracts against *A. salina* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	26	86.667	87	6.13	5.770	6.054	15.96	5.791
50.000	1.699	30	12	40.000	40	4.75	5.111	4.740	19.02	5.122
25.000	1.398	30	10	33.333	33	4.56	4.451	4.570	16.74	4.453
12.500	1.097	30	4	13.333	13	3.87	3.792	3.894	10.08	3.783

Regression equation: Y = 1.345 + 2.223X
Chi-squared is 4.231 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.644ppm
LC_{50} is 44.060ppm
95% confidence limits are 33.933 to 57.207ppm

Appendix Table CCCLXVI: Cytotoxicity effect of *P.hysterophorus* (wp/CH_3OH) extracts against *A. salina* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	28	93.333	93	6.48	6.134	6.408	12.15	6.170
50.000	1.699	30	18	60.000	60	5.25	5.427	5.240	18.03	5.448
25.000	1.398	30	11	36.667	37	4.67	4.721	4.662	18.48	4.726
12.500	1.097	30	6	20.000	20	4.16	4.014	4.160	13.17	4.005

Regression equation: Y = 1.375 + 2.397X
Chi-squared is 1.864 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.512ppm
LC_{50} is 32.513ppm
95% confidence limits are 25.566 to 41.349ppm

Appendix Table CCCLXVII: Cytotoxicity effect of *Ph. niruri* (wp/PetE) extracts against *A. salina* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	8	26.667	27	4.39	4.364	4.394	15.96	4.362
200.000	2.301	30	5	16.667	17	4.05	4.190	4.056	14.13	4.184
100.000	2.000	30	5	16.667	17	4.05	4.017	4.037	13.17	4.007
50.000	1.699	30	4	13.333	13	3.87	3.843	3.873	11.10	3.830
25.000	1.398	30	4	13.333	13	3.87	3.669	3.931	9.06	3.652
12.500	1.097	30	1	3.333	3	3.12	3.495	3.180	7.14	3.475

Regression equation: Y = 2.829 + 0.589X
Chi-squared is 1.607 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 3.686ppm
LC_{50} is 4845.618ppm
95% confidence limits are 181.877 to 129098.700ppm

Appendix Table CCCLXVIII: Cytotoxicity effect of *Ph. niruri* (wp/PetE) extracts against *A. salina* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	12	40.000	40	4.75	4.762	4.740	18.48	4.735
200.000	2.301	30	9	30.000	30	4.48	4.540	4.460	17.43	4.525
100.000	2.000	30	8	26.667	27	4.39	4.318	4.394	15.96	4.314
50.000	1.699	30	5	16.667	17	4.05	4.096	4.037	13.17	4.104
25.000	1.398	30	5	16.667	17	4.05	3.873	4.077	11.10	3.893
12.500	1.097	30	2	6.667	7	3.52	3.651	3.529	9.06	3.682

Regression equation: Y = 2.915 + 0.700X
Chi-squared is 0.823 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.980ppm
LC_{50} is 955.244ppm
95% confidence limits are 195.075 to 4677.654ppm

Appendix Table CCCLXIX: Cytotoxicity effect of *Ph. niruri* (wp/PetE) extracts against *A. salina* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	16	53.333	53	5.08	5.068	5.075	19.11	5.071
200.000	2.301	30	12	40.000	40	4.75	4.818	4.760	18.81	4.819
100.000	2.000	30	12	40.000	40	4.75	4.568	4.740	17.43	4.567
50.000	1.699	30	6	20.000	20	4.16	4.318	4.170	15.96	4.315
25.000	1.398	30	5	16.667	17	4.05	4.069	4.037	13.17	4.063
12.500	1.097	30	4	13.333	13	3.87	3.819	3.873	11.10	3.811

Regression equation: Y = 2.893 + 0.837X
Chi-squared is 0.975 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.517ppm
LC_{50} is 329.020ppm
95% confidence limits are 141.410 to 765.534ppm

Appendix Table CCCLXX: Cytotoxicity effect of *Ph. niruri* (wp/PetE) extracts against *A. salina* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	23	76.667	77	5.74	5.675	5.730	16.74	5.654
200.000	2.301	30	17	56.667	57	5.18	5.320	5.162	18.48	5.304
100.000	2.000	30	15	50.000	50	5.00	4.964	4.990	19.02	4.954
50.000	1.699	30	11	36.667	37	4.67	4.609	4.659	18.03	4.603
25.000	1.398	30	7	23.333	23	4.26	4.254	4.252	15.09	4.253
12.500	1.097	30	4	13.333	13	3.87	3.898	3.873	11.10	3.903

Regression equation: Y = 2.628 + 1.163X
Chi-squared is 0.559 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.040ppm
LC_{50} is 109.640ppm
95% confidence limits are 73.122 to 164.395ppm

Appendix Table CCCLXXI: Cytotoxicity effect of *Ph. niruri* (wp/PetE) extracts against *A. salina* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	29	96.667	97	6.88	6.223	6.587	11.10	6.178
200.000	2.301	30	22	73.333	73	5.61	5.826	5.562	15.09	5.790
100.000	2.000	30	17	56.667	57	5.18	5.429	5.159	18.03	5.403
50.000	1.699	30	16	53.333	53	5.08	5.032	5.075	19.11	5.016
25.000	1.398	30	12	40.000	40	4.75	4.635	4.740	18.03	4.629
12.500	1.097	30	7	23.333	23	4.26	4.238	4.252	15.09	4.241

Regression equation: Y = 2.830 + 1.287X
Chi-squared is 4.014 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.687ppm
LC_{50} is 48.604ppm
95% confidence limits are 33.656 to 70.189ppm

Appendix Table CCCLXXII: Cytotoxicity effect of *Ph. niruri* (wp/$CHCl_3$) extracts against *A. salina* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	10	33.333	33	4.56	4.360	4.586	15.96	4.405
100.000	2.000	30	5	16.667	17	4.05	4.178	4.056	14.13	4.208
50.000	1.699	30	4	13.333	13	3.87	3.997	3.878	12.15	4.010
25.000	1.398	30	3	10.000	10	3.72	3.816	3.720	11.10	3.813
12.500	1.097	30	3	10.000	10	3.72	3.635	3.730	9.06	3.616
6.250	0.796	30	2	6.667	7	3.52	3.454	3.540	7.14	3.419

Regression equation: Y = 2.897 + 0.655X
Chi-squared is 1.381 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 3.209ppm
LC_{50} is 1617.613ppm
95% confidence limits are 111.518 to 23464.230ppm

Appendix Table CCCLXXIII: Cytotoxicity effect of *Ph. niruri* (wp/$CHCl_3$) extracts against *A. salina* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	21	70.000	70	5.52	5.168	5.490	19.02	5.152
100.000	2.000	30	12	40.000	40	4.75	4.974	4.740	19.02	4.960
50.000	1.699	30	10	33.333	33	4.56	4.779	4.558	18.48	4.768
25.000	1.398	30	9	30.000	30	4.48	4.584	4.460	17.43	4.575
12.500	1.097	30	8	26.667	27	4.39	4.390	4.394	15.96	4.383
6.250	0.796	30	8	26.667	27	4.39	4.195	4.436	14.13	4.191

Regression equation: Y = 3.684 + 0.638X
Chi-squared is 4.986 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.063ppm
LC_{50} is 115.700ppm
95% confidence limits are 45.056 to 297.106ppm

Appendix Table CCCLXXIV: Cytotoxicity effect of *Ph. niruri* (wp/$CHCl_3$) extracts against *A. salina* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	27	90.000	90	6.28	5.619	6.120	16.74	5.618
100.000	2.000	30	16	53.333	53	5.08	5.375	5.058	18.48	5.376
50.000	1.699	30	13	43.333	43	4.82	5.131	4.815	19.02	5.133
25.000	1.398	30	13	43.333	43	4.82	4.887	4.838	18.81	4.891
12.500	1.097	30	12	40.000	40	4.75	4.643	4.740	18.03	4.648
6.250	0.796	30	10	33.333	33	4.56	4.399	4.586	15.96	4.406

Regression equation: Y = 3.765 + 0.805X
Chi-squared is 8.730 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.533ppm
LC_{50} is 34.150ppm
95% confidence limits are 19.858 to 58.728ppm

Appendix Table CCCLXXV: Cytotoxicity effect of *Ph. niruri* (wp/$CHCl_3$) extracts against *A. salina* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	29	96.667	97	6.88	5.831	6.378	15.09	5.810
100.000	2.000	30	18	60.000	60	5.25	5.552	5.220	17.43	5.537
50.000	1.699	30	14	46.667	47	4.92	5.274	4.942	18.81	5.264
25.000	1.398	30	14	46.667	47	4.92	4.995	4.915	19.02	4.992
12.500	1.097	30	12	40.000	40	4.75	4.717	4.740	18.48	4.719
6.250	0.796	30	11	36.667	37	4.67	4.438	4.690	16.74	4.446

Regression equation: Y = 3.724 + 0.907X
Chi-squared is 9.694 with 4 degrees of freedom
Variance has been adjusted for heterogeneity
Log LC_{50} is 1.407ppm
LC_{50} is 25.543ppm
95% confidence limits are 11.738 to 55.582ppm

Appendix Table CCCLXXVI: Cytotoxicity effect of *Ph. niruri* (wp/$CHCl_3$) extracts against *A. salina* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	20	66.667	67	5.44	5.284	5.462	18.81	5.294
50.000	1.699	30	15	50.000	50	5.00	5.142	4.990	19.02	5.150
25.000	1.398	30	14	46.667	47	4.92	5.000	4.925	19.11	5.006
12.500	1.097	30	13	43.333	43	4.82	4.858	4.838	18.81	4.861
6.250	0.796	30	13	43.333	43	4.82	4.716	4.818	18.48	4.717

Regression equation: Y = 4.336 + 0.479X
Chi-squared is 1.338 with 3 degrees of freedom
No significant heterogeneity
LOG LC_{50} is 1.386 ppm
LC_{50} is 24.331 ppm
95% confidence limits are 9.212 to 64.267 ppm

Appendix Table CCCLXXVII: Cytotoxicity effect of *Ph. niruri* (wp/CH_3OH) extracts against *A. salina* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
800.000	2.903	30	11	36.667	37	4.67	4.644	4.659	18.03	4.684
400.000	2.602	30	8	26.667	27	4.39	4.319	4.394	15.96	4.355
200.000	2.301	30	6	20.000	20	4.16	3.993	4.200	12.15	4.026
100.000	2.000	30	1	3.333	3	3.12	3.667	3.261	9.06	3.697
50.000	1.699	30	2	6.667	7	3.52	3.341	3.572	6.24	3.368
25.000	1.398	30	1	3.333	3	3.12	3.016	3.135	3.93	3.039

Regression equation: Y = 1.511 + 1.093X
Chi-squared is 2.422 with 4 degrees of freedom
No significant heterogeneity
LOG LC_{50} is 3.192 ppm
LC_{50} is 1557.524 ppm
95% confidence limits are 555.412 to 4367.718 ppm

Appendix Table CCCLXVIII: Cytotoxicity effect of *Ph. niruri* (wp/CH_3OH) extracts against *A. salina* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
800.000	2.903	30	17	56.667	57	5.18	5.004	5.175	19.11	5.037
400.000	2.602	30	11	36.667	37	4.67	4.677	4.659	18.03	4.691
200.000	2.301	30	6	20.000	20	4.16	4.350	4.170	15.96	4.344
100.000	2.000	30	4	13.333	13	3.87	4.023	3.873	13.17	3.998
50.000	1.699	30	3	10.000	10	3.72	3.696	3.730	9.06	3.652
25.000	1.398	30	2	6.667	7	3.52	3.370	3.572	6.24	3.306

Regression equation: Y = 1.700 + 1.149X
Chi-squared is 1.572 with 4 degrees of freedom
No significant heterogeneity
LOG LC_{50} is 2.871 ppm
LC_{50} is 743.490 ppm
95% confidence limits are 381.772 to 1447.926 ppm

Appendix Table CCLXXIX: Cytotoxicity effect of *Ph. niruri* (wp/CH_3OH) extracts against *A. salina* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
800.000	2.903	30	24	80.000	80	5.85	5.409	5.780	18.03	5.384
400.000	2.602	30	12	40.000	40	4.75	5.047	4.750	19.11	5.020
200.000	2.301	30	8	26.667	27	4.39	4.686	4.389	18.03	4.656
100.000	2.000	30	6	20.000	20	4.16	4.324	4.170	15.96	4.292
50.000	1.699	30	6	20.000	20	4.16	3.963	4.200	12.15	3.929
25.000	1.398	30	3	10.000	10	3.72	3.601	3.730	9.06	3.565

Regression equation: Y = 1.876 + 1.208X
Chi-squared is 6.892 with 4 degrees of freedom
No significant heterogeneity
LOG LC_{50} is 2.585 ppm
LC_{50} is 384.977 ppm
95% confidence limits are 240.904 to 615.215 ppm

Appendix Table CCCLXXX: Cytotoxicity effect of *Ph. niruri* (wp/CH_3OH) extracts against *A. salina* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
800.000	2.903	30	24	80.000	80	5.85	5.511	5.780	17.43	5.469
400.000	2.602	30	14	46.667	47	4.92	5.169	4.915	19.02	5.136
200.000	2.301	30	10	33.333	33	4.56	4.828	4.578	18.81	4.803
100.000	2.000	30	9	30.000	30	4.48	4.486	4.480	16.74	4.470
50.000	1.699	30	7	23.333	23	4.26	4.144	4.284	14.13	4.137
25.000	1.398	30	4	13.333	13	3.87	3.802	3.873	11.10	3.804

Regression equation: Y = 2.257 + 1.106 X
Chi-squared is 3.927 with 4 degrees of freedom
No significant heterogeneity
LOG LC_{50} is 2.479 ppm
LC_{50} is 301.357 ppm
95% confidence limits are 189.072 to 480.326 ppm

Appendix Table CCCLXXXI: Cytotoxicity effect of *Ph. niruri* (wp/CH_3OH) extracts against *A. salina* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
800.000	2.903	30	26	86.667	87	6.13	6.038	6.087	13.17	5.991
400.000	2.602	30	22	73.333	73	5.61	5.610	5.610	16.74	5.577
200.000	2.301	30	16	53.333	53	5.08	5.182	5.065	19.02	5.162
100.000	2.000	30	10	33.333	33	4.56	4.754	4.558	18.48	4.748
50.000	1.699	30	10	33.333	33	4.56	4.327	4.586	15.96	4.333
25.000	1.398	30	4	13.333	13	3.87	3.899	3.873	11.10	3.918

Regression equation: Y = 1.993 + 1.377X
Chi-squared is 2.027 with 4 degrees of freedom
No significant heterogeneity
LOG LC_{50} is 2.183ppm
LC_{50} is 152.499ppm
95% confidence limits are 108.849 to 213.652ppm

Appendix Table CCCXXXII: Cytotoxicity effect of *Po. hydropiper* (wp/Pet.E) extracts against *A. salina* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	3	10.000	10	3.72	3.753	3.720	10.08	3.748
100.000	2.000	30	2	6.667	7	3.52	3.453	3.540	7.14	3.462
50.000	1.699	30	1	3.333	3	3.12	3.153	3.116	4.62	3.176

Regression equation: Y = 1.564 + 0.949X
Chi-squared is 0.068 with 1 degrees of freedom
No significant heterogeneity
Log LC_{50} is 3.621ppm
LC_{50} is 4175.449ppm
95% confidence limits are 4.825 to 3613104ppm

Appendix Table CCCLXXXIII: Cytotoxicity effect of *Po. hydropiper* (wp/Pet.E) extracts against *A. salina* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	16	53.333	53	5.08	5.090	5.075	19.11	5.083
100.000	2.000	30	14	46.667	47	4.92	4.926	4.915	19.02	4.918
50.000	1.699	30	12	40.000	40	4.75	4.761	4.740	18.48	4.754
25.000	1.398	30	11	36.667	37	4.67	4.596	4.656	17.43	4.589
12.500	1.097	30	8	26.667	27	4.39	4.431	4.390	16.74	4.425
6.250	0.796	30	7	23.333	23	4.26	4.266	4.252	15.09	4.260

Regression equation: Y = 3.825 + 0.547X
Chi-squared is 0.104 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.150ppm
LC_{50} is 141.108ppm
95% confidence limits are 42.669 to 466.643ppm

Appendix Table CCCLXXXIV: Cytotoxicity effect of *Po. hydropiper* (wp/Pet.E) extracts against *A. salina* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	26	86.667	87	6.13	5.992	6.136	14.13	5.987
50.000	1.699	30	20	66.667	67	5.44	5.626	5.430	16.74	5.625
25.000	1.398	30	18	60.000	60	5.25	5.260	5.280	18.81	5.263
12.500	1.097	30	14	46.667	47	4.92	4.894	4.942	18.81	4.901
6.250	0.796	30	10	33.333	33	4.56	4.528	4.544	17.43	4.539

Regression equation: Y = 3.582 + 1.203X
Chi-squared is 0.988 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.179ppm
LC_{50} is 15.102ppm
95% confidence limits are 9.676 to 23.573ppm

Appendix Table CCCLXXXV: Cytotoxicity effect of *Po. hydropiper* (wp/Pet.E) extracts against *A. salina* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	29	96.667	97	6.88	6.538	6.759	8.07	6.505
50.000	1.699	30	25	83.333	83	5.95	6.059	5.923	13.17	6.036
25.000	1.398	30	20	66.667	67	5.44	5.579	5.416	17.43	5.566
12.500	1.097	30	17	56.667	57	5.18	5.099	5.175	19.11	5.097
6.250	0.796	30	11	36.667	37	4.67	4.619	4.659	18.03	4.628

Regression equation: Y = 3.387 + 1.559X
Chi-squared is 1.216 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.035ppm
LC_{50} is 10.831ppm
95% confidence limits are 7.263 to 16.151ppm

Appendix Table CCCLXXXVI: Cytotoxicity effect of *Po. hydropiper* (wp/Pet.E) extracts against *A. salina* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	29	96.667	97	6.88	6.918	6.844	4.62	6.862
50.000	1.699	30	28	93.333	93	6.48	6.369	6.424	10.08	6.328
25.000	1.398	30	23	76.667	77	5.74	5.820	5.698	15.09	5.795
12.500	1.097	30	18	60.000	60	5.25	5.271	5.280	18.81	5.261
6.250	0.796	30	12	40.000	40	4.75	4.722	4.740	18.48	4.728

Regression equation: Y = 3.317 + 1.772X
Chi-squared is 0.245 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 0.949ppm
LC_{50} is 8.901ppm
95% confidence limits are 6.013 to 13.17ppm

Appendix Table CCCLXXXVII: Cytotoxicity effect of *Po. hydropiper* (wp/$CHCl_3$) extracts against *A. salina* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	18	60.000	60	5.25	5.173	5.240	19.02	5.178
50.000	1.699	30	13	43.333	43	4.82	4.838	4.838	18.81	4.839
25.000	1.398	30	8	26.667	27	4.39	4.503	4.376	17.43	4.501
12.500	1.097	30	6	20.000	20	4.16	4.167	4.170	14.13	4.163
6.250	0.796	30	4	13.333	13	3.87	3.832	3.873	11.10	3.824
3.125	0.495	30	2	6.667	7	3.52	3.497	3.540	7.14	3.486

Regression equation: Y = 2.930 + 1.124X
Chi-squared is 0.394 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.842ppm
LC_{50} is 69.464ppm
95% confidence limits are 38.534 to 125.218ppm

Appendix Table CCCLXXXVIII: Cytotoxicity effect of *Po. hydropiper* (wp/$CHCl_3$) extracts against *A. salina* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	27	90.000	90	6.28	5.943	6.250	14.13	5.882
50.000	1.699	30	20	66.667	67	5.44	5.562	5.416	17.43	5.511
25.000	1.398	30	14	46.667	47	4.92	5.181	4.915	19.02	5.141
12.500	1.097	30	10	33.333	33	4.56	4.799	4.558	18.48	4.770
6.250	0.796	30	9	30.000	30	4.48	4.418	4.480	16.74	4.400
3.125	0.495	30	7	23.333	23	4.26	4.037	4.283	13.17	4.030

Regression equation: Y = 3.421 + 1.230X
Chi-squared is 4.832 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.283ppm
LC_{50} is 19.208ppm
95% confidence limits are 13.278 to 27.786ppm

Appendix Table CCCLXXXIX: Cytotoxicity effect of *Po. hydropiper* (wp/$CHCl_3$) extracts against *A. salina* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
50.000	1.699	30	27	90.000	90	6.28	6.174	6.270	12.15	6.111
25.000	1.398	30	24	80.000	80	5.85	5.809	5.800	15.09	5.765
12.500	1.097	30	18	60.000	60	5.25	5.444	5.240	18.03	5.419
6.250	0.796	30	14	46.667	47	4.92	5.079	4.925	19.11	5.073
3.125	0.495	30	14	46.667	47	4.92	4.714	4.922	18.48	4.727

Regression equation: Y = 4.158 + 1.150X
Chi-squared is 2.025 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 0.732ppm
LC_{50} is 5.400ppm
95% confidence limits are 3.156 to 9.238ppm

Appendix Table CCCXC: Cytotoxicity effect of *Po. hydropiper* (wp/$CHCl_3$) extracts against *A. salina* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
50.000	1.699	30	29	96.667	97	6.88	6.614	6.810	7.14	6.612
25.000	1.398	30	27	90.000	90	6.28	6.222	6.230	11.10	6.220
12.500	1.097	30	23	76.667	77	5.74	5.829	5.698	15.09	5.828
6.250	0.796	30	19	63.333	63	5.33	5.437	5.321	18.03	5.436
3.125	0.495	30	17	56.667	57	5.18	5.045	5.175	19.11	5.044

Regression equation: Y = 4.399 + 1.302X
Chi-squared is 1.103 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 0.461ppm
LC_{50} is 2.892ppm
95% confidence limits are 1.479 to 5.653ppm

Appendix Table CCCXCI: Cytotoxicity effect of *Po. hydropiper* (wp/$CHCl_3$) extracts against *A. salina* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
25.000	1.398	30	28	93.333	93	6.48	6.327	6.424	10.08	6.250
12.500	1.097	30	23	76.667	77	5.74	5.969	5.756	14.13	5.936
6.250	0.796	30	22	73.333	73	5.61	5.611	5.610	16.74	5.621
3.125	0.495	30	19	63.333	63	5.33	5.253	5.358	18.81	5.306

Regression equation: Y = 4.789 + 1.045X
Chi-squared is 0.813 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 0.202ppm
LC_{50} is 1.590ppm
95% confidence limits are 0.439 to 5.760ppm

Appendix Table CCCXCII: Cytotoxicity effect of *Po. hydropiper* (wp/CH_3OH) extracts against *A. salina* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	9	30.000	30	4.48	4.408	4.480	16.74	4.424
100.000	2.000	30	8	26.667	27	4.39	4.288	4.388	15.09	4.299
50.000	1.699	30	4	13.333	13	3.87	4.168	3.904	14.13	4.174
25.000	1.398	30	5	16.667	17	4.05	4.048	4.037	13.17	4.049
12.500	1.097	30	5	16.667	17	4.05	3.928	4.062	12.15	3.923

Regression equation: Y = 3.467 + 0.416X
Chi-squared is 1.435 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 3.686ppm
LC_{50} is 4852.087ppm
95% confidence limits are 11.942 to 1971432ppm

Appendix Table CCCXCIII: Cytotoxicity effect of *Po. hydropiper* (wp/CH_3OH) extracts against *A. salina* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	25	83.333	83	5.95	5.910	5.984	14.13	5.904
100.000	2.000	30	24	80.000	80	5.85	5.439	5.780	18.03	5.426
50.000	1.699	30	8	26.667	27	4.39	4.968	4.415	19.02	4.948
25.000	1.398	30	7	23.333	23	4.26	4.497	4.270	16.74	4.470
12.500	1.097	30	8	26.667	27	4.39	4.026	4.447	13.17	3.992

Regression equation: Y = 2.250 + 1.588X
Chi-squared is 11.149 with 3 degrees of freedom
Variance has been adjusted for heterogeneity
Log LC_{50} is 1.732ppm
LC_{50} is 53.895ppm
95% confidence limits are 29.307 to 99.111ppm

Appendix Table CCCXCIV: Cytotoxicity effect of *Po. hydropiper* (wp/CH_3OH) extracts against *A. salina* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	29	96.667	97	6.88	6.006	6.497	13.17	6.010
50.000	1.699	30	15	50.000	50	5.00	5.436	4.970	18.03	5.443
25.000	1.398	30	12	40.000	40	4.75	4.866	4.760	18.81	4.875
12.500	1.097	30	10	33.333	33	4.56	4.296	4.592	15.09	4.308

Regression equation: Y = 2.240 + 1.885X
Chi-squared is 8.619 with 2 degrees of freedom
Variance has been adjusted for heterogeneity
Log LC_{50} is 1.464ppm
LC_{50} is 29.110ppm
95% confidence limits are 15.499 to 54.674ppm

Appendix Table CCCXCV: Cytotoxicity effect of *Po. hydropiper* (wp/CH_3OH) extracts against *A. salina* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	29	96.667	97	6.88	6.068	6.497	13.17	6.043
50.000	1.699	30	17	56.667	57	5.18	5.533	5.136	17.43	5.515
25.000	1.398	30	12	40.000	40	4.75	4.999	4.740	19.02	4.988
12.500	1.097	30	12	40.000	40	4.75	4.465	4.780	16.74	4.461

Regression equation: Y = 2.539 + 1.752X
Chi-squared is 8.104 with 2 degrees of freedom
Variance has been adjusted for heterogeneity
Log LC_{50} is 1.405ppm
LC_{50} is 25.398ppm
95% confidence limits are 12.914 to 49.950ppm

Appendix Table CCCXCVI: Cytotoxicity effect of *Po. hydropiper* (wp/CH_3OH) extracts against *A. salina* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	29	96.667	97	6.88	5.991	6.516	14.13	6.025
50.000	1.699	30	17	56.667	57	5.18	5.550	5.136	17.43	5.570
25.000	1.398	30	13	43.333	43	4.82	5.108	4.815	19.02	5.115
12.500	1.097	30	15	50.000	50	5.00	4.667	5.010	18.03	4.660

Regression equation: Y = 3.001 + 1.512X
Chi-squared is 10.610 with 2 degrees of freedom
Variance has been adjusted for heterogeneity
Log LC_{50} is 1.322ppm
LC_{50} is 20.995ppm
95% confidence limits are 7.963 to 55.354ppm

Appendix Table CCCXCVII: Cytotoxicity effect of *Pz. zeylanica* (wp/PetE) extracts against *A. salina* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	12	40.000	40	4.75	4.588	4.740	17.43	4.590
50.000	1.699	30	5	16.667	17	4.05	4.300	4.048	15.09	4.299
25.000	1.398	30	5	16.667	17	4.05	4.012	4.037	13.17	4.007
12.500	1.097	30	3	10.000	10	3.72	3.724	3.720	10.08	3.716
6.250	0.796	30	2	6.667	7	3.52	3.437	3.540	7.14	3.425
3.125	0.495	30	1	3.333	3	3.12	3.149	3.116	4.62	3.133

Regression equation: Y = 2.655 + 0.968X
Chi-squared is 1.448 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.424ppm
LC_{50} is 265.189ppm
95% confidence limits are 71.529 to 983.166ppm

Appendix Table CCCXCVIII: Cytotoxicity effect of *Pz. zeylanica* (wp/PetE) extracts against *A. salina* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	17	56.667	57	5.18	4.857	5.202	18.81	4.909
50.000	1.699	30	7	23.333	23	4.26	4.600	4.281	18.03	4.630
25.000	1.398	30	8	26.667	27	4.39	4.343	4.394	15.96	4.352
12.500	1.097	30	4	13.333	13	3.87	4.087	3.873	13.17	4.073
6.250	0.796	30	4	13.333	13	3.87	3.830	3.873	11.10	3.795
3.125	0.495	30	3	10.000	10	3.72	3.573	3.750	8.07	3.517

Regression equation: Y = 3.059 + 0.925X
Chi-squared is 4.882 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.099ppm
LC_{50} is 125.528ppm
95% confidence limits are 49.105 to 320.887ppm

Appendix Table CCCXCIX: Cytotoxicity effect of *Pz. zeylanica* (wp/PetE) extracts against *A. salina* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	21	70.000	70	5.52	5.190	5.490	19.02	5.188
50.000	1.699	30	10	33.333	33	4.56	4.902	4.565	19.02	4.894
25.000	1.398	30	10	33.333	33	4.56	4.614	4.551	18.03	4.601
12.500	1.097	30	7	23.333	23	4.26	4.326	4.266	15.96	4.307
6.250	0.796	30	5	16.667	17	4.05	4.038	4.037	13.17	4.013
3.125	0.495	30	4	13.333	13	3.87	3.750	3.894	10.08	3.720

Regression equation: Y = 3.237 + 0.975X
Chi-squared is 4.183 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.807ppm
LC_{50} is 64.177ppm
95% confidence limits are 33.523 to 122.864ppm

Appendix Table CD: Cytotoxicity effect of *Pz. zeylanica* (wp/PetE) extracts against *A. salina* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	23	76.667	77	5.74	5.558	5.696	17.43	5.527
50.000	1.699	30	15	50.000	50	5.00	5.234	5.020	18.81	5.212
25.000	1.398	30	13	43.333	43	4.82	4.910	4.815	19.02	4.897
12.500	1.097	30	11	36.667	37	4.67	4.586	4.656	17.43	4.582
6.250	0.796	30	8	26.667	27	4.39	4.263	4.388	15.09	4.267
3.125	0.495	30	4	13.333	13	3.87	3.939	3.878	12.15	3.952

Regression equation: Y = 3.434 + 1.047X
Chi-squared is 1.702 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.496ppm
LC_{50} is 31.359ppm
95% confidence limits are 19.750 to 49.793ppm

Appendix Table CDI: Cytotoxicity effect of *Pz. zeylanica* (wp/PetE) extracts against *A. salina* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	27	90.000	90	6.28	6.058	6.210	13.17	5.977
50.000	1.699	30	20	66.667	67	5.44	5.718	5.414	15.96	5.662
25.000	1.398	30	17	56.667	57	5.18	5.377	5.162	18.48	5.347
12.500	1.097	30	17	56.667	57	5.18	5.036	5.175	19.11	5.032
6.250	0.796	30	15	50.000	50	5.00	4.696	5.010	18.03	4.717
3.125	0.495	30	6	20.000	20	4.16	4.355	4.170	15.96	4.402

Regression equation: Y = 3.884 + 1.046X
Chi-squared is 5.126 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.066ppm
LC_{50} is 11.648ppm
95% confidence limits are 7.431 to 18.259ppm

Appendix Table CDII: Cytotoxicity effect of *Pz. zeylanica* (wp/$CHCl_3$) extracts against *A. salina* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	3	10.000	10	3.72	3.580	3.750	8.07	3.634
100.000	2.000	30	1	3.333	3	3.12	3.440	3.180	7.14	3.482
50.000	1.699	30	2	6.667	7	3.52	3.300	3.572	6.24	3.330
25.000	1.398	30	1	3.333	3	3.12	3.160	3.116	4.62	3.178

Regression equation: Y = 2.472 + 0.505X
Chi-squared is 1.143 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 5.006ppm
LC_{50} is 101415.100ppm
95% confidence limits are 0.006 to 1.751E+12ppm

Appendix Table CDIII: Cytotoxicity effect of *Pz. zeylanica* (wp/$CHCl_3$) extracts against *A. salina* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	9	30.000	30	4.48	4.550	4.460	17.43	4.547
100.000	2.000	30	9	30.000	30	4.48	4.262	4.490	15.09	4.265
50.000	1.699	30	4	13.333	13	3.87	3.974	3.878	12.15	3.983
25.000	1.398	30	2	6.667	7	3.52	3.686	3.529	9.06	3.701
12.500	1.097	30	2	6.667	7	3.52	3.398	3.572	6.24	3.419

Regression equation: Y = 2.391 + 0.937X
Chi-squared is 1.444 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.784ppm
LC_{50} is 608.430ppm
95% confidence limits are 123.423 to 2999.348ppm

Appendix Table CDIV: Cytotoxicity effect of *Pz. zeylanica* (wp/$CHCl_3$) extracts against *A. salina* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	13	43.333	43	4.82	4.794	4.818	18.48	4.786
100.000	2.000	30	10	33.333	33	4.56	4.574	4.544	17.43	4.572
50.000	1.699	30	7	23.333	23	4.26	4.354	4.266	15.96	4.358
25.000	1.398	30	7	23.333	23	4.26	4.134	4.284	14.13	4.144
12.500	1.097	30	4	13.333	13	3.87	3.914	3.878	12.15	3.930

Regression equation: Y = 3.151 + 0.711X
Chi-squared is 0.477 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.603ppm
LC_{50} is 400.674ppm
95% confidence limits are 79.628 to 2016.126ppm

Appendix Table CDV: Cytotoxicity effect of *Pz. zeylanica* (wp/$CHCl_3$) extracts against *A. salina* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	16	53.333	53	5.08	5.050	5.075	19.11	5.044
100.000	2.000	30	12	40.000	40	4.75	4.817	4.760	18.81	4.815
50.000	1.699	30	10	33.333	33	4.56	4.584	4.544	17.43	4.585
25.000	1.398	30	9	30.000	30	4.48	4.351	4.490	15.96	4.356
12.500	1.097	30	5	16.667	17	4.05	4.118	4.056	14.13	4.126

Regression equation: Y = 3.290 + 0.762X
Chi-squared is 0.4610 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.243ppm
LC_{50} is 175.094ppm
95% confidence limits are 64.678 to 474.008ppm

Appendix Table CDVI: Cytotoxicity effect of *Pz. zeylanica* (wp/$CHCl_3$) extracts against *A. salina* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	24	80.000	80	5.85	5.728	5.830	15.96	5.697
100.000	2.000	30	18	60.000	60	5.25	5.332	5.240	18.48	5.309
50.000	1.699	30	12	40.000	40	4.75	4.936	4.740	19.02	4.920
25.000	1.398	30	11	36.667	37	4.67	4.540	4.656	17.43	4.531
12.500	1.097	30	6	20.000	20	4.16	4.144	4.170	14.13	4.142

Regression equation: Y = 2.725 + 1.292X
Chi-squared is 1.266 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.761ppm
LC_{50} is 57.682ppm
95% confidence limits are 39.396 to 84.458ppm

Appendix Table CDVII: Cytotoxicity effect of *Pz. zeylanica* (wp/CH_3OH) extracts against *A. salina* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	11	36.667	37	4.67	4.594	4.656	17.43	4.595
100.000	2.000	30	7	23.333	23	4.26	4.365	4.266	15.96	4.366
50.000	1.699	30	6	20.000	20	4.16	4.136	4.170	14.13	4.138
25.000	1.398	30	4	13.333	13	3.87	3.907	3.878	12.15	3.909
12.500	1.097	30	3	10.000	10	3.72	3.678	3.730	9.06	3.680

Regression equation: Y = 2.847 + 0.760X
Chi-squared is 0.274 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.834ppm
LC_{50} is 682.599ppm
95% confidence limits are 96.215 to 4842.714ppm

Appendix Table CDVIII: Cytotoxicity effect of *Pz. zeylanica* (wp/CH_3OH) extracts against *A. salina* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	14	46.667	47	4.92	4.940	4.915	19.02	4.935
100.000	2.000	30	13	43.333	43	4.82	4.765	4.818	18.48	4.760
50.000	1.699	30	10	33.333	33	4.56	4.590	4.544	17.43	4.584
25.000	1.398	30	8	26.667	27	4.39	4.415	4.390	16.74	4.408
12.500	1.097	30	7	23.333	23	4.26	4.240	4.252	15.09	4.232

Regression equation: Y = 3.591 + 0.5840X
Chi-squared is 0.110 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.412ppm
LC_{50} is 257.960ppm
95% confidence limits are 53.586 to 1241.796ppm

Appendix Table CDIX: Cytotoxicity effect of *Pz. zeylanica* (wp/CH_3OH) extracts against *A. salina* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	19	63.333	63	5.33	5.302	5.318	18.48	5.297
100.000	2.000	30	16	53.333	53	5.08	5.054	5.075	19.11	5.048
50.000	1.699	30	12	40.000	40	4.75	4.806	4.760	18.81	4.800
25.000	1.398	30	9	30.000	30	4.48	4.558	4.460	17.43	4.552
12.500	1.097	30	8	26.667	27	4.39	4.310	4.394	15.96	4.303

Regression equation: Y = 3.398 + 0.825X
Chi-squared is 0.330 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.941ppm
LC_{50} is 87.372ppm
95% confidence limits are 45.519 to 167.707ppm

Appendix Table CDX: Cytotoxicity effect of *Pz. zeylanica* (wp/CH_3OH) extracts against *A. salina* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	25	83.333	83	5.95	5.842	5.902	15.09	5.801
100.000	2.000	30	19	63.333	63	5.33	5.471	5.321	18.03	5.442
50.000	1.699	30	17	56.667	57	5.18	5.100	5.175	19.11	5.083
25.000	1.398	30	10	33.333	33	4.56	4.729	4.558	18.48	4.725
12.500	1.097	30	9	30.000	30	4.48	4.358	4.490	15.96	4.366

Regression equation: Y = 3.059 + 1.191X
Chi-squared is 1.338 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.629ppm
LC_{50} is 42.562ppm
95% confidence limits are 28.203 to 64.234ppm

Appendix Table CDXI: Cytotoxicity effect of *Pz. zeylanica* (wp/CH_3OH) extracts against *A. salina* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	27	90.000	90	6.28	6.114	6.270	12.15	6.080
100.000	2.000	30	21	70.000	70	5.52	5.685	5.520	16.74	5.666
50.000	1.699	30	18	60.000	60	5.25	5.256	5.280	18.81	5.252
25.000	1.398	30	11	36.667	37	4.67	4.827	4.682	18.81	4.839
12.500	1.097	30	10	33.333	33	4.56	4.398	4.586	15.96	4.425

Regression equation: Y = 2.918 + 1.374X
Chi-squared is 1.687 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.515ppm
LC_{50} is 32.749ppm
95% confidence limits are 22.271 to 48.157ppm

Appendix Table CDXII: Cytotoxicity effect of *S. nodiflora* (wp/PetE) extracts against *A. salina* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	10	33.333	33	4.56	4.596	4.544	17.43	4.591
100.000	2.000	30	8	26.667	27	4.39	4.379	4.394	15.96	4.378
50.000	1.699	30	7	23.333	23	4.26	4.162	4.284	14.13	4.165
25.000	1.398	30	4	13.333	13	3.87	3.945	3.878	12.15	3.951
12.500	1.097	30	3	10.000	10	3.72	3.728	3.720	10.08	3.738
6.250	0.796	30	2	6.667	7	3.52	3.510	3.519	8.07	3.525

Regression equation: Y = 2.961 + 0.709X
Chi-squared is 0.314 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.878ppm
LC_{50} is 754.710ppm
95% confidence limits are 113.488 to 5018.917ppm

Appendix Table CDXIII: Cytotoxicity effect of *S. nodiflora* (wp/PetE) extracts against *A. salina* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	14	46.667	47	4.92	4.969	4.915	19.02	4.974
100.000	2.000	30	14	46.667	47	4.92	4.781	4.922	18.48	4.782
50.000	1.699	30	11	36.667	37	4.67	4.592	4.656	17.43	4.590
25.000	1.398	30	6	20.000	20	4.16	4.404	4.180	16.74	4.399
12.500	1.097	30	6	20.000	20	4.16	4.216	4.150	15.09	4.207
6.250	0.796	30	6	20.000	20	4.16	4.028	4.160	13.17	4.015

Regression equation: Y = 3.508 + 0.637X
Chi-squared is 1.628 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.342ppm
LC_{50} is 219.824ppm
95% confidence limits are 63.008 to 766.934ppm

Appendix Table CDXIV: Cytotoxicity effect of *S. nodiflora* (wp/PetE) extracts against *A. salina* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	21	70.000	70	5.52	5.591	5.500	17.43	5.578
100.000	2.000	30	20	66.667	67	5.44	5.379	5.422	18.48	5.366
50.000	1.699	30	18	60.000	60	5.25	5.166	5.240	19.02	5.154
25.000	1.398	30	14	46.667	47	4.92	4.954	4.915	19.02	4.942
12.500	1.097	30	11	36.667	37	4.67	4.741	4.662	18.48	4.730
6.250	0.796	30	10	33.333	33	4.56	4.529	4.544	17.43	4.518

Regression equation: Y = 3.958 + 0.704X
Chi-squared is 0.416 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.480ppm
LC_{50} is 30.223ppm
95% confidence limits are 16.306 to 56.019ppm

Appendix Table CDXV: Cytotoxicity effect of *S. nodiflora* (wp/PetE) extracts against *A. salina* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	28	93.333	93	6.48	6.057	6.333	13.17	6.030
50.000	1.699	30	21	70.000	70	5.52	5.709	5.510	15.96	5.691
25.000	1.398	30	17	56.667	57	5.18	5.361	5.162	18.48	5.352
12.500	1.097	30	15	50.000	50	5.00	5.013	5.000	19.11	5.013
6.250	0.796	30	13	43.333	43	4.82	4.665	4.821	18.03	4.673

Regression equation: Y = 3.777 + 1.127X
Chi-squared is 2.792 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.086ppm
LC_{50} is 12.179ppm
95% confidence limits are 7.252 to 20.456ppm

Appendix Table CDXVI: Cytotoxicity effect of *S. nodiflora* (wp/PetE) extracts against *A. salina* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	29	96.667	97	6.88	6.239	6.587	11.10	6.206
50.000	1.699	30	22	73.333	73	5.61	5.842	5.562	15.09	5.821
25.000	1.398	30	19	63.333	63	5.33	5.445	5.321	18.03	5.437
12.500	1.097	30	15	50.000	50	5.00	5.048	5.000	19.11	5.052
6.250	0.796	30	13	43.333	43	4.82	4.651	4.821	18.03	4.667

Regression equation: Y = 3.650 + 1.278X
Chi-squared is 3.344 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.056ppm
LC_{50} is 11.380ppm
95% confidence limits are 7.085 to 18.278ppm

Appendix Table CDXVII: Cytotoxicity effect of *S. nodiflora* (wp/$CHCl_3$) extracts against *A. salina* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	11	36.667	37	4.67	4.728	4.662	18.48	4.706
200.000	2.301	30	10	33.333	33	4.56	4.554	4.544	17.43	4.540
100.000	2.000	30	8	26.667	27	4.39	4.380	4.394	15.96	4.375
50.000	1.699	30	7	23.333	23	4.26	4.206	4.252	15.09	4.209
25.000	1.398	30	6	20.000	20	4.16	4.033	4.160	13.17	4.044
12.500	1.097	30	3	10.000	10	3.72	3.859	3.720	11.10	3.878

Regression equation: Y = 3.275 + 0.550 X
Chi-squared is 0.525 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 3.137ppm
LC_{50} is 1372.014ppm
95% confidence limits are 147.422 to 12768.92ppm

Appendix Table CDXVIII: Cytotoxicity effect of *S. nodiflora* (wp/$CHCl_3$) extracts against *A. salina* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	25	83.333	83	5.95	5.356	5.838	18.48	5.314
200.000	2.301	30	10	33.333	33	4.56	5.053	4.575	19.11	5.016
100.000	2.000	30	8	26.667	27	4.39	4.750	4.402	18.48	4.717
50.000	1.699	30	9	30.000	30	4.48	4.447	4.480	16.74	4.419
25.000	1.398	30	6	20.000	20	4.16	4.144	4.170	14.13	4.120
12.500	1.097	30	5	16.667	17	4.05	3.840	4.077	11.10	3.822

Regression equation: Y = 2.734 + 0.992X
Chi-squared is 11.439 with 4 degrees of freedom
Variance has been adjusted for heterogeneity
Log LC_{50} is 2.285ppm
LC_{50} is 192.840ppm
95% confidence limits are 74.018 to 502.408ppm

Appendix Table CDXIX: Cytotoxicity effect of *S. nodiflora* (wp/$CHCl_3$) extracts against *A. salina* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	26	86.667	87	6.13	5.536	5.976	17.43	5.464
200.000	2.301	30	13	43.333	43	4.82	5.203	4.838	18.81	5.143
100.000	2.000	30	8	26.667	27	4.39	4.870	4.422	18.81	4.823
50.000	1.699	30	10	33.333	33	4.56	4.537	4.544	17.43	4.502
25.000	1.398	30	6	20.000	20	4.16	4.204	4.150	15.09	4.181
12.500	1.097	30	6	20.000	20	4.16	3.870	4.230	11.10	3.860

Regression equation: Y = 2.692 + 1.066X
Chi-squared is 10.902 with 4 degrees of freedom
Variance has been adjusted for heterogeneity
Log LC_{50} is 2.166ppm
LC_{50} is 146.676ppm
95% confidence limits are 66.514 to 323.450ppm

Appendix Table CDXX: Cytotoxicity effect of *S. nodiflora* (wp/$CHCl_3$) extracts against *A. salina* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	28	93.333	93	6.48	5.792	6.246	15.96	5.770
200.000	2.301	30	20	66.667	67	5.44	5.462	5.429	18.03	5.447
100.000	2.000	30	10	33.333	33	4.56	5.133	4.565	19.02	5.124
50.000	1.699	30	10	33.333	33	4.56	4.803	4.578	18.81	4.801
25.000	1.398	30	11	36.667	37	4.67	4.474	4.690	16.74	4.477
12.500	1.097	30	8	26.667	27	4.39	4.144	4.436	14.13	4.154

Regression equation: Y = 2.977 + 1.073X
Chi-squared is 12.369 with 4 degrees of freedom
Variance has been adjusted for heterogeneity
Log LC_{50} is 1.8895ppm
LC_{50} is 76.688ppm
95% confidence limits are 36.959 to 159.121ppm

Appendix Table CDXXI: Cytotoxicity effect of *S. nodiflora* (wp/$CHCl_3$) extracts against *A. salina* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	29	96.667	97	6.88	5.900	6.516	14.13	5.923
200.000	2.301	30	20	66.667	67	5.44	5.577	5.416	17.43	5.591
100.000	2.000	30	13	43.333	43	4.82	5.254	4.838	18.81	5.259
50.000	1.699	30	12	40.000	40	4.75	4.930	4.740	19.02	4.927
25.000	1.398	30	11	36.667	37	4.67	4.607	4.659	18.03	4.594
12.500	1.097	30	10	33.333	33	4.56	4.284	4.592	15.09	4.262

Regression equation: Y = 3.052 + 1.103X
Chi-squared is 11.209 with 4 degrees of freedom
Variance has been adjusted for heterogeneity
Log LC_{50} is 1.765ppm
LC_{50} is 58.268ppm
95% confidence limits are 29.406 to 115.461ppm

Appendix Table CDXXII: Cytotoxicity effect of *S. nodiflora* (wp/CH_3OH) extracts against *A. salina* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
800.000	2.903	30	9	30.000	30	4.48	4.458	4.480	16.74	4.435
400.000	2.602	30	5	16.667	17	4.05	4.168	4.056	14.13	4.172
200.000	2.301	30	4	13.333	13	3.87	3.878	3.873	11.10	3.909
100.000	2.000	30	4	13.333	13	3.87	3.588	3.981	8.07	3.646
50.000	1.699	30	1	3.333	3	3.12	3.298	3.121	5.40	3.383

Regression equation: Y = 1.899 + 0.873X
Chi-squared is 1.515 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 3.550ppm
LC_{50} is 3548.378ppm
95% confidence limits are 462.319 to 27234.43ppm

Appendix Table CDXXIII: Cytotoxicity effect of *S. nodiflora* (wp/CH_3OH) extracts against *A. salina* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
800.000	2.903	30	14	46.667	47	4.92	4.877	4.942	18.81	4.897
400.000	2.602	30	9	30.000	30	4.48	4.532	4.460	17.43	4.541
200.000	2.301	30	5	16.667	17	4.05	4.188	4.056	14.13	4.184
100.000	2.000	30	6	20.000	20	4.16	3.844	4.230	11.10	3.828
50.000	1.699	30	1	3.333	3	3.12	3.500	3.180	7.14	3.472

Regression equation: Y = 1.462 + 1.183X
Chi-squared is 2.785 with 3 degrees of freedom
No significant heterogeneity
Log Lc_{50} is 2.990ppm
Lc_{50} is 977.604ppm
95% confidence limits are 441.563 to 2164.381ppm

Appendix Table CDXXIV: Cytotoxicity effect of *S. nodiflora* (wp/CH_3OH) extracts against *A. salina* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
800.000	2.903	30	18	60.000	60	5.25	5.164	5.240	19.02	5.168
400.000	2.602	30	13	43.333	43	4.82	4.868	4.838	18.81	4.867
200.000	2.301	30	9	30.000	30	4.48	4.572	4.460	17.43	4.566
100.000	2.000	30	7	23.333	23	4.26	4.276	4.252	15.09	4.265
50.000	1.699	30	5	16.667	17	4.05	3.980	4.062	12.15	3.963

Regression equation: Y = 2.264 + 1.000X
Chi-squared is 0.430 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.735ppm
LC_{50} is 543.606ppm
95% confidence limits are 278.778 to 1060.010ppm

Appendix Table CDXXV: Cytotoxicity effect of *S. nodiflora* (wp/CH_3OH) extracts against *A. salina* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
800.000	2.903	30	25	83.333	83	5.95	5.832	5.902	15.09	5.793
400.000	2.602	30	20	66.667	67	5.44	5.432	5.429	18.03	5.400
200.000	2.301	30	13	43.333	43	4.82	5.032	4.825	19.11	5.008
100.000	2.000	30	10	33.333	33	4.56	4.632	4.551	18.03	4.615
50.000	1.699	30	8	26.667	27	4.39	4.232	4.388	15.09	4.223

Regression equation: Y = 2.008 + 1.304X
Chi-squared is 1.320 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.295 ppm
LC_{50} is 197.230 ppm
95% confidence limits are 135.584 to 286.905 ppm

Appendix Table CDXXVI: Cytotoxicity effect of *Z. zerumbet* (ap/PetE) extracts against *A. salina* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	13	43.333	43	4.82	4.742	4.818	18.48	4.742
50.000	1.699	30	9	30.000	30	4.48	4.509	4.460	17.43	4.504
25.000	1.398	30	6	20.000	20	4.16	4.276	4.150	15.09	4.265
12.500	1.097	30	5	16.667	17	4.05	4.043	4.037	13.17	4.026
6.250	0.796	30	4	13.333	13	3.87	3.810	3.873	11.10	3.787

Regression equation: Y = 3.156 + 0.793X
Chi-squared is 0.421 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.325ppm
LC_{50} is 211.379ppm
95% confidence limits are 47.526 to 940.138ppm

Appendix Table CDXXVII: Cytotoxicity effect of *Z. zerumbet* (ap/PetE) extracts against *A. salina* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	23	76.667	77	5.74	5.826	5.698	15.09	5.800
50.000	1.699	30	20	66.667	67	5.44	5.400	5.429	18.03	5.383
25.000	1.398	30	16	53.333	53	5.08	4.974	5.065	19.02	4.966
12.500	1.097	30	10	33.333	33	4.56	4.548	4.544	17.43	4.549
6.250	0.796	30	5	16.667	17	4.05	4.122	4.056	14.13	4.132

Regression equation: Y = 3.030 + 1.385X
Chi-squared is 0.464 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.422ppm
LC_{50} is 26.447ppm
95% confidence limits are 18.517 to 37.772ppm

Appendix Table CDXXVIII: Cytotoxicity effect of *Z. zerumbet* (ap/PetE) extracts against *A. salina* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	27	90.000	90	6.28	6.215	6.230	11.10	6.190
50.000	1.699	30	22	73.333	73	5.61	5.708	5.606	15.96	5.692
25.000	1.398	30	18	60.000	60	5.25	5.202	5.280	18.81	5.193
12.500	1.097	30	11	36.667	37	4.67	4.695	4.659	18.03	4.694
6.250	0.796	30	6	20.000	20	4.16	4.188	4.170	14.13	4.196
3.125	0.495	30	3	10.000	10	3.72	3.682	3.730	9.06	3.697

Regression equation: Y = 2.878+ 1.656X
Chi-squared is 0.319 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.281ppm
LC_{50} is 19.114ppm
95% confidence limits are 14.274 to 25.596ppm

Appendix Table CDXXIX: Cytotoxicity effect of *Z. zerumbet* (ap/PetE) extracts against *A. salina* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
50.000	1.699	30	25	83.333	83	5.95	5.946	5.984	14.13	5.963
25.000	1.398	30	22	73.333	73	5.61	5.466	5.591	18.03	5.468
12.500	1.097	30	13	43.333	43	4.82	4.986	4.815	19.02	4.974
6.250	0.796	30	8	26.667	27	4.39	4.506	4.376	17.43	4.479
3.125	0.495	30	6	20.000	20	4.16	4.026	4.160	13.17	3.985

Regression equation: Y = 3.172 + 1.643X
Chi-squared is 1.348 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.113ppm
LC_{50} is 12.968ppm
95% confidence limits are 9.570 to 17.572ppm

Appendix Table CDXXX: Cytotoxicity effect of *Z. zerumbet* (ap/PetE) extracts against *A. salina* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
50.000	1.699	30	27	90.000	90	6.28	6.212	6.230	11.10	6.166
25.000	1.398	30	23	76.667	77	5.74	5.673	5.730	16.74	5.634
12.500	1.097	30	15	50.000	50	5.00	5.134	4.990	19.02	5.102
6.250	0.796	30	8	26.667	27	4.39	4.595	4.376	17.43	4.571
3.125	0.495	30	7	23.333	23	4.26	4.056	4.283	13.17	4.039

Regression equation: Y = 3.165 + 1.766X
Chi-squared is 1.885 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.039ppm
LC_{50} is 10.938ppm
95% confidence limits are 8.170 to 14.643ppm

Appendix Table CDXXXI: Cytotoxicity effect of *Z. zerumbet* (ap/$CHCl_3$) extracts against *A. salina* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	9	30.000	30	4.48	4.520	4.460	17.43	4.525
100.000	2.000	30	9	30.000	30	4.48	4.252	4.490	15.09	4.257
50.000	1.699	30	3	10.000	10	3.72	3.984	3.740	12.15	3.988
25.000	1.398	30	3	10.000	10	3.72	3.716	3.720	10.08	3.720
12.500	1.097	30	2	6.667	7	3.52	3.448	3.540	7.14	3.452

Regression equation: Y = 2.474 + 0.891X
Chi-squared is 1.700 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.834ppm
LC_{50} is 682.473ppm
95% confidence limits are 121.602 to 3830.261ppm

Appendix Table CDLXXXII: Cytotoxicity effect of *Z. zerumbet* (ap/$CHCl_3$) extracts against *A. salina* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	19	63.333	63	5.33	5.488	5.321	18.03	5.465
100.000	2.000	30	18	60.000	60	5.25	5.146	5.240	19.02	5.146
50.000	1.699	30	13	43.333	43	4.82	4.804	4.838	18.81	4.826
25.000	1.398	30	12	40.000	40	4.75	4.462	4.780	16.74	4.506
12.500	1.097	30	4	13.333	13	3.87	4.120	3.904	14.13	4.187

Regression equation: Y = 3.022 + 1.062X
Chi-squared is 2.930 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.863ppm
LC_{50} is 72.906ppm
95% confidence limits are 45.200 to 117.596ppm

Appendix Table CDXXXIII: Cytotoxicity effect of *Z. zerumbet* (ap/$CHCl_3$) extracts against *A. salina* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	29	96.667	97	6.88	6.505	6.759	8.07	6.528
100.000	2.000	30	25	83.333	83	5.95	5.945	5.984	14.13	5.961
50.000	1.699	30	17	56.667	57	5.18	5.384	5.162	18.48	5.395
25.000	1.398	30	13	43.333	43	4.82	4.823	4.838	18.81	4.828
12.500	1.097	30	8	26.667	27	4.39	4.263	4.388	15.09	4.261

Regression equation: Y = 2.195 + 1.883X
Chi-squared is 1.682 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.489ppm
LC_{50} is 30.866ppm
95% confidence limits are 23.005 to 41.412ppm

Appendix Table CDXXXIV: Cytotoxicity effect of *Z. zerumbet* (ap/$CHCl_3$) extracts against *A. salina* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	26	86.667	87	6.13	6.045	6.087	13.17	5.994
50.000	1.699	30	19	63.333	63	5.33	5.535	5.304	17.43	5.501
25.000	1.398	30	17	56.667	57	5.18	5.025	5.175	19.11	5.009
12.500	1.097	30	9	30.000	30	4.48	4.515	4.460	17.43	4.516

Regression equation: Y = 2.721 + 1.636X
Chi-squared is 1.376 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.393ppm
LC_{50} is 24.701ppm
95% confidence limits are 17.227 to 35.417ppm

Appendix Table CDXXXV: Cytotoxicity effect of *Z. zerumbet* (ap/$CHCl_3$) extracts against *A. salina* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	26	86.667	87	6.13	6.088	6.087	13.17	6.053
50.000	1.699	30	20	66.667	67	5.44	5.606	5.430	16.74	5.584
25.000	1.398	30	19	63.333	63	5.33	5.124	5.315	19.02	5.114
12.500	1.097	30	10	33.333	33	4.56	4.642	4.551	18.03	4.645

Regression equation: Y = 2.934 + 1.560X
Chi-squared is 1.336 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.325ppm
LC_{50} is 21.121ppm
95% confidence limits are 14.056 to 31.738ppm

Appendix Table CDXXXVI: Cytotoxicity effect of *Z. zerumbet* (ap/CH_3OH) extracts against *A. salina* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	14	46.667	47	4.92	4.996	4.915	19.02	4.986
200.000	2.301	30	10	33.333	33	4.56	4.618	4.551	18.03	4.605
100.000	2.000	30	9	30.000	30	4.48	4.241	4.490	15.09	4.224
50.000	1.699	30	4	13.333	13	3.87	3.864	3.873	11.10	3.843
25.000	1.398	30	1	3.333	3	3.12	3.486	3.180	7.14	3.462

Regression equation: Y = 1.692 + 1.266X
Chi-squared is 1.794 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.613ppm
LC_{50} is 410.045ppm
95% confidence limits are 209.547 to 802.382ppm

Appendix Table CDXXXVII: Cytotoxicity effect of *Z. zerumbet* (ap/CH_3OH) extracts against *A. salina* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	17	56.667	57	5.18	5.176	5.165	19.02	5.161
200.000	2.301	30	12	40.000	40	4.75	4.835	4.760	18.81	4.832
100.000	2.000	30	10	33.333	33	4.56	4.494	4.570	16.74	4.503
50.000	1.699	30	7	23.333	23	4.26	4.153	4.284	14.13	4.174
25.000	1.398	30	3	10.000	10	3.72	3.812	3.720	11.10	3.845

Regression equation: Y = 2.317 + 1.093X
Chi-squared is 0.518 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.454ppm
LC_{50} is 284.761ppm
95% confidence limits are 152.007 to 533.455ppm

Appendix Table CDXXXVIII: Cytotoxicity effect of *Z. zerumbet* (ap/CH_3OH) extracts against *A. salina* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	22	73.333	73	5.61	5.608	5.610	16.74	5.593
200.000	2.301	30	16	53.333	53	5.08	5.191	5.065	19.02	5.185
100.000	2.000	30	14	46.667	47	4.92	4.774	4.922	18.48	4.778
50.000	1.699	30	8	26.667	27	4.39	4.357	4.394	15.96	4.371
25.000	1.398	30	4	13.333	13	3.87	3.940	3.878	12.15	3.963

Regression equation: Y = 2.072 + 1.353X
Chi-squared is 0.761 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.164ppm
LC_{50} is 145.906ppm
95% confidence limits are 99.457 to 214.047ppm

Appendix Table CDXXXIX: Cytotoxicity effect of *Z. zerumbet* (ap/CH_3OH) extracts against *A. salina* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	24	80.000	80	5.85	5.784	5.830	15.96	5.762
200.000	2.301	30	18	60.000	60	5.25	5.355	5.240	18.48	5.340
100.000	2.000	30	14	46.667	47	4.92	4.926	4.915	19.02	4.917
50.000	1.699	30	10	33.333	33	4.56	4.497	4.570	16.74	4.495
25.000	1.398	30	5	16.667	17	4.05	4.068	4.037	13.17	4.072

Regression equation: Y = 2.111 + 1.403X
Chi-squared is 0.368 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.059ppm
LC_{50} is 114.558ppm
95% confidence limits are 80.456 to 163.113ppm

Appendix Table CDXL: Cytotoxicity effect of *Z. zerumbet* (ap/CH_3OH) extracts against *A. salina* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	25	83.333	83	5.95	5.942	5.984	14.13	5.944
200.000	2.301	30	19	63.333	63	5.33	5.504	5.304	17.43	5.509
100.000	2.000	30	18	60.000	60	5.25	5.066	5.250	19.11	5.075
50.000	1.699	30	12	40.000	40	4.75	4.628	4.740	18.03	4.641
25.000	1.398	30	5	16.667	17	4.05	4.190	4.056	14.13	4.206

Regression equation: Y = 2.189 + 1.443X
Chi-squared is 1.840 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.947996ppm
LC_{50} is 88.715ppm
95% confidence limits are 62.754 to 125.415ppm

Appendix Table CDXLI: Cytotoxicity effect of *Z. zerumbet* (rh/PetE) extracts against *A. salina* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	15	50.000	50	5.00	4.955	4.990	19.02	4.950
50.000	1.699	30	11	36.667	37	4.67	4.705	4.662	18.48	4.698
25.000	1.398	30	8	26.667	27	4.39	4.455	4.390	16.74	4.447
12.500	1.097	30	7	23.333	23	4.26	4.205	4.252	15.09	4.195

Regression equation: Y = 3.279 + 0.836X
Chi-squared is 0.158 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.060ppm
LC_{50} is 114.818ppm
95% confidence limits are 36.676 to 359.449ppm

Appendix Table CDXLII: Cytotoxicity effect of *Z. zerumbet* (rh/PetE) extracts against *A. salina* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	21	70.000	70	5.52	5.621	5.520	16.74	5.629
50.000	1.699	30	17	56.667	57	5.18	5.164	5.165	19.02	5.162
25.000	1.398	30	12	40.000	40	4.75	4.707	4.740	18.48	4.696
12.500	1.097	30	10	33.333	33	4.56	4.249	4.592	15.09	4.229
6.250	0.796	30	1	3.333	3	3.12	3.792	3.314	10.08	3.763

Regression equation: Y = 2.530 + 1.549X
Chi-squared is 4.250 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.594ppm
LC_{50} is 39.290ppm
95% confidence limits are 27.847 to 55.437ppm

Appendix Table CDXLIII: Cytotoxicity effect of *Z. zerumbet* (rh/PetE) extracts against *A. salina* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	24	80.000	80	5.85	5.964	5.870	14.13	5.971
50.000	1.699	30	22	73.333	73	5.61	5.474	5.591	18.03	5.484
25.000	1.398	30	14	46.667	47	4.92	4.984	4.915	19.02	4.997
12.500	1.097	30	11	36.667	37	4.67	4.494	4.690	16.74	4.510
6.250	0.796	30	4	13.333	13	3.87	4.004	3.873	13.17	4.023

Regression equation: Y = 2.735+ 1.618 X
Chi-squared is 1.317 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.400ppm
LC_{50} is 25.115ppm
95% confidence limits are 18.424 to 34.236ppm

Appendix Table CDXLIV: Cytotoxicity effect of *Z. zerumbet* (rh/PetE) extracts against *A. salina* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	27	90.000	90	6.28	6.326	6.250	10.08	6.324
50.000	1.699	30	24	80.000	80	5.85	5.799	5.830	15.96	5.799
25.000	1.398	30	18	60.000	60	5.25	5.272	5.280	18.81	5.274
12.500	1.097	30	13	43.333	43	4.82	4.745	4.818	18.48	4.749
6.250	0.796	30	6	20.000	20	4.16	4.218	4.150	15.09	4.225

Regression equation: Y = 2.837 + 1.743X
Chi-squared is 0.242 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.241ppm
LC_{50} is 17.403ppm
95% confidence limits are 12.847 to 23.57ppm

Appendix Table CDXLV: Cytotoxicity effect of *Z. zerumbet* (rh/PetE) extracts against *A. salina* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
50.000	1.699	30	26	86.667	87	6.13	6.123	6.132	12.15	6.107
25.000	1.398	30	20	66.667	67	5.44	5.526	5.416	17.43	5.517
12.500	1.097	30	16	53.333	53	5.08	4.929	5.065	19.02	4.928
6.250	0.796	30	7	23.333	23	4.26	4.332	4.266	15.96	4.338

Regression equation: Y = 2.780 + 1.958X
Chi-squared is 0.628 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.134ppm
LC_{50} is 13.608ppm
95% confidence limits are 10.116 to 18.305ppm

Appendix Table CDXLVI: Cytotoxicity effect of *Z. zerumbet* (rh/$CHCl_3$) extracts against *A. salina* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	15	50.000	50	5.00	4.985	4.990	19.02	4.982
50.000	1.699	30	9	30.000	30	4.48	4.616	4.470	18.03	4.609
25.000	1.398	30	8	26.667	27	4.39	4.248	4.388	15.09	4.237
12.500	1.097	30	5	16.667	17	4.05	3.879	4.077	11.10	3.865
6.250	0.796	30	1	3.333	3	3.12	3.511	3.211	8.07	3.493

Regression equation: Y = 2.509 + 1.236X
Chi-squared is 1.835 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.015ppm
LC_{50} is 103.476ppm
95% confidence limits are 52.005 to 205.892ppm

Appendix Table CDXLVII: Cytotoxicity effect of *Z. zerumbet* (rh/$CHCl_3$) extracts against *A. salina* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	25	83.333	83	5.95	6.167	5.948	12.15	6.174
50.000	1.699	30	22	73.333	73	5.61	5.512	5.584	17.43	5.513
25.000	1.398	30	15	50.000	50	5.00	4.857	5.020	18.81	4.852
12.500	1.097	30	7	23.333	23	4.26	4.202	4.252	15.09	4.191
6.250	0.796	30	1	3.333	3	3.12	3.546	3.211	8.07	3.530

Regression equation: Y = 1.783 + 2.195X
Chi-squared is 2.117 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.465ppm
LC_{50} is 29.198ppm
95% confidence limits are 22.887 to 37.249ppm

Appendix Table CDXLVIII: Cytotoxicity effect of *Z. zerumbet* (rh/$CHCl_3$) extracts against *A. salina* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	29	96.667	97	6.88	6.874	6.909	5.40	6.853
50.000	1.699	30	27	90.000	90	6.28	6.169	6.270	12.15	6.147
25.000	1.398	30	19	63.333	63	5.33	5.464	5.321	18.03	5.441
12.500	1.097	30	11	36.667	37	4.67	4.759	4.662	18.48	4.735
6.250	0.796	30	6	20.000	20	4.16	4.054	4.160	13.17	4.029

Regression equation: Y = 2.163 + 2.345X
Chi-squared is 0.785 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.210ppm
LC_{50} is 16.212ppm
95% confidence limits are 12.730 to 20.647ppm

Appendix Table CDXLIX: Cytotoxicity effect of *Z. zerumbet* (rh/$CHCl_3$) extracts against *A. salina* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	29	96.667	97	6.88	6.946	6.844	4.62	6.884
50.000	1.699	30	28	93.333	93	6.48	6.292	6.383	11.10	6.245
25.000	1.398	30	21	70.000	70	5.52	5.638	5.520	16.74	5.606
12.500	1.097	30	14	46.667	47	4.92	4.984	4.915	19.02	4.966
6.250	0.796	30	8	26.667	27	4.39	4.330	4.394	15.96	4.327

Regression equation: Y = 2.637 + 2.124X
Chi-squared is 0.464 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.113ppm
LC_{50} is 12.963ppm
95% confidence limits are 9.802 to 17.144ppm

Appendix Table CDL: Cytotoxicity effect of *Z. zerumbet* (rh/$CHCl_3$) extracts against *A. salina* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
50.000	1.699	30	29	96.667	97	6.88	6.567	6.759	8.07	6.532
25.000	1.398	30	22	73.333	73	5.61	5.848	5.562	15.09	5.823
12.500	1.097	30	18	60.000	60	5.25	5.129	5.240	19.02	5.115
6.250	0.796	30	8	26.667	27	4.39	4.410	4.390	16.74	4.406

Regression equation: Y = 2.533 + 2.353X
Chi-squared is 1.750 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.048ppm
LC_{50} is 11.172ppm
95% confidence limits are 8.534 to 14.624ppm

Appendix Table CDLI: Cytotoxicity effect of *Z. zerumbet* (rh/CH_3OH) extracts against *A. salina* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	14	46.667	47	4.92	4.870	4.942	18.81	4.893
200.000	2.301	30	8	26.667	27	4.39	4.490	4.390	16.74	4.499
100.000	2.000	30	6	20.000	20	4.16	4.110	4.170	14.13	4.105

Regression equation: Y = 1.487 + 1.309X
Chi-squared is 0.304 with 1 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.684ppm
LC_{50} is 482.507ppm
95% confidence limits are 203.485 to 1144.128ppm

Appendix Table CDLII: Cytotoxicity effect of *Z. zerumbet* (rh/CH_3OH) extracts against *A. salina* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	17	56.667	57	5.18	5.154	5.165	19.02	5.106
200.000	2.301	30	9	30.000	30	4.48	4.681	4.470	18.03	4.665
100.000	2.000	30	8	26.667	27	4.39	4.208	4.388	15.09	4.224
50.000	1.699	30	4	13.333	13	3.87	3.735	3.894	10.08	3.783
25.000	1.398	30	1	3.333	3	3.12	3.262	3.121	5.40	3.342

Regression equation: Y = 1.295 + 1.465X
Chi-squared is 1.546 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.530ppm
LC_{50} is 338.584ppm
95% confidence limits are 200.216 to 572.579ppm

Appendix Table CDLIII: Cytotoxicity effect of *Z. zerumbet* (rh/CH_3OH) extracts against *A. salina* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	21	70.000	70	5.52	5.442	5.510	18.03	5.411
200.000	2.301	30	12	40.000	40	4.75	4.983	4.740	19.02	4.966
100.000	2.000	30	11	36.667	37	4.67	4.524	4.656	17.43	4.521
50.000	1.699	30	6	20.000	20	4.16	4.065	4.160	13.17	4.076
25.000	1.398	30	2	6.667	7	3.52	3.606	3.529	9.06	3.631

Regression equation: Y = 1.564 + 1.478X
Chi-squared is 1.653 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.324ppm
LC_{50} is 210.761ppm
95% confidence limits are 140.841 to 315.391ppm

Appendix Table CDLIV: Cytotoxicity effect of *Z. zerumbet* (rh/CH_3OH) extracts against *A. salina* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	23	76.667	77	5.74	5.742	5.734	15.96	5.722
200.000	2.301	30	17	56.667	57	5.18	5.306	5.162	18.48	5.302
100.000	2.000	30	15	50.000	50	5.00	4.870	5.020	18.81	4.882
50.000	1.699	30	10	33.333	33	4.56	4.434	4.570	16.74	4.462
25.000	1.398	30	4	13.333	13	3.87	3.998	3.878	12.15	4.043

Regression equation: Y = 2.093 + 1.395X
Chi-squared is 1.245 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.084ppm
LC_{50} is 121.463ppm
95% confidence limits are 84.756 to 174.067ppm

Appendix Table CDLV: Cytotoxicity effect of *Z. zerumbet* (rh/CH_3OH) extracts against *A. salina* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	25	83.333	83	5.95	5.988	5.984	14.13	5.996
200.000	2.301	30	20	66.667	67	5.44	5.495	5.429	18.03	5.504
100.000	2.000	30	16	53.333	53	5.08	5.002	5.075	19.11	5.012
50.000	1.699	30	11	36.667	37	4.67	4.509	4.656	17.43	4.520
25.000	1.398	30	4	13.333	13	3.87	4.016	3.873	13.17	4.028

Regression equation: Y = 1.742 + 1.635X
Chi-squared is 0.818 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.993ppm
LC_{50} is 98.301ppm
95% confidence limits are 72.434 to 133.405ppm

Appendix Table CDLVI: Larvicidal effect of *E. mummularius* (wp/PetE) extracts against *C. quinquefasciatus* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	15	50.000	50	5.00	4.855	5.020	18.81	4.872
100.000	2.000	30	4	13.333	13	3.87	4.222	3.912	15.09	4.231
50.000	1.699	30	3	10.000	10	3.72	3.589	3.750	8.07	3.589
25.000	1.398	30	1	3.333	3	3.12	2.956	3.172	3.30	2.948

Regression equation: Y = -0.031 + 2.131X
Chi-squared is 2.318 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.361ppm
LC_{50} is 229.552ppm
95% confidence limits are 140.986 to 373.752ppm

Appendix Table CDLVII: Larvicidal effect of *E. mummularius* (wp/PetE) extracts against *C. quinquefasciatus* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	22	73.333	73	5.61	5.382	5.578	18.48	5.358
100.000	2.000	30	10	33.333	33	4.56	4.818	4.578	18.81	4.805
50.000	1.699	30	7	23.333	23	4.26	4.254	4.252	15.09	4.252
25.000	1.398	30	2	6.667	7	3.52	3.690	3.529	9.06	3.700
12.500	1.097	30	1	3.333	3	3.12	3.126	3.116	4.62	3.147
6.250	0.796	30	1	3.333	3	3.12	2.562	3.860	1.50	2.594

Regression equation: Y = 1.133 + 1.836X
Chi-squared is 4.537 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.106ppm
LC_{50} is 127.677ppm
95% confidence limits are 89.302 to 182.542ppm

Appendix Table CDLVIII: Larvicidal effect of *E. mummularius* (wp/PetE) extracts against *C. quinquefasciatus larvae* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	28	93.333	93	6.48	5.957	6.364	14.13	6.003
100.000	2.000	30	15	50.000	50	5.00	5.272	5.020	18.81	5.303
50.000	1.699	30	10	33.333	33	4.56	4.587	4.544	17.43	4.604
25.000	1.398	30	4	13.333	13	3.87	3.903	3.878	12.15	3.904
12.500	1.097	30	1	3.333	3	3.12	3.218	3.121	5.40	3.205
6.250	0.796	30	1	3.333	3	3.12	2.534	3.860	1.50	2.505

Regression equation: Y = 0.655 + 2.324X
Chi-squared is 6.215 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.869ppm
LC_{50} is 74.044ppm
95% confidence limits are 58.328 to 93.996ppm

Appendix Table CDLIX: Larvicidal effect of *E. mummularius* (wp/PetE) extracts against *C. quinquefasciatus* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	28	93.333	93	6.48	6.025	6.333	13.17	5.940
100.000	2.000	30	16	53.333	53	5.08	5.446	5.051	18.03	5.365
50.000	1.699	30	13	43.333	43	4.82	4.868	4.838	18.81	4.790
25.000	1.398	30	5	16.667	17	4.05	4.289	4.048	15.09	4.215
12.500	1.097	30	2	6.667	7	3.52	3.710	3.546	10.08	3.640
6.250	0.796	30	2	6.667	7	3.52	3.132	3.724	4.62	3.065

Regression equation: Y = 1.546 + 1.910X
Chi-squared is 6.371 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.809ppm
LC_{50} is 64.412ppm
95% confidence limits are 48.891 to 84.861ppm

Appendix Table CDLX: Larvicidal effect of *E. mummularius* (wp/PetE) extracts against *C. quinquefasciatus* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	28	93.333	93	6.48	6.166	6.408	12.15	6.107
100.000	2.000	30	20	66.667	67	5.44	5.645	5.430	16.74	5.590
50.000	1.699	30	17	56.667	57	5.18	5.124	5.165	19.02	5.073
25.000	1.398	30	6	20.000	20	4.16	4.603	4.200	18.03	4.556
12.500	1.097	30	5	16.667	17	4.05	4.082	4.037	13.17	4.039
6.250	0.796	30	4	13.333	13	3.87	3.560	3.981	8.07	3.522

Regression equation: Y = 2.155 + 1.717X
Chi-squared is 5.675 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.657ppm
LC_{50} is 45.345ppm
95% confidence limits are 34.157 to 60.198ppm

Appendix Table CDLXI: Larvicidal effect of *E. mummularius* (wp/$CHCl_3$) extracts against *C. quinquefasciatus* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	13	43.333	43	4.82	4.746	4.818	18.48	4.764
200.000	2.301	30	7	23.333	23	4.26	4.332	4.266	15.96	4.338
100.000	2.000	30	4	13.333	13	3.87	3.918	3.878	12.15	3.912
50.000	1.699	30	2	6.667	7	3.52	3.504	3.519	8.07	3.486
25.000	1.398	30	1	3.333	3	3.12	3.090	3.135	3.93	3.060

Regression equation: Y = 1.082 + 1.415X
Chi-squared is 0.182 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.769ppm
LC_{50} is 587.413ppm
95% confidence limits are 272.445 to 1266.508ppm

Appendix Table CDLXII: Larvicidal effect of *E. mummularius* (wp/$CHCl_3$) extracts against *C. quinquefasciatus* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	21	70.000	70	5.52	5.414	5.510	18.03	5.440
200.000	2.301	30	16	53.333	53	5.08	4.995	5.065	19.02	5.001
100.000	2.000	30	9	30.000	30	4.48	4.575	4.460	17.43	4.562
50.000	1.699	30	4	13.333	13	3.87	4.155	3.904	14.13	4.123
25.000	1.398	30	3	10.000	10	3.72	3.735	3.720	10.08	3.684
12.500	1.097	30	2	6.667	7	3.52	3.316	3.572	6.24	3.245

Regression equation: Y = 1.646 + 1.458X
Chi-squared is 1.706 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.300ppm
LC_{50} is 199.652ppm
95% confidence limits are 134.205 to 297.015ppm

Appendix Table CDLXIII: Larvicidal effect of *E. mummularius* (wp/$CHCl_3$) extracts against *C. quinquefasciatus* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	26	86.667	87	6.13	6.121	6.132	12.15	6.143
200.000	2.301	30	22	73.333	73	5.61	5.613	5.610	16.74	5.620
100.000	2.000	30	19	63.333	63	5.33	5.104	5.315	19.02	5.098
50.000	1.699	30	7	23.333	23	4.26	4.596	4.264	17.43	4.575
25.000	1.398	30	5	16.667	17	4.05	4.087	4.037	13.17	4.052
12.500	1.097	30	3	10.000	10	3.72	3.579	3.750	8.07	3.529

Regression equation: Y = 1.624 + 1.737X
Chi-squared is 2.982 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.944ppm
LC_{50} is 87.868ppm
95% confidence limits are 66.398 to 116.280ppm

Appendix Table CDLXIV: Larvicidal effect of *E. mummularius* (wp/$CHCl_3$) extracts against *C. quinquefasciatus* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	28	93.333	93	6.48	6.435	6.491	9.06	6.438
200.000	2.301	30	24	80.000	80	5.85	5.856	5.800	15.09	5.850
100.000	2.000	30	20	66.667	67	5.44	5.278	5.462	18.81	5.262
50.000	1.699	30	8	26.667	27	4.39	4.699	4.389	18.03	4.673
25.000	1.398	30	5	16.667	17	4.05	4.120	4.056	14.13	4.085
12.500	1.097	30	3	10.000	10	3.72	3.542	3.750	8.07	3.496

Regression equation: Y = 1.352 + 1.955X
Chi-squared is 2.805 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.866ppm
LC_{50} is 73.468ppm
95% confidence limits are 57.038 to 94.632ppm

Appendix Table CDLXV: Larvicidal effect of *E. mummularius* (wp/$CHCl_3$) extracts against *C. quinquefasciatus* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	28	93.333	93	6.48	6.284	6.383	11.10	6.197
100.000	2.000	30	22	73.333	73	5.61	5.587	5.584	17.43	5.513
50.000	1.699	30	9	30.000	30	4.48	4.890	4.500	18.81	4.828
25.000	1.398	30	6	20.000	20	4.16	4.193	4.170	14.13	4.144
12.500	1.097	30	3	10.000	10	3.72	3.496	3.810	7.14	3.460

Regression equation: Y = 0.966 + 2.273X
Chi-squared is 3.386 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.774ppm
LC_{50} is 59.492ppm
95% confidence limits are 46.785 to 75.650ppm

Appendix Table CDLXVI: Larvicidal effect of *E. mummularius* (wp/CH_3OH) extracts against *C. quinquefasciatus* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
800.000	2.903	30	7	23.333	23	4.26	4.344	4.266	15.96	4.325
400.000	2.602	30	6	20.000	20	4.16	4.127	4.170	14.13	4.125
200.000	2.301	30	4	13.333	13	3.87	3.909	3.878	12.15	3.925
100.000	2.000	30	4	13.333	13	3.87	3.691	3.931	9.06	3.725
50.000	1.699	30	2	6.667	7	3.52	3.473	3.540	7.14	3.525
25.000	1.398	30	1	3.333	3	3.12	3.256	3.121	5.40	3.325

Regression equation: Y = 2.397 + 0.664X
Chi-squared is 0.722 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 3.920ppm
LC_{50} is 8322.446ppm
95% confidence limits are 443.818 to 156062.1ppm

Appendix Table CDLXVII: Larvicidal effect of *E. mummularius* (wp/CH_3OH) extracts against *C. quinquefasciatus* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
800.000	2.903	30	15	50.000	50	5.00	4.944	4.990	19.02	4.931
400.000	2.602	30	9	30.000	30	4.48	4.691	4.470	18.03	4.688
200.000	2.301	30	10	33.333	33	4.56	4.438	4.570	16.74	4.446
100.000	2.000	30	8	26.667	27	4.39	4.185	4.436	14.13	4.203
50.000	1.699	30	3	10.000	10	3.72	3.932	3.740	12.15	3.960
25.000	1.398	30	3	10.000	10	3.72	3.680	3.730	9.06	3.717

Regression equation: Y = 2.590 + 0.807X
Chi-squared is 2.543 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.988ppm
LC_{50} is 973.453ppm
95% confidence limits are 340.280 to 2784.796ppm

Appendix Table CDLXVIII: Larvicidal effect of *E. mummularius* (wp/CH_3OH) extracts against *C. quinquefasciatus* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
800.000	2.903	30	16	53.333	53	5.08	5.140	5.065	19.02	5.131
400.000	2.602	30	14	46.667	47	4.92	4.918	4.915	19.02	4.911
200.000	2.301	30	13	43.333	43	4.82	4.696	4.821	18.03	4.690
100.000	2.000	30	9	30.000	30	4.48	4.474	4.480	16.74	4.469
50.000	1.699	30	6	20.000	20	4.16	4.252	4.150	15.09	4.249
25.000	1.398	30	5	16.667	17	4.05	4.030	4.037	13.17	4.028

Regression equation: Y = 3.003 + 0.733X
Chi-squared is 0.543 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.724ppm
LC_{50} is 529.690ppm
95% confidence limits are 221.355 to 1267.520ppm

Appendix Table CDLXIX: Larvicidal effect of *E. mummularius* (wp/CH_3OH) extracts against *C. quinquefasciatus* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
800.000	2.903	30	23	76.667	77	5.74	5.598	5.696	17.43	5.580
400.000	2.602	30	17	56.667	57	5.18	5.276	5.202	18.81	5.261
200.000	2.301	30	14	46.667	47	4.92	4.954	4.915	19.02	4.942
100.000	2.000	30	9	30.000	30	4.48	4.632	4.470	18.03	4.623
50.000	1.699	30	8	26.667	27	4.39	4.311	4.394	15.96	4.304
25.000	1.398	30	5	16.667	17	4.05	3.989	4.062	12.15	3.985

Regression equation: Y = 2.503 + 1.060X
Chi-squared is 0.937 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.356ppm
LC_{50} is 226.776ppm
95% confidence limits are 145.669 to 353.042ppm

Appendix Table CDLXX: Larvicidal effect of *E. mummularius* (wp/CH_3OH) extracts against *C. quinquefasciatus* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
800.000	2.903	30	27	90.000	90	6.28	6.010	6.210	13.17	5.947
400.000	2.602	30	20	66.667	67	5.44	5.614	5.430	16.74	5.565
200.000	2.301	30	16	53.333	53	5.08	5.217	5.098	18.81	5.183
100.000	2.000	30	11	36.667	37	4.67	4.820	4.682	18.81	4.801
50.000	1.699	30	9	30.000	30	4.48	4.423	4.480	16.74	4.419
25.000	1.398	30	6	20.000	20	4.16	4.026	4.160	13.17	4.037

Regression equation: Y = 2.263 + 1.269X
Chi-squared is 1.880 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.157ppm
LC_{50} is 143.461ppm
95% confidence limits are 100.061 to 205.686ppm

Appendix Table CDLXXI: Larvicidal effect of *L. camara* (ap/PetE) extracts against *C. quinquefasciatus* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	13	43.333	43	4.82	4.852	4.838	18.81	4.845
50.000	1.699	30	8	26.667	27	4.39	4.449	4.390	16.74	4.460
25.000	1.398	30	7	23.333	23	4.26	4.046	4.283	13.17	4.074
12.500	1.097	30	2	6.667	7	3.52	3.643	3.529	9.06	3.688

Regression equation: Y = 2.283 + 1.281X
Chi-squared is 0.888 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.121ppm
LC_{50} is 132.032ppm
95% confidence limits are 56.850 to 306.639ppm

Appendix Table CDLXXII: Larvicidal effect of *L. camara* (ap/PetE) extracts against *C. quinquefasciatus* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	19	63.333	63	5.33	5.274	5.358	18.81	5.281
50.000	1.699	30	11	36.667	37	4.67	4.861	4.682	18.81	4.872
25.000	1.398	30	10	33.333	33	4.56	4.448	4.570	16.74	4.463
12.500	1.097	30	6	20.000	20	4.16	4.035	4.160	13.17	4.054
6.250	0.796	30	2	6.667	7	3.52	3.622	3.529	9.06	3.645

Regression equation: Y = 2.563 + 1.359X
Chi-squared is 1.252 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.793ppm
LC_{50} is 62.076ppm
95% confidence limits are 38.717 to 99.527ppm

Appendix Table CDLXXIII: Larvicidal effect of *L. camara* (ap/PetE) extracts against *C. quinquefasciatus* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	23	76.667	77	5.74	5.580	5.696	17.43	5.539
50.000	1.699	30	14	46.667	47	4.92	5.123	4.915	19.02	5.094
25.000	1.398	30	10	33.333	33	4.56	4.666	4.551	18.03	4.648
12.500	1.097	30	8	26.667	27	4.39	4.209	4.388	15.09	4.203
6.250	0.796	30	3	10.000	10	3.72	3.752	3.720	10.08	3.757

Regression equation: Y = 2.579 + 1.480X
Chi-squared is 1.739 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.636ppm
LC_{50} is 43.208ppm
95% confidence limits are 29.833 to 62.578ppm

Appendix Table CDLXXIV: Larvicidal effect of *L. camara* (ap/PetE) extracts against *C. quinquefasciatus* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	26	86.667	87	6.13	5.864	6.038	15.09	5.770
50.000	1.699	30	16	53.333	53	5.08	5.396	5.058	18.48	5.331
25.000	1.398	30	13	43.333	43	4.82	4.928	4.815	19.02	4.893
12.500	1.097	30	10	33.333	33	4.56	4.460	4.570	16.74	4.455
6.250	0.796	30	5	16.667	17	4.05	3.992	4.062	12.15	4.016

Regression equation: Y = 2.857 + 1.456X
Chi-squared is 2.831 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.471ppm
LC_{50} is 29.608ppm
95% confidence limits are 20.958 to 41.828ppm

Appendix Table CDLXXV: Larvicidal effect of *L. camara* (ap/PetE) extracts against *C. quinquefasciatus* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	27	90.000	90	6.28	6.036	6.210	13.17	5.939
50.000	1.699	30	18	60.000	60	5.25	5.562	5.220	17.43	5.497
25.000	1.398	30	15	50.000	50	5.00	5.088	5.000	19.11	5.055
12.500	1.097	30	12	40.000	40	4.75	4.614	4.740	18.03	4.612
6.250	0.796	30	6	20.000	20	4.16	4.140	4.170	14.13	4.170

Regression equation: Y = 3.000 + 1.469X
Chi-squared is 2.653 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.361ppm
LC_{50} is 22.950ppm
95% confidence limits are 16.330 to 32.252ppm

Appendix Table CDLXXVI: Larvicidal effect of *L. camara* (ap/$CHCl_3$) extracts against *C. quinquefasciatus* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	12	40.000	40	4.75	4.762	4.740	18.48	4.748
200.000	2.301	30	10	33.333	33	4.56	4.505	4.544	17.43	4.495
100.000	2.000	30	6	20.000	20	4.16	4.248	4.150	15.09	4.243
50.000	1.699	30	5	16.667	17	4.05	3.991	4.062	12.15	3.990
25.000	1.398	30	3	10.000	10	3.72	3.734	3.720	10.08	3.737

Regression equation: Y = 2.563 + 0.840X
Chi-squared is 0.238 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.902ppm
LC_{50} is 797.276ppm
95% confidence limits are 199.363 to 3188.403ppm

Appendix Table CDLXXVII: Larvicidal effect of *L. camara* (ap/$CHCl_3$) extracts against *C. quinquefasciatus* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	15	50.000	50	5.00	4.892	5.020	18.81	4.909
200.000	2.301	30	10	33.333	33	4.56	4.672	4.551	18.03	4.679
100.000	2.000	30	8	26.667	27	4.39	4.452	4.390	16.74	4.448
50.000	1.699	30	7	23.333	23	4.26	4.232	4.252	15.09	4.217
25.000	1.398	30	5	16.667	17	4.05	4.012	4.037	13.17	3.986

Regression equation: Y = 2.915 + 0.767X
Chi-squared is 0.632 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.720ppm
LC_{50} is 525.043ppm
95% confidence limits are 154.293 to 1786.669ppm

Appendix Table CDLXXVIII: Larvicidal effect of *L. camara* (ap/$CHCl_3$) extracts against *C. quinquefasciatus* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	21	70.000	70	5.52	5.324	5.500	18.48	5.317
200.000	2.301	30	14	46.667	47	4.92	5.019	4.925	19.11	5.012
100.000	2.000	30	9	30.000	30	4.48	4.714	4.480	18.48	4.707
50.000	1.699	30	8	26.667	27	4.39	4.409	4.390	16.74	4.401
25.000	1.398	30	7	23.333	23	4.26	4.104	4.284	14.13	4.096

Regression equation: Y = 2.679 + 1.014X
Chi-squared is 2.212 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.289ppm
LC_{50} is 194.735ppm
95% confidence limits are 111.424 to 340.337ppm

Appendix Table CDLXXIX: Larvicidal effect of *L. camara* (ap/$CHCl_3$) extracts against *C. quinquefasciatus* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	28	93.333	93	6.48	6.077	6.333	13.17	6.052
200.000	2.301	30	22	73.333	73	5.61	5.641	5.610	16.74	5.625
100.000	2.000	30	13	43.333	43	4.82	5.206	4.838	18.81	5.198
50.000	1.699	30	12	40.000	40	4.75	4.770	4.740	18.48	4.771
25.000	1.398	30	10	33.333	33	4.56	4.334	4.586	15.96	4.344

Regression equation: Y = 2.361 + 1.418X
Chi-squared is 4.434 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.861ppm
LC_{50} is 72.554ppm
95% confidence limits are 50.510 to 104.218ppm

Appendix Table CDLXXX: Larvicidal effect of *L. camara* (ap/$CHCl_3$) extracts against *C. quinquefasciatus* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	26	86.667	87	6.13	5.933	6.136	14.13	5.891
100.000	2.000	30	17	56.667	57	5.18	5.426	5.159	18.03	5.399
50.000	1.699	30	13	43.333	43	4.82	4.919	4.815	19.02	4.907
25.000	1.398	30	10	33.333	33	4.56	4.412	4.570	16.74	4.415

Regression equation: Y = 2.129 + 1.635X
Chi-squared is 2.450 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.756ppm
LC_{50} is 57.024ppm
95% confidence limits are 40.443 to 80.403ppm

Appendix Table CDLXXXI: Larvicidal effect of *L. camara* (ap/CH_3OH) extracts against *C. quinquefasciatus* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	12	40.000	40	4.75	4.728	4.740	18.48	4.730
100.000	2.000	30	4	13.333	13	3.87	3.913	3.878	12.15	3.909
50.000	1.699	30	1	3.333	3	3.12	3.098	3.135	3.93	3.088

Regression equation: Y = -1.547 + 2.728X
Chi-squared is 0.022 with 1 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.400ppm
LC_{50} is 251.201ppm
95% confidence limits are 157.531 to 400.568ppm

Appendix Table CDLXXXII: Larvicidal effect of *L. camara* (ap/CH_3OH) extracts against *C. quinquefasciatus* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	18	60.000	60	5.25	5.133	5.240	19.02	5.124
100.000	2.000	30	9	30.000	30	4.48	4.572	4.460	17.43	4.569
50.000	1.699	30	4	13.333	13	3.87	4.011	3.873	13.17	4.014
25.000	1.398	30	2	6.667	7	3.52	3.449	3.540	7.14	3.459
12.500	1.097	30	1	3.333	3	3.12	2.888	3.256	2.76	2.904

Regression equation: Y = 0.882 + 1.843X
Chi-squared is 1.114 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.234ppm
LC_{50} is 171.323ppm
95% confidence limits are 111.619 to 262.962ppm

Appendix Table CDLXXXIII: Larvicidal effect of *L. camara* (ap/CH_3OH) extracts against *C. quinquefasciatus* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	25	83.333	83	5.95	5.770	5.926	15.96	5.777
100.000	2.000	30	16	53.333	53	5.08	5.203	5.098	18.81	5.193
50.000	1.699	30	10	33.333	33	4.56	4.636	4.551	18.03	4.610
25.000	1.398	30	4	13.333	13	3.87	4.069	3.873	13.17	4.026
12.500	1.097	30	3	10.000	10	3.72	3.502	3.750	8.07	3.442

Regression equation: Y = 1.315 + 1.939X
Chi-squared is 1.659 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.900ppm
LC_{50} is 79.484ppm
95% confidence limits are 59.951 to 105.382ppm

Appendix Table CDLXXXIV: Larvicidal effect of *L. camara* (ap/CH_3OH) extracts against *C. quinquefasciatus* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	29	96.667	97	6.88	6.544	6.759	8.07	6.499
100.000	2.000	30	23	76.667	77	5.74	5.873	5.698	15.09	5.841
50.000	1.699	30	17	56.667	57	5.18	5.201	5.202	18.81	5.183
25.000	1.398	30	8	26.667	27	4.39	4.530	4.376	17.43	4.526
12.500	1.097	30	5	16.667	17	4.05	3.859	4.077	11.10	3.868

Regression equation: Y = 1.471 + 2.185X
Chi-squared is 1.738 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.615ppm
LC_{50} is 41.211ppm
95% confidence limits are 32.159 to 52.811ppm

Appendix Table CDLXXXV: Larvicidal effect of *L. camara* (ap/CH_3OH) extracts against *C. quinquefasciatus* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	25	83.333	83	5.95	6.002	5.923	13.17	5.997
50.000	1.699	30	21	70.000	70	5.52	5.319	5.500	18.48	5.308
25.000	1.398	30	8	26.667	27	4.39	4.636	4.389	18.03	4.620
12.500	1.097	30	5	16.667	17	4.05	3.953	4.062	12.15	3.931

Regression equation: Y = 1.422 + 2.288X
Chi-squared is 1.919 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.564ppm
LC_{50} is 36.658ppm
95% confidence limits are 28.523 to 47.115ppm

Appendix Table CDLXXXVI: Larvicidal effect of *L. camara* (r/PetE) extracts against *C. quinquefasciatus* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	15	50.000	50	5.00	5.081	5.000	19.11	5.092
50.000	1.699	30	9	30.000	30	4.48	4.261	4.490	15.09	4.258
25.000	1.398	30	1	3.333	3	3.12	3.441	3.180	7.14	3.425

Regression equation: Y = -0.445 + 2.768X
Chi-squared is 1.399 with 1 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.967ppm
LC_{50} is 92.666ppm
95% confidence limits are 66.876 to 128.403ppm

Appendix Table CDLXXXVII: Larvicidal effect of *L. camara* (r/PetE) extracts against *C. quinquefasciatus* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	18	60.000	60	5.25	5.184	5.240	19.02	5.210
50.000	1.699	30	13	43.333	43	4.82	4.728	4.818	18.48	4.733
25.000	1.398	30	5	16.667	17	4.05	4.272	4.048	15.09	4.257
12.500	1.097	30	3	10.000	10	3.72	3.816	3.720	11.10	3.780
6.250	0.796	30	2	6.667	7	3.52	3.360	3.572	6.24	3.303

Regression equation: Y = 2.042 + 1.584X
Chi-squared is 1.297 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.867ppm
LC_{50} is 73.666ppm
95% confidence limits are 47.125 to 115.153ppm

Appendix Table CDLXXXVIII: Larvicidal effect of *L. camara* (r/PetE) extracts against *C. quinquefasciatus* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	23	76.667	77	5.74	5.718	5.734	15.96	5.731
50.000	1.699	30	18	60.000	60	5.25	5.136	5.240	19.02	5.133
25.000	1.398	30	8	26.667	27	4.39	4.554	4.376	17.43	4.536
12.500	1.097	30	4	13.333	13	3.87	3.972	3.878	12.15	3.939
6.250	0.796	30	2	6.667	7	3.52	3.390	3.572	6.24	3.341

Regression equation: Y = 1.762 + 1.984X
Chi-squared is 1.040 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.632ppm
LC_{50} is 42.835ppm
95% confidence limits are 32.238 to 56.917ppm

Appendix Table CDLXXXIX: Larvicidal effect of *L. camara* (r/PetE) extracts against *C. quinquefasciatus* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	27	90.000	90	6.28	6.118	6.270	12.15	6.084
50.000	1.699	30	20	66.667	67	5.44	5.448	5.429	18.03	5.415
25.000	1.398	30	8	26.667	27	4.39	4.778	4.402	18.48	4.746
12.500	1.097	30	7	23.333	23	4.26	4.108	4.284	14.13	4.078
6.250	0.796	30	2	6.667	7	3.52	3.438	3.540	7.14	3.409

Regression equation: Y = 1.642 + 2.221X
Chi-squared is 3.341 with 3 egrees of freedom
No significant heterogeneity
Log LC_{50} is 1.512ppm
LC_{50} is 32.517ppm
95% confidence limits are 25.437 to 41.567ppm

Appendix Table CDXC: Larvicidal effect of *L. camara* (r/PetE) extracts against *C. quinquefasciatus* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
50.000	1.699	30	21	70.000	70	5.52	5.444	5.510	18.03	5.450
25.000	1.398	30	13	43.333	43	4.82	4.893	4.838	18.81	4.894
12.500	1.097	30	7	23.333	23	4.26	4.342	4.266	15.96	4.338
6.250	0.796	30	4	13.333	13	3.87	3.791	3.894	10.08	3.783

Regression equation: Y = 2.314 + 1.846X
Chi-squared is 0.333 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.455ppm
LC_{50} is 28.532ppm
95% confidence limits are 20.330 to 40.043ppm

Appendix Table CDXCI: Larvicidal effect of *L. camara* (r/$CHCl_3$) extracts against *C. quinquefasciatus* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
800.000	2.903	30	10	33.333	33	4.56	4.506	4.544	17.43	4.500
400.000	2.602	30	5	16.667	17	4.05	4.165	4.056	14.13	4.163
200.000	2.301	30	4	13.333	13	3.87	3.824	3.873	11.10	3.825
100.000	2.000	30	2	6.667	7	3.52	3.483	3.540	7.14	3.488
50.000	1.699	30	1	3.333	3	3.12	3.142	3.116	4.62	3.151

Regression equation: Y = 1.249 + 1.120X
Chi-squared is 0.245 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 3.350ppm
LC_{50} is 2238.424ppm
95% confidence limits are 584.642 to 8570.274ppm

Appendix Table CDXCII: Larvicidal effect *L. camara* (r/$CHCl_3$) extracts against *C. quinquefasciatus* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
800.000	2.903	30	17	56.667	57	5.18	5.200	5.202	18.81	5.198
400.000	2.602	30	12	40.000	40	4.75	4.798	4.740	18.48	4.803
200.000	2.301	30	9	30.000	30	4.48	4.396	4.490	15.96	4.408
100.000	2.000	30	5	16.667	17	4.05	3.994	4.062	12.15	4.013
50.000	1.699	30	2	6.667	7	3.52	3.592	3.519	8.07	3.619

Regression equation: Y = 1.390 + 1.312X
Chi-squared is 0.289 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.752ppm
LC_{50} is 565.086ppm
95% confidence limits are 333.691 to 956.937ppm

Appendix Table CDXCIII: Larvicidal effect of *L. camara* (r/$CHCl_3$) extracts against *C. quinquefasciatus* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
800.000	2.903	30	19	63.333	63	5.33	5.332	5.318	18.48	5.304
400.000	2.602	30	13	43.333	43	4.82	4.967	4.815	19.02	4.954
200.000	2.301	30	12	40.000	40	4.75	4.602	4.740	18.03	4.605
100.000	2.000	30	8	26.667	27	4.39	4.237	4.388	15.09	4.255
50.000	1.699	30	3	10.000	10	3.72	3.872	3.720	11.10	3.906

Regression equation: Y = 1.933 + 1.161X
Chi-squared is 1.351 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.641ppm
LC_{50} is 438.020ppm
95% confidence limits are 261.029 to 735.022ppm

Appendix Table CDXCIV: Larvicidal effect of *L. camara* (r/$CHCl_3$) extracts against *C. quinquefasciatus* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
800.000	2.903	30	22	73.333	73	5.61	5.572	5.584	17.43	5.530
400.000	2.602	30	15	50.000	50	5.00	5.150	4.990	19.02	5.131
200.000	2.301	30	12	40.000	40	4.75	4.728	4.740	18.48	4.733
100.000	2.000	30	10	33.333	33	4.56	4.306	4.586	15.96	4.335
50.000	1.699	30	3	10.000	10	3.72	3.884	3.720	11.10	3.936

Regression equation: Y = 1.688 + 1.323X
Chi-squared is 1.960 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.503ppm
LC_{50} is 318.277ppm
95% confidence limits are 213.313 to 474.891ppm

Appendix Table CDXCV: Larvicidal effect of *L. camara* (r/$CHCl_3$) extracts against *C. quinquefasciatus* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
800.000	2.903	30	26	86.667	87	6.13	6.036	6.087	13.17	5.971
400.000	2.602	30	19	63.333	63	5.33	5.526	5.304	17.43	5.489
200.000	2.301	30	15	50.000	50	5.00	5.016	5.000	19.11	5.006
100.000	2.000	30	12	40.000	40	4.75	4.506	4.740	17.43	4.523
50.000	1.699	30	4	13.333	13	3.87	3.996	3.878	12.15	4.040

Regression equation: Y = 1.316 + 1.604X
Chi-squared is 1.911 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.297ppm
LC_{50} is 198.309ppm
95% confidence limits are 144.549 to 272.064ppm

Appendix Table CDXCVI: Larvicidal effect of *L. camara* (r/CH_3OH) extracts against *C. quinquefasciatus* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	6	20.000	20	4.16	4.280	4.150	15.09	4.238
100.000	2.000	30	5	16.667	17	4.05	3.935	4.062	12.15	3.936
50.000	1.699	30	3	10.000	10	3.72	3.590	3.750	8.07	3.634
25.000	1.398	30	1	3.333	3	3.12	3.245	3.121	5.40	3.331

Regression equation: Y = 1.927 + 1.004X
Chi-squared is 0.659 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 3.059ppm
LC_{50} is 1146.454ppm
95% confidence limits are 90.833 to 14469.99ppm

Appendix Table CDXCVII: Larvicidal effect of *L. camara* (r/CH_3OH) extracts against *C. quinquefasciatus* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	16	53.333	53	5.08	5.162	5.065	19.02	5.147
100.000	2.000	30	13	43.333	43	4.82	4.660	4.821	18.03	4.657
50.000	1.699	30	5	16.667	17	4.05	4.158	4.056	14.13	4.167
25.000	1.398	30	3	10.000	10	3.72	3.656	3.730	9.06	3.676
12.500	1.097	30	1	3.333	3	3.12	3.154	3.116	4.62	3.186

Regression equation: Y = 1.400 + 1.629X
Chi-squared is 0.836 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.211ppm
LC_{50} is 162.446ppm
95% confidence limits are 102.209 to 258.182ppm

Appendix Table CDXCVIII: Larvicidal effect of *L. camara* (r/CH_3OH) extracts against *C. quinquefasciatus* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	21	70.000	70	5.52	5.592	5.500	17.43	5.569
100.000	2.000	30	17	56.667	57	5.18	5.090	5.175	19.11	5.079
50.000	1.699	30	10	33.333	33	4.56	4.588	4.544	17.43	4.588
25.000	1.398	30	6	20.000	20	4.16	4.086	4.160	13.17	4.097
12.500	1.097	30	2	6.667	7	3.52	3.584	3.519	8.07	3.606

Regression equation: Y = 1.818 + 1.630X
Chi-squared is 0.409 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.952ppm
LC_{50} is 89.496ppm
95% confidence limits are 63.497 to 126.141ppm

Appendix Table CDXCIX: Larvicidal effect of *L. camara* (r/CH_3OH) extracts against *C. quinquefasciatus* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	27	90.000	90	6.28	6.140	6.270	12.15	6.084
100.000	2.000	30	19	63.333	63	5.33	5.543	5.304	17.43	5.507
50.000	1.699	30	14	46.667	47	4.92	4.946	4.915	19.02	4.931
25.000	1.398	30	9	30.000	30	4.48	4.349	4.490	15.96	4.354
12.500	1.097	30	3	10.000	10	3.72	3.752	3.720	10.08	3.778

Regression equation: Y = 1.678 + 1.915X
Chi-squared is 1.474 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.735ppm
LC_{50} is 54.335ppm
95% confidence limits are 41.354 to 71.392ppm

Appendix Table D: Larvicidal effect of *L. camara* (r/CH_3OH) extracts against *C. quinquefasciatus* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	23	76.667	77	5.74	5.743	5.734	15.96	5.722
50.000	1.699	30	16	53.333	53	5.08	5.141	5.065	19.02	5.132
25.000	1.398	30	11	36.667	37	4.67	4.539	4.656	17.43	4.542
12.500	1.097	30	4	13.333	13	3.87	3.937	3.878	12.15	3.952

Regression equation: Y = 1.802 + 1.960X
Chi-squared is 0.381 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.632ppm
LC_{50} is 42.811ppm
95% confidence limits are 32.019 to 57.242ppm

Appendix Table DI: Larvicidal effect of *M. piperita* (wp/PetE) extracts against *C. quinquefasciatus* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	17	56.667	57	5.18	5.145	5.165	19.02	5.133
100.000	2.000	30	8	26.667	27	4.39	4.475	4.390	16.74	4.468
50.000	1.699	30	4	13.333	13	3.87	3.805	3.873	11.10	3.802
25.000	1.398	30	1	3.333	3	3.12	3.135	3.116	4.62	3.136

Regression equation: Y = 0.045 + 2.211X
Chi-squared is 0.178 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.241ppm
LC_{50} is 174.072ppm
95% confidence limits are 119.846 to 252.832ppm

Appendix Table DII: Larvicidal effect of *M. piperita* (wp/PetE) extracts against *C. quinquefasciatus* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	20	66.667	67	5.44	5.428	5.429	18.03	5.435
100.000	2.000	30	14	46.667	47	4.92	4.891	4.942	18.81	4.895
50.000	1.699	30	7	23.333	23	4.26	4.354	4.266	15.96	4.355
25.000	1.398	30	4	13.333	13	3.87	3.817	3.873	11.10	3.814

Regression equation: Y = 1.305 + 1.795X
Chi-squared is 0.206 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.058ppm
LC_{50} is 114.399ppm
95% confidence limits are 80.711 to 162.149ppm

Appendix Table DIII: Larvicidal effect of *M. piperita* (wp/PetE) extracts against *C. quinquefasciatus* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	23	76.667	77	5.74	5.706	5.734	15.96	5.675
100.000	2.000	30	16	53.333	53	5.08	5.180	5.065	19.02	5.166
50.000	1.699	30	11	36.667	37	4.67	4.654	4.659	18.03	4.657
25.000	1.398	30	7	23.333	23	4.26	4.128	4.284	14.13	4.147
12.500	1.097	30	2	6.667	7	3.52	3.602	3.529	9.06	3.638

Regression equation: Y = 1.782 + 1.692X
Chi-squared is 0.620 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.902ppm
LC_{50} is 79.776ppm
95% confidence limits are 57.825 to 110.059ppm

Appendix Table DIV: Larvicidal effect of *M. piperita* (wp/PetE) extracts against *C. quinquefasciatus* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	25	83.333	83	5.95	5.922	5.984	14.13	5.898
100.000	2.000	30	17	56.667	57	5.18	5.374	5.162	18.48	5.377
50.000	1.699	30	14	46.667	47	4.92	4.826	4.942	18.81	4.857
25.000	1.398	30	10	33.333	33	4.56	4.278	4.592	15.09	4.336
12.500	1.097	30	2	6.667	7	3.52	3.730	3.546	10.08	3.815

Regression equation: Y = 1.917 + 1.730X
Chi-squared is 2.819 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.782ppm
LC_{50} is 60.519ppm
95% confidence limits are 44.858 to 81.648ppm

Appendix Table DV: Larvicidal effect of *M. piperita* (wp/PetE) extracts against *C. quinquefasciatus* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	29	96.667	97	6.88	6.237	6.587	11.10	6.223
100.000	2.000	30	19	63.333	63	5.33	5.652	5.310	16.74	5.646
50.000	1.699	30	15	50.000	50	5.00	5.067	5.000	19.11	5.068
25.000	1.398	30	11	36.667	37	4.67	4.482	4.690	16.74	4.491
12.500	1.097	30	4	13.333	13	3.87	3.897	3.873	11.10	3.913

Regression equation: Y = 1.808 + 1.919X
Chi-squared is 4.127 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.663ppm
LC_{50} is 46.065ppm
95% confidence limits are 35.055 to 60.533ppm

Appendix Table DVI: Larvicidal effect of *M. piperita* (wp/$CHCl_3$) extracts against *C. quinquefasciatus* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	13	43.333	43	4.82	4.968	4.815	19.02	4.953
200.000	2.301	30	10	33.333	33	4.56	4.277	4.592	15.09	4.244
100.000	2.000	30	1	3.333	3	3.12	3.586	3.211	8.07	3.536

Regression equation: Y = -1.171 + 2.353X
Chi-squared is 3.037 with 1 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.622ppm
LC_{50} is 418.844ppm
95% confidence limits are 272.140 to 644.633ppm

Appendix Table DVII: Larvicidal effect of *M. piperita* (wp/$CHCl_3$) extracts against *C. quinquefasciatus* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	23	76.667	77	5.74	5.614	5.730	16.74	5.660
200.000	2.301	30	13	43.333	43	4.82	4.838	4.838	18.81	4.838
100.000	2.000	30	3	10.000	10	3.72	4.062	3.750	13.17	4.017
50.000	1.699	30	2	6.667	7	3.52	3.286	3.629	5.40	3.195

Regression equation: Y = -1.442 + 2.729X
Chi-squared is 2.036 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.360ppm
LC_{50} is 229.226ppm
95% confidence limits are 180.758 to 290.690ppm

Appendix Table DVIII: Larvicidal effect of *M. piperita* (wp/$CHCl_3$) extracts against *C. quinquefasciatus* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	25	83.333	83	5.95	5.767	5.926	15.96	5.732
200.000	2.301	30	13	43.333	43	4.82	5.109	4.815	19.02	5.081
100.000	2.000	30	9	30.000	30	4.48	4.451	4.480	16.74	4.431
50.000	1.699	30	4	13.333	13	3.87	3.793	3.894	10.08	3.781

Regression equation: Y = 0.111 + 2.160X
Chi-squared is 2.122 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.263ppm
LC_{50} is 183.390ppm
95% confidence limits are 139.801 to 240.569ppm

Appendix Table DIX: Larvicidal effect of *M. piperita* (wp/$CHCl_3$) extracts against *C. quinquefasciatus* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	28	93.333	93	6.48	6.196	6.408	12.15	6.105
200.000	2.301	30	18	60.000	60	5.25	5.495	5.240	18.03	5.419
100.000	2.000	30	10	33.333	33	4.56	4.794	4.558	18.48	4.733
50.000	1.699	30	6	20.000	20	4.16	4.093	4.160	13.17	4.047
25.000	1.398	30	2	6.667	7	3.52	3.392	3.572	6.24	3.361

Regression equation: Y = 0.175 + 2.279X
Chi-squared is 2.705 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.117ppm
LC_{50} is 130.911ppm
95% confidence limits are 102.806 to 166.700ppm

Appendix Table DX: Larvicidal effect of *M. piperita* (wp/$CHCl_3$) extracts against *C. quinquefasciatus* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	21	70.000	70	5.52	5.534	5.500	17.43	5.522
100.000	2.000	30	16	53.333	53	5.08	5.033	5.075	19.11	5.019
50.000	1.699	30	9	30.000	30	4.48	4.532	4.460	17.43	4.517
25.000	1.398	30	5	16.667	17	4.05	4.031	4.037	13.17	4.014

Regression equation: Y = 1.680 + 1.670X
Chi-squared is 0.130 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.988ppm
LC_{50} is 97.375ppm
95% confidence limits are 68.799 to 137.821ppm

Appendix Table DXI: Larvicidal effect of *M. piperita* (wp/CH_3OH) extracts against *C. quinquefasciatus* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
800.000	2.903	30	10	33.333	33	4.56	4.653	4.551	18.03	4.644
400.000	2.602	30	7	23.333	23	4.26	4.049	4.283	13.17	4.029
200.000	2.301	30	1	3.333	3	3.12	3.446	3.180	7.14	3.414

Regression equation: Y = -1.285 + 2.042X
Chi-squared is 1.396 with 1 degrees of freedom
No significant heterogeneity
Log LC_{50} is 3.077ppm
LC_{50} is 1195.342ppm
95% confidence limits are 589.974 to 2421.874ppm

Appendix Table DXII: Larvicidal effect of *M. piperita* (wp/CH_3OH) extracts against *C. quinquefasciatus* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
800.000	2.903	30	11	36.667	37	4.67	4.789	4.662	18.48	4.772
400.000	2.602	30	9	30.000	30	4.48	4.228	4.490	15.09	4.237
200.000	2.301	30	2	6.667	7	3.52	3.667	3.529	9.06	3.701
100.000	2.000	30	1	3.333	3	3.12	3.106	3.116	4.62	3.166

Regression equation: Y = -0.389 + 1.778X
Chi-squared is 1.473 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 3.0315ppm
LC_{50} is 1075.135ppm
95% confidence limits are 562.391 to 2055.359ppm

Appendix Table DXIII: Larvicidal effect of *M. piperita* (wp/CH_3OH) extracts against *C. quinquefasciatus* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
800.000	2.903	30	16	53.333	53	5.08	5.125	5.065	19.02	5.103
400.000	2.602	30	11	36.667	37	4.67	4.595	4.656	17.43	4.583
200.000	2.301	30	5	16.667	17	4.05	4.065	4.037	13.17	4.063
100.000	2.000	30	2	6.667	7	3.52	3.535	3.519	8.07	3.543

Regression equation: Y = 0.087 + 1.728X
Chi-squared is 0.134 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.843ppm
LC_{50} is 696.966ppm
95% confidence limits are 434.749 to 1117.337ppm

Appendix Table DXIV: Larvicidal effect of *M. piperita* (wp/CH_3OH) extracts against *C. quinquefasciatus* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
800.000	2.903	30	18	60.000	60	5.25	5.280	5.280	18.81	5.308
400.000	2.602	30	12	40.000	40	4.75	4.803	4.760	18.81	4.819
200.000	2.301	30	9	30.000	30	4.48	4.327	4.490	15.96	4.330
100.000	2.000	30	4	13.333	13	3.87	3.850	3.873	11.10	3.841
50.000	1.699	30	1	3.333	3	3.12	3.373	3.148	6.24	3.351

Regression equation: Y = 0.590 + 1.625X
Chi-squared is 0.760 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.713ppm
LC_{50} is 516.804ppm
95% confidence limits are 344.759 to 774.703ppm

Appendix Table DXV: Larvicidal effect of *M. piperita* (wp/CH_3OH) extracts against *C. quinquefasciatus* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
800.000	2.903	30	24	80.000	80	5.85	5.794	5.830	15.96	5.816
400.000	2.602	30	16	53.333	53	5.08	5.210	5.098	18.81	5.220
200.000	2.301	30	12	40.000	40	4.75	4.625	4.740	18.03	4.623
100.000	2.000	30	6	20.000	20	4.16	4.041	4.160	13.17	4.027
50.000	1.699	30	1	3.333	3	3.12	3.457	3.180	7.14	3.431

Regression equation: Y = 0.066 + 1.981X
Chi-squared is 1.209 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.491ppm
LC_{50} is 309.859ppm
95% confidence limits are 235.467 to 407.753ppm

Appendix Table DXVI: Larvicidal effect of *Mi. pudica* (wp/PetE) extracts against *C. quinquefasciatus* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	17	56.667	57	5.18	5.086	5.175	19.11	5.096
200.000	2.301	30	9	30.000	30	4.48	4.578	4.460	17.43	4.571
100.000	2.000	30	5	16.667	17	4.05	4.070	4.037	13.17	4.046
50.000	1.699	30	2	6.667	7	3.52	3.562	3.519	8.07	3.520
25.000	1.398	30	1	3.333	3	3.12	3.054	3.135	3.93	2.995

Regression equation: Y = 0.556 + 1.745X
Chi-squared is 0.411 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.547ppm
LC_{50} is 352.364ppm
95% confidence limits are 223.195 to 556.286ppm

Appendix Table DXVII: Larvicidal effect of *Mi. pudica* (wp/PetE) extracts against *C. quinquefasciatus* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	20	66.667	67	5.44	5.338	5.422	18.48	5.340
200.000	2.301	30	12	40.000	40	4.75	4.866	4.760	18.81	4.864
100.000	2.000	30	8	26.667	27	4.39	4.394	4.394	15.96	4.388
50.000	1.699	30	4	13.333	13	3.87	3.922	3.878	12.15	3.912
25.000	1.398	30	2	6.667	7	3.52	3.450	3.540	7.14	3.436

Regression equation: Y = 1.225 + 1.581X
Chi-squared is 0.420 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.387ppm
LC_{50} is 243.844ppm
95% confidence limits are 162.579 to 365.729ppm

Appendix Table DXVIII: Larvicidal effect of *Mi. pudica* (wp/PetE) extracts against *C. quinquefasciatus* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	23	76.667	77	5.74	5.510	5.696	17.43	5.483
200.000	2.301	30	13	43.333	43	4.82	5.070	4.825	19.11	5.046
100.000	2.000	30	10	33.333	33	4.56	4.630	4.551	18.03	4.609
50.000	1.699	30	6	20.000	20	4.16	4.190	4.170	14.13	4.172
25.000	1.398	30	4	13.333	13	3.87	3.750	3.894	10.08	3.735

Regression equation: Y = 1.705 + 1.452X
Chi-squared is 2.040 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.269ppm
LC_{50} is 185.822ppm
95% confidence limits are 125.898 to 274.267ppm

Appendix Table DXIX: Larvicidal effect of *Mi. pudica* (wp/PetE) extracts against *C. quinquefasciatus* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	25	83.333	83	5.95	5.824	5.902	15.09	5.778
200.000	2.301	30	18	60.000	60	5.25	5.367	5.240	18.48	5.334
100.000	2.000	30	13	43.333	43	4.82	4.910	4.815	19.02	4.890
50.000	1.699	30	9	30.000	30	4.48	4.453	4.480	16.74	4.446
25.000	1.398	30	5	16.667	17	4.05	3.996	4.062	12.15	4.002

Regression equation: Y = 1.941 + 1.474X
Chi-squared is 0.565 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.075ppm
LC_{50} is 118.721ppm
95% confidence limits are 84.386 to 167.026ppm

Appendix Table DXX: Larvicidal effect of *Mi. pudica* (wp/PetE) extracts against *C. quinquefasciatus* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	26	86.667	87	6.13	5.994	6.136	14.13	5.963
200.000	2.301	30	19	63.333	63	5.33	5.542	5.304	17.43	5.522
100.000	2.000	30	16	53.333	53	5.08	5.090	5.075	19.11	5.080
50.000	1.699	30	12	40.000	40	4.75	4.638	4.740	18.03	4.638
25.000	1.398	30	6	20.000	20	4.16	4.186	4.170	14.13	4.197

Regression equation: Y = 2.145 + 1.467X
Chi-squared is 1.444 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.945ppm
LC_{50} is 88.187ppm
95% confidence limits are 62.719 to 123.996ppm

Appendix Table DXXI: Larvicidal effect of *Mi. pudica* (wp/$CHCl_3$) extracts against *C. quinquefasciatus* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
800.000	2.903	30	12	40.000	40	4.75	4.673	4.740	18.03	4.696
400.000	2.602	30	5	16.667	17	4.05	4.131	4.056	14.13	4.128
200.000	2.301	30	2	6.667	7	3.52	3.589	3.519	8.07	3.560
100.000	2.000	30	1	3.333	3	3.12	3.047	3.135	3.93	2.992

Regression equation: Y = -0.782 + 1.887X
Chi-squared is 0.202 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 3.064ppm
LC_{50} is 1159.022ppm
95% confidence limits are 600.263 to 2237.904ppm

Appendix Table DXXII: Larvicidal effect of *Mi. pudica* (wp/$CHCl_3$) extracts against *C. quinquefasciatus* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
800.000	2.903	30	12	40.000	40	4.75	4.741	4.740	18.48	4.726
400.000	2.602	30	7	23.333	23	4.26	4.362	4.266	15.96	4.365
200.000	2.301	30	6	20.000	20	4.16	3.983	4.200	12.15	4.005
100.000	2.000	30	2	6.667	7	3.52	3.604	3.529	9.06	3.645

Regression equation: Y = 1.252 + 1.197X
Chi-squared is 0.744 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 3.132ppm
LC_{50} is 1356.547ppm
95% confidence limits are 471.550 to 3902.496ppm

Appendix TableDXXIII: Larvicidal effect of *Mi. pudica* (wp/$CHCl_3$) extracts against *C. quinquefasciatus* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
800.000	2.903	30	16	53.333	53	5.08	5.035	5.075	19.11	5.044
400.000	2.602	30	10	33.333	33	4.56	4.653	4.551	18.03	4.657
200.000	2.301	30	7	23.333	23	4.26	4.271	4.252	15.09	4.269
100.000	2.000	30	6	20.000	20	4.16	3.889	4.230	11.10	3.882
50.000	1.699	30	1	3.333	3	3.12	3.507	3.211	8.07	3.495

Regression equation: Y = 1.309 + 1.287X
Chi-squared is 2.218 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.869ppm
LC_{50} is 739.454ppm
95% confidence limits are 397.209 to 1376.586ppm

Appendix Table DXXIV: Larvicidal effect of *Mi. pudica* (wp/$CHCl_3$) extracts against *C. quinquefasciatus* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
800.000	2.903	30	20	66.667	67	5.44	5.344	5.422	18.48	5.324
400.000	2.602	30	13	43.333	43	4.82	4.944	4.815	19.02	4.930
200.000	2.301	30	9	30.000	30	4.48	4.544	4.460	17.43	4.536
100.000	2.000	30	7	23.333	23	4.26	4.144	4.284	14.13	4.142
50.000	1.699	30	3	10.000	10	3.72	3.744	3.720	10.08	3.749

Regression equation: Y = 1.525 + 1.309X
Chi-squared is 0.823 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.655ppm
LC_{50} is 452.226ppm
95% confidence limits are 283.249 to 722.009ppm

Appendix Table DXXV: Larvicidal effect of *Mi. pudica* (wp/$CHCl_3$) extracts against *C. quinquefasciatus* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
800.000	2.903	30	25	83.333	83	5.95	5.808	5.902	15.09	5.764
400.000	2.602	30	16	53.333	53	5.08	5.293	5.098	18.81	5.264
200.000	2.301	30	12	40.000	40	4.75	4.778	4.740	18.48	4.763
100.000	2.000	30	8	26.667	27	4.39	4.263	4.388	15.09	4.263
50.000	1.699	30	3	10.000	10	3.72	3.748	3.720	10.08	3.762

Regression equation: Y = 0.937 + 1.663X
Chi-squared is 1.068 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.443ppm
LC_{50} is 277.609ppm
95% confidence limits are 202.384 to 380.795ppm

Appendix Table DXXVI: Larvicidal effect of *P. hysterophorus* (wp/PetE) extracts against *C. quinquefasciatus* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	24	80.000	80	5.85	5.667	5.820	16.74	5.650
100.000	2.000	30	12	40.000	40	4.75	4.969	4.740	19.02	4.936
50.000	1.699	30	6	20.000	20	4.16	4.271	4.150	15.09	4.221
25.000	1.398	30	3	10.000	10	3.72	3.573	3.750	8.07	3.507

Regression equation: Y = 0.190 + 2.373X
Chi-squared is 1.765 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.027ppm
LC_{50} is 106.419ppm
95% confidence limits are 81.974 to 138.155ppm

Appendix Table DXXVII: Larvicidal effect of *P. hysterophorus* (wp/PetE) extracts against *C. quinquefasciatus* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	29	96.667	97	6.88	6.150	6.592	12.15	6.149
100.000	2.000	30	16	53.333	53	5.08	5.381	5.058	18.48	5.380
50.000	1.699	30	8	26.667	27	4.39	4.611	4.389	18.03	4.611
25.000	1.398	30	6	20.000	20	4.16	3.841	4.230	11.10	3.841
12.500	1.097	30	1	3.333	3	3.12	3.072	3.135	3.93	3.072

Regression equation: Y = 0.269 + 2.556X
Chi-squared is 6.875 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.851ppm
LC_{50} is 71.013ppm
95% confidence limits are 56.834 to 88.728ppm

Appendix Table DXXVIII: Larvicidal effect of *P. hysterophorus* (wp/PetE) extracts against *C. quinquefasciatus* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	19	63.333	63	5.33	5.220	5.358	18.81	5.242
50.000	1.699	30	10	33.333	33	4.56	4.765	4.558	18.48	4.774
25.000	1.398	30	8	26.667	27	4.39	4.310	4.394	15.96	4.306
12.500	1.097	30	4	13.333	13	3.87	3.855	3.873	11.10	3.838

Regression equation: Y = 2.133 + 1.554X
Chi-squared is 1.253 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.845ppm
LC_{50} is 69.907ppm
95% confidence limits are 44.616 to 109.534ppm

Appendix Table DXXIX: Larvicidal effect of *P. hysterophorus* (wp/PetE) extracts against *C. quinquefasciatus* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	21	70.000	70	5.52	5.529	5.500	17.43	5.507
50.000	1.699	30	15	50.000	50	5.00	5.063	5.000	19.11	5.054
25.000	1.398	30	12	40.000	40	4.75	4.597	4.740	17.43	4.600
12.500	1.097	30	5	16.667	17	4.05	4.131	4.056	14.13	4.147

Regression equation: Y = 2.494 + 1.507X
Chi-squared is 0.513 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.663ppm
LC_{50} is 46.054ppm
95% confidence limits are 31.609 to 67.101ppm

Appendix Table DXXX: Larvicidal effect of *P. hysterophorus* (wp/PetE) extracts against *C. quinquefasciatus* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	23	76.667	77	5.74	5.700	5.734	15.96	5.699
50.000	1.699	30	16	53.333	53	5.08	5.200	5.098	18.81	5.200
25.000	1.398	30	13	43.333	43	4.82	4.700	4.818	18.48	4.701
12.500	1.097	30	6	20.000	20	4.16	4.200	4.150	15.09	4.203

Regression equation: Y = 2.386 + 1.657X
Chi-squared is 0.509 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.578ppm
LC_{50} is 37.858ppm
95% confidence limits are 27.206 to 52.681ppm

Appendix Table DXXXI: Larvicidal effect of *P. hysterophorus* (wp/$CHCl_3$) extracts against *C. quinquefasciatus* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
800.000	2.903	30	17	56.667	57	5.18	5.216	5.202	18.81	5.221
400.000	2.602	30	12	40.000	40	4.75	4.701	4.740	18.48	4.709
200.000	2.301	30	6	20.000	20	4.16	4.186	4.170	14.13	4.197
100.000	2.000	30	3	10.000	10	3.72	3.671	3.730	9.06	3.685
50.000	1.699	30	1	3.333	3	3.12	3.156	3.116	4.62	3.173

Regression equation: Y = 0.284 + 1.701X
Chi-squared is 0.068 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.773ppm
LC_{50} is 593.445ppm
95% confidence limits are 389.409 to 904.389ppm

Appendix Table DXXXII: Larvicidal effect of *P. hysterophorus* (wp/$CHCl_3$) extracts against *C. quinquefasciatus* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
800.000	2.903	30	25	83.333	83	5.95	5.842	5.902	15.09	5.772
400.000	2.602	30	15	50.000	50	5.00	5.181	4.990	19.02	5.139
200.000	2.301	30	9	30.000	30	4.48	4.520	4.460	17.43	4.506
100.000	2.000	30	5	16.667	17	4.05	3.859	4.077	11.10	3.874
50.000	1.699	30	1	3.333	3	3.12	3.198	3.116	4.62	3.241

Regression equation: Y = -0.329 + 2.102X
Chi-squared is 1.247 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.536ppm
LC_{50} is 343.456ppm
95% confidence limits are 261.438 to 451.205ppm

Appendix Table DXXXIII: Larvicidal effect of *P. hysterophorus* (wp/$CHCl_3$) extracts against *C. quinquefasciatus* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	16	53.333	53	5.08	5.206	5.098	18.81	5.212
200.000	2.301	30	12	40.000	40	4.75	4.679	4.740	18.03	4.677
100.000	2.000	30	8	26.667	27	4.39	4.151	4.436	14.13	4.142
50.000	1.699	30	1	3.333	3	3.12	3.623	3.261	9.06	3.608

Regression equation: Y = 0.591 + 1.776X
Chi-squared is 2.622 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.483ppm
LC_{50} is 303.972ppm
95% confidence limits are 200.183 to 461.573ppm

Appendix Table DXXXIV: Larvicidal effect of *P. hysterophorus* (wp/$CHCl_3$) extracts against *C. quinquefasciatus* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	20	66.667	67	5.44	5.499	5.429	18.03	5.472
200.000	2.301	30	14	46.667	47	4.92	4.958	4.915	19.02	4.960
100.000	2.000	30	11	36.667	37	4.67	4.417	4.690	16.74	4.449
50.000	1.699	30	3	10.000	10	3.72	3.876	3.720	11.10	3.937

Regression equation: Y = 1.049 + 1.700X
Chi-squared is 1.570 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.324ppm
LC_{50} is 211.057ppm
95% confidence limits are 148.368 to 300.235ppm

Appendix Table DXXXV: Larvicidal effect of *P. hysterophorus* (wp/$CHCl_3$) extracts against *C. quinquefasciatus* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	26	86.667	87	6.13	6.095	6.087	13.17	6.056
200.000	2.301	30	19	63.333	63	5.33	5.420	5.321	18.03	5.397
100.000	2.000	30	13	43.333	43	4.82	4.745	4.818	18.48	4.737
50.000	1.699	30	5	16.667	17	4.05	4.070	4.037	13.17	4.078

Regression equation: Y = 0.357 + 2.190X
Chi-squared is 0.259 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.120ppm
LC_{50} is 131.807ppm
95% confidence limits are 101.520 to 171.129ppm

Appendix Table DXXXVI: Larvicidal effect of *P. hysterophorus* (wp/CH_3OH) extracts against *C. quinquefasciatus* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	13	43.333	43	4.82	4.865	4.838	18.81	4.887
100.000	2.000	30	8	26.667	27	4.39	4.432	4.390	16.74	4.436
50.000	1.699	30	7	23.333	23	4.26	3.999	4.338	12.15	3.985
25.000	1.398	30	1	3.333	3	3.12	3.566	3.211	8.07	3.534

Regression equation: Y = 1.439 + 1.498X
Chi-squared is 2.437 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.377ppm
LC_{50} is 237.973ppm
95% confidence limits are 120.781 to 468.876ppm

Appendix Table DXXXVII: Larvicidal effect of *P. hysterophorus* (wp/CH_3OH) extracts against *C.quinquefasciatus* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	17	56.667	57	5.18	5.228	5.202	18.81	5.242
100.000	2.000	30	13	43.333	43	4.82	4.801	4.838	18.81	4.818
50.000	1.699	30	9	30.000	30	4.48	4.374	4.490	15.96	4.395
25.000	1.398	30	4	13.333	13	3.87	3.947	3.878	12.15	3.971

Regression equation: Y = 2.005 + 1.407X
Chi-squared is 0.287 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.129ppm
LC_{50} is 134.598ppm
95% confidence limits are 83.031 to 218.190ppm

Appendix Table DXXXVIII: Larvicidal effect of *P. hysterophorus* (wp/CH_3OH) extracts against *C. quinquefasciatus* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	21	70.000	70	5.52	5.550	5.500	17.43	5.531
100.000	2.000	30	16	53.333	53	5.08	5.098	5.075	19.11	5.088
50.000	1.699	30	12	40.000	40	4.75	4.646	4.740	18.03	4.646
25.000	1.398	30	6	20.000	20	4.16	4.194	4.170	14.13	4.204
12.500	1.097	30	3	10.000	10	3.72	3.742	3.720	10.08	3.762

Regression equation: Y = 2.150 + 1.469X
Chi-squared is 0.212 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.940ppm
LC_{50} is 87.056ppm
95% confidence limits are 59.845 to 126.639ppm

Appendix Table DXXXIX: Larvicidal effect of *P. hysterophorus* (wp/CH_3OH) extracts against *C. quinquefasciatus* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	26	86.667	87	6.13	6.112	6.132	12.15	6.097
100.000	2.000	30	21	70.000	70	5.52	5.556	5.500	17.43	5.546
50.000	1.699	30	15	50.000	50	5.00	5.000	5.000	19.11	4.996
25.000	1.398	30	9	30.000	30	4.48	4.444	4.480	16.74	4.446
12.500	1.097	30	4	13.333	13	3.87	3.888	3.873	11.10	3.896

Regression equation: Y = 1.892 + 1.827X
Chi-squared is 0.078 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.701ppm
LC_{50} is 50.229ppm
95% confidence limits are 37.872 to 66.618ppm

Appendix Table DXL: Larvicidal effect of *P. hysterophorus* (wp/CH_3OH) extracts against *C. quinquefasciatus* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	26	86.667	87	6.13	6.001	6.087	13.17	5.943
50.000	1.699	30	17	56.667	57	5.18	5.307	5.162	18.48	5.262
25.000	1.398	30	9	30.000	30	4.48	4.613	4.470	18.03	4.582
12.500	1.097	30	5	16.667	17	4.05	3.919	4.062	12.15	3.901

Regression equation: Y = 1.421 + 2.261X
Chi-squared is 0.999 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.583ppm
LC_{50} is 38.287ppm
95% confidence limits are 29.676 to 49.396ppm

Appendix Table DXLI: Larvicidal effect of *Ph. niruri* (wp/PetE) extracts against *C. quinquefasciatus* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	13	43.333	43	4.82	4.746	4.818	18.48	4.742
50.000	1.699	30	7	23.333	23	4.26	4.367	4.266	15.96	4.374
25.000	1.398	30	4	13.333	13	3.87	3.988	3.878	12.15	4.005
12.500	1.097	30	4	13.333	13	3.87	3.609	3.931	9.06	3.637
6.250	0.796	30	1	3.333	3	3.12	3.230	3.121	5.40	3.268

Regression equation: Y = 2.294 + 1.224X
Chi-squared is 1.390 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.210ppm
LC_{50} is 162.346ppm
95% confidence limits are 64.957 to 405.746ppm

Appendix Table DXLII: Larvicidal effect of *Ph. niruri* (wp/PetE) extracts against *C. quinquefasciatus* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	20	66.667	67	5.44	5.291	5.462	18.81	5.297
50.000	1.699	30	12	40.000	40	4.75	4.881	4.760	18.81	4.889
25.000	1.398	30	7	23.333	23	4.26	4.472	4.270	16.74	4.481
12.500	1.097	30	6	20.000	20	4.16	4.062	4.160	13.17	4.072
6.250	0.796	30	4	13.333	13	3.87	3.652	3.931	9.06	3.664
3.125	0.495	30	1	3.333	3	3.12	3.242	3.121	5.40	3.256

Regression equation: Y = 2.585 + 1.356X
Chi-squared is 2.411 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.781ppm
LC_{50} is 60.402ppm
95% confidence limits are 38.045 to 95.898ppm

Appendix Table DXLIII: Larvicidal effect of *Ph. niruri* (wp/PetE) extracts against *C. quinquefasciatus* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	25	83.333	83	5.95	5.759	5.926	15.96	5.722
50.000	1.699	30	18	60.000	60	5.25	5.391	5.240	18.48	5.365
25.000	1.398	30	13	43.333	43	4.82	5.024	4.825	19.11	5.007
12.500	1.097	30	11	36.667	37	4.67	4.656	4.659	18.03	4.649
6.250	0.796	30	9	30.000	30	4.48	4.289	4.490	15.09	4.291
3.125	0.495	30	4	13.333	13	3.87	3.921	3.878	12.15	3.933

Regression equation: Y = 3.345 + 1.189X
Chi-squared is 2.215 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.392ppm
LC_{50} is 24.680ppm
95% confidence limits are 16.716 to 36.438ppm

Appendix Table DXLIV: Larvicidal effect of *Ph. niruri* (wp/PetE) extracts against *C. quinquefasciatus* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
50.000	1.699	30	25	83.333	83	5.95	5.898	5.902	15.09	5.852
25.000	1.398	30	21	70.000	70	5.52	5.544	5.500	17.43	5.514
12.500	1.097	30	16	53.333	53	5.08	5.190	5.065	19.02	5.176
6.250	0.796	30	14	46.667	47	4.92	4.836	4.942	18.81	4.838
3.125	0.495	30	9	30.000	30	4.48	4.482	4.480	16.74	4.500

Regression equation: Y = 3.945 + 1.122X
Chi-squared is 0.486 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 0.940ppm
LC_{50} is 8.707ppm
95% confidence limits are 5.523 to 13.729ppm

Appendix Table DXLV: Larvicidal effect of *Ph. niruri* (wp/PetE) extracts against *C. quinquefasciatus* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
25.000	1.398	30	28	93.333	93	6.48	6.437	6.491	9.06	6.442
12.500	1.097	30	24	80.000	80	5.85	5.969	5.870	14.13	5.970
6.250	0.796	30	22	73.333	73	5.61	5.501	5.584	17.43	5.499
3.125	0.495	30	15	50.000	50	5.00	5.033	5.000	19.11	5.027

Regression equation: Y = 4.252 + 1.566X
Chi-squared is 0.305 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 0.477ppm
LC_{50} is 3.390ppm bh
95% confidence limits are 1.672 to 5.391ppm

Appendix Table DXLVI: Larvicidal effect of *Ph. niruri* (wp/$CHCl_3$) extracts against *C. quinquefasciatus* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	11	36.667	37	4.67	4.732	4.662	18.48	4.736
100.000	2.000	30	9	30.000	30	4.48	4.399	4.490	15.96	4.399
50.000	1.699	30	5	16.667	17	4.05	4.065	4.037	13.17	4.061
25.000	1.398	30	4	13.333	13	3.87	3.732	3.894	10.08	3.724
12.500	1.097	30	1	3.333	3	3.12	3.399	3.148	6.24	3.387

Regression equation: Y = 2.158 + 1.120X
Chi-squared is 0.889 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.537ppm
LC_{50} is 344.236ppm
95% confidence limits are 124.367 to 952.811ppm

Appendix Table DXLVII: Larvicidal effect of *Ph. niruri* (wp/$CHCl_3$) extracts against *C. quinquefasciatus* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	18	60.000	60	5.25	5.269	5.280	18.81	5.293
100.000	2.000	30	13	43.333	43	4.82	4.906	4.815	19.02	4.921
50.000	1.699	30	11	36.667	37	4.67	4.543	4.656	17.43	4.550
25.000	1.398	30	7	23.333	23	4.26	4.181	4.284	14.13	4.178
12.500	1.097	30	4	13.333	13	3.87	3.818	3.873	11.10	3.807
6.250	0.796	30	1	3.333	3	3.12	3.456	3.180	7.14	3.435

Regression equation: Y = 2.453 + 1.234X
Chi-squared is 1.086 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.064ppm
LC_{50} is 115.823ppm
95% confidence limits are 70.603 to 190.005ppm

Appendix Table DXLVIII: Larvicidal effect of *Ph. niruri* (wp/$CHCl_3$) extracts against *C. quinquefasciatus* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	23	76.667	77	5.74	5.793	5.734	15.96	5.790
100.000	2.000	30	20	66.667	67	5.44	5.454	5.429	18.03	5.452
50.000	1.699	30	18	60.000	60	5.25	5.115	5.240	19.02	5.113
25.000	1.398	30	13	43.333	43	4.82	4.775	4.818	18.48	4.774
12.500	1.097	30	7	23.333	23	4.26	4.436	4.270	16.74	4.435
6.250	0.796	30	6	20.000	20	4.16	4.097	4.160	13.17	4.096

Regression equation: Y = 3.201 + 1.125X
Chi-squared is 0.914 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.599ppm
LC_{50} is 39.697ppm
95% confidence limits are 26.645 to 59.142ppm

Appendix Table DXLIX: Larvicidal effect of *Ph. niruri* (wp/$CHCl_3$) extracts against *C. quinquefasciatus*after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	25	83.333	83	5.95	5.982	5.984	14.13	5.999
50.000	1.699	30	23	76.667	77	5.74	5.686	5.730	16.74	5.694
25.000	1.398	30	19	63.333	63	5.33	5.390	5.318	18.48	5.390
12.500	1.097	30	17	56.667	57	5.18	5.094	5.175	19.11	5.086
6.250	0.796	30	12	40.000	40	4.75	4.798	4.740	18.48	4.781

Regression equation: Y = 3.977 + 1.011X
Chi-squared is 0.305 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.012ppm
LC_{50} is 10.284ppm
95% confidence limits are 5.507 to 19.206ppm

Appendix Table DL: Larvicidal effect of *Ph. niruri* (wp/$CHCl_3$) extracts against *C. quinquefasciatus* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
50.000	1.699	30	28	93.333	93	6.48	6.371	6.424	10.08	6.277
25.000	1.398	30	24	80.000	80	5.85	6.002	5.800	13.17	5.955
12.500	1.097	30	22	73.333	73	5.61	5.633	5.610	16.74	5.632
6.250	0.796	30	19	63.333	63	5.33	5.264	5.358	18.81	5.309

Regression equation: Y = 4.456 + 1.072X
Chi-squared is 0.585 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 0.508ppm
LC_{50} is 3.220ppm
95% confidence limits are 0.925 to 11.196ppm

Appendix Table DLI: Larvicidal effect of *Ph. niruri* (wp/CH_3OH) extracts against *C. quinquefasciatus* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
800.000	2.903	30	5	16.667	17	4.05	3.994	4.062	12.15	4.023
600.000	2.778	30	2	6.667	7	3.52	3.615	3.529	9.06	3.619
400.000	2.602	30	1	3.333	3	3.12	3.081	3.135	3.93	3.049

Regression equation: Y = -5.367 + 3.234X
Chi-squared is 0.121 with 1 degrees of freedom
No significant heterogeneity
Log LC_{50} is 3.205ppm
LC_{50} is 1603.863ppm
95% confidence limits are 551.099 to 4667.72ppm

Appendix Table DLII: Larvicidal effect of *Ph. niruri* (wp/CH_3OH) extracts against *C. quinquefasciatus* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
800.000	2.903	30	10	33.333	33	4.56	4.600	4.551	18.03	4.572
600.000	2.778	30	7	23.333	23	4.26	4.307	4.266	15.96	4.303
400.000	2.602	30	5	16.667	17	4.05	3.894	4.077	11.10	3.923
200.000	2.301	30	1	3.333	3	3.12	3.188	3.116	4.62	3.274

Regression equation: Y = -1.687 + 2.156X
Chi-squared is 0.408 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 3.101ppm
LC_{50} is 1262.913ppm
95% confidence limits are 648.058 to 2461.124ppm

Appendix Table DLIII: Larvicidal effect of *Ph. niruri* (wp/CH_3OH) extracts against *C. quinquefasciatus* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
800.000	2.903	30	14	46.667	47	4.92	4.825	4.942	18.81	4.847
600.000	2.778	30	9	30.000	30	4.48	4.542	4.460	17.43	4.550
400.000	2.602	30	5	16.667	17	4.05	4.143	4.056	14.13	4.133
200.000	2.301	30	2	6.667	7	3.52	3.461	3.540	7.14	3.418

Regression equation: Y = -2.041 + 2.373X
Chi-squared is 0.501 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.968ppm
LC_{50} is 928.145ppm
95% confidence limits are 614.832 to 1401.117ppm

Appendix Table DLIV: Larvicidal effect of *Ph. niruri* (wp/CH_3OH) extracts against *C. quinquefasciatus* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
800.000	2.903	30	20	66.667	67	5.44	5.318	5.422	18.48	5.297
600.000	2.778	30	14	46.667	47	4.92	5.051	4.925	19.11	5.034
400.000	2.602	30	11	36.667	37	4.67	4.675	4.659	18.03	4.665
200.000	2.301	30	5	16.667	17	4.05	4.032	4.037	13.17	4.032
100.000	2.000	30	1	3.333	3	3.12	3.389	3.148	6.24	3.400
50.000	1.699	30	1	3.333	3	3.12	2.746	3.379	2.28	2.768

Regression equation: Y = -0.800 + 2.100X
Chi-squared is 1.768 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.762ppm
LC_{50} is 577.739ppm
95% confidence limits are 437.340 to 763.209ppm

Appendix Table DLV: Larvicidal effect of *Ph. niruri* (wp/CH_3OH) extracts against *C. quinquefasciatus* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
800.000	2.903	30	28	93.333	93	6.48	6.125	6.408	12.15	6.037
600.000	2.778	30	24	80.000	80	5.85	5.853	5.800	15.09	5.771
400.000	2.602	30	16	53.333	53	5.08	5.470	5.051	18.03	5.398
200.000	2.301	30	12	40.000	40	4.75	4.815	4.760	18.81	4.759
100.000	2.000	30	5	16.667	17	4.05	4.161	4.056	14.13	4.119
50.000	1.699	30	3	10.000	10	3.72	3.506	3.750	8.07	3.480

Regression equation: Y = -0.127 + 2.123X
Chi-squared is 4.497 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.415ppm
LC_{50} is 259.864ppm
95% confidence limits are 206.685 to 326.728ppm

Appendix Table DLVI: Larvicidal effect of *Po. hydropiper* (wp/PetE) extracts against *C. quinquefasciatus* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	11	36.667	37	4.67	4.732	4.662	18.48	4.738
50.000	1.699	30	10	33.333	33	4.56	4.398	4.586	15.96	4.406
25.000	1.398	30	5	16.667	17	4.05	4.064	4.037	13.17	4.074
12.500	1.097	30	2	6.667	7	3.52	3.730	3.546	10.08	3.742
6.250	0.796	30	2	6.667	7	3.52	3.396	3.572	6.24	3.410

Regression equation: Y = 2.532 + 1.103X
Chi-squared is 1.193 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.237ppm
LC_{50} is 172.630ppm
95% confidence limits are 61.302 to 486.138ppm

Appendix Table DLVII: Larvicidal effect of *Po. hydropiper* (wp/PetE) extracts against *C. quinquefasciatus* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	17	56.667	57	5.18	5.184	5.165	19.02	5.189
50.000	1.699	30	13	43.333	43	4.82	4.742	4.818	18.48	4.742
25.000	1.398	30	7	23.333	23	4.26	4.300	4.266	15.96	4.296
12.500	1.097	30	3	10.000	10	3.72	3.858	3.720	11.10	3.850
6.250	0.796	30	2	6.667	7	3.52	3.416	3.540	7.14	3.404

Regression equation: Y = 2.224 + 1.482X
Chi-squared is 0.451 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.873ppm
LC_{50} is 74.608ppm
95% confidence limits are 46.201 to 120.481ppm

Appendix Table DLVIII: Larvicidal effect of *Po. hydropiper* (wp/PetE) extracts against *C. quinquefasciatus* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	19	63.333	63	5.33	5.306	5.318	18.48	5.338
50.000	1.699	30	15	50.000	50	5.00	4.856	5.020	18.81	4.871
25.000	1.398	30	7	23.333	23	4.26	4.406	4.270	16.74	4.405
12.500	1.097	30	3	10.000	10	3.72	3.956	3.740	12.15	3.939
6.250	0.796	30	3	10.000	10	3.72	3.506	3.750	8.07	3.472

Regression equation: Y = 2.239 + 1.549X
Chi-squared is 1.829 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.782ppm
LC_{50} is 60.534ppm
95% confidence limits are 40.12327 to 91.328ppm

Appendix Table DLIX: Larvicidal effect of *Po. hydropiper* (wp/PetE) extracts against *C. quinquefasciatus* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	24	80.000	80	5.85	5.646	5.820	16.74	5.633
50.000	1.699	30	16	53.333	53	5.08	5.147	5.065	19.02	5.126
25.000	1.398	30	8	26.667	27	4.39	4.648	4.389	18.03	4.619
12.500	1.097	30	5	16.667	17	4.05	4.149	4.056	14.13	4.112
6.250	0.796	30	4	13.333	13	3.87	3.650	3.931	9.06	3.605

Regression equation: Y = 2.265 + 1.684X
Chi-squared is 2.617 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.624ppm
LC_{50} is 42.100ppm
95% confidence limits are 30.382 to 58.337ppm

Appendix Table DLX: Larvicidal effect of *Po. hydropiper* (wp/PetE) extracts against *C. quinquefasciatus* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	28	93.333	93	6.48	6.300	6.424	10.08	6.222
50.000	1.699	30	22	73.333	73	5.61	5.701	5.606	15.96	5.641
25.000	1.398	30	15	50.000	50	5.00	5.102	4.990	19.02	5.061
12.500	1.097	30	7	23.333	23	4.26	4.503	4.264	17.43	4.480
6.250	0.796	30	6	20.000	20	4.16	3.904	4.200	12.15	3.900

Regression equation: Y = 2.366 + 1.928X
Chi-squared is 2.438 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.366ppm
LC_{50} is 23.246ppm
95% confidence limits are 17.728 to 30.483ppm

Appendix Table DLXI: Larvicidal effect of *Po. hydropiper* (wp/$CHCl_3$) extracts against *C. quinquefasciatus* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	7	23.333	23	4.26	4.330	4.266	15.96	4.319
100.000	2.000	30	6	20.000	20	4.16	4.108	4.170	14.13	4.107
50.000	1.699	30	4	13.333	13	3.87	3.886	3.873	11.10	3.895
25.000	1.398	30	3	10.000	10	3.72	3.664	3.730	9.06	3.682
12.500	1.097	30	2	6.667	7	3.52	3.442	3.540	7.14	3.470
6.250	0.796	30	1	3.333	3	3.12	3.220	3.121	5.40	3.258

Regression equation: Y = 2.697 + 0.705X
Chi-squared is 0.263 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 3.267ppm
LC_{50} is 1851.189ppm
95% confidence limits are 126.670 to 27053.9ppm

Appendix Table DLXII: Larvicidal effect of *Po. hydropiper* (wp/$CHCl_3$) extracts against *C. quinquefasciatus* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	13	43.333	43	4.82	4.931	4.815	19.02	4.912
100.000	2.000	30	12	40.000	40	4.75	4.585	4.740	17.43	4.577
50.000	1.699	30	7	23.333	23	4.26	4.238	4.252	15.09	4.241
25.000	1.398	30	3	10.000	10	3.72	3.892	3.720	11.10	3.906
12.500	1.097	30	3	10.000	10	3.72	3.545	3.750	8.07	3.571
6.250	0.796	30	1	3.333	3	3.12	3.199	3.116	4.62	3.236

Regression equation: Y = 2.349 + 1.114X
Chi-squared is 1.355 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.380ppm
LC_{50} is 240.028ppm
95% confidence limits are 109.256 to 527.321ppm

Appendix Table DLXIII: Larvicidal effect of *Po. hydropiper* (wp/$CHCl_3$) extracts against *C. quinquefasciatus* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	16	53.333	53	5.08	5.097	5.075	19.11	5.118
100.000	2.000	30	14	46.667	47	4.92	4.793	4.922	18.48	4.808
50.000	1.699	30	10	33.333	33	4.56	4.489	4.570	16.74	4.497
25.000	1.398	30	4	13.333	13	3.87	4.185	3.904	14.13	4.186
12.500	1.097	30	4	13.333	13	3.87	3.881	3.873	11.10	3.875
6.250	0.796	30	3	10.000	10	3.72	3.577	3.750	8.07	3.564

Regression equation: Y = 2.743 + 1.032X
Chi-squared is 1.769 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.186ppm
LC_{50} is 153.594ppm
95% confidence limits are 78.414 to 300.853ppm

Appendix Table DLXIV: Larvicidal effect of *Po. hydropiper* (wp/$CHCl_3$) extracts against *C. quinquefasciatus* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	21	70.000	70	5.52	5.384	5.500	18.48	5.387
100.000	2.000	30	16	53.333	53	5.08	5.079	5.075	19.11	5.077
50.000	1.699	30	12	40.000	40	4.75	4.773	4.740	18.48	4.766
25.000	1.398	30	6	20.000	20	4.16	4.467	4.180	16.74	4.456
12.500	1.097	30	6	20.000	20	4.16	4.161	4.170	14.13	4.145
6.250	0.796	30	5	16.667	17	4.05	3.856	4.077	11.10	3.835

Regression equation: Y = 3.014 + 1.031X
Chi-squared is 2.181 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.926ppm
LC_{50} is 84.288ppm
95% confidence limits are 50.332 to 141.150ppm

Appendix Table DLXV: Larvicidal effect of *Po. hydropiper* (wp/$CHCl_3$) extracts against *C. quinquefasciatus* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	26	86.667	87	6.13	5.938	6.136	14.13	5.919
100.000	2.000	30	21	70.000	70	5.52	5.520	5.500	17.43	5.497
50.000	1.699	30	14	46.667	47	4.92	5.102	4.915	19.02	5.076
25.000	1.398	30	9	30.000	30	4.48	4.684	4.470	18.03	4.654
12.500	1.097	30	7	23.333	23	4.26	4.267	4.252	15.09	4.232
6.250	0.796	30	5	16.667	17	4.05	3.849	4.077	11.10	3.810

Regression equation: Y = 2.695 + 1.401X
Chi-squared is 2.560 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.645ppm
LC_{50} is 44.154ppm
95% confidence limits are 31.636 to 61.625ppm

Appendix Table DLXVI: Larvicidal effect of *Po. hydropiper* (wp/CH_3OH) extracts against *C. quinquefasciatus* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	11	36.667	37	4.67	4.710	4.662	18.48	4.703
100.000	2.000	30	9	30.000	30	4.48	4.396	4.490	15.96	4.393
50.000	1.699	30	5	16.667	17	4.05	4.083	4.037	13.17	4.083
25.000	1.398	30	3	10.000	10	3.72	3.770	3.720	10.08	3.774
12.500	1.097	30	2	6.667	7	3.52	3.457	3.540	7.14	3.464
6.250	0.796	30	1	3.333	3	3.12	3.144	3.116	4.62	3.154

Regression equation: Y = 2.335 + 1.029X
Chi-squared is 0.286 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.589ppm
LC_{50} is 388.521ppm
95% confidence limits are 133.247 to 1132.844ppm

Appendix Table DLXVII: Larvicidal effect of *Po. hydropiper* (wp/CH_3OH) extracts against *C. quinquefasciatus* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	12	40.000	40	4.75	4.799	4.740	18.48	4.789
100.000	2.000	30	10	33.333	33	4.56	4.481	4.570	16.74	4.480
50.000	1.699	30	6	20.000	20	4.16	4.164	4.170	14.13	4.170
25.000	1.398	30	3	10.000	10	3.72	3.846	3.720	11.10	3.861
12.500	1.097	30	3	10.000	10	3.72	3.529	3.750	8.07	3.551
6.250	0.796	30	1	3.333	3	3.12	3.211	3.121	5.40	3.242

Regression equation: Y = 2.423 + 1.028X
Chi-squared is 0.799 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.506ppm
LC_{50} is 320.718ppm
95% confidence limits are 121.140 to 849.101ppm

Appendix Table DLXVIII: Larvicidal effect of *Po. hydropiper* (wp/CH_3OH) extracts against *C. quinquefasciatus* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	12	40.000	40	4.75	4.757	4.740	18.48	4.762
100.000	2.000	30	11	36.667	37	4.67	4.530	4.656	17.43	4.532
50.000	1.699	30	7	23.333	23	4.26	4.303	4.266	15.96	4.302
25.000	1.398	30	4	13.333	13	3.87	4.077	3.873	13.17	4.071
12.500	1.097	30	4	13.333	13	3.87	3.850	3.873	11.10	3.841
6.250	0.796	30	3	10.000	10	3.72	3.623	3.730	9.06	3.611

Regression equation: Y = 3.002 + 0.765X
Chi-squared is 0.956 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.612ppm
LC_{50} is 408.946ppm
95% confidence limits are 103.401 to 1617.363ppm

Appendix Table DLXIX: Larvicidal effect of *Po. hydropiper* (wp/CH_3OH) extracts against *C. quinquefasciatus* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	16	53.333	53	5.08	5.077	5.075	19.11	5.066
100.000	2.000	30	14	46.667	47	4.92	4.936	4.915	19.02	4.928
50.000	1.699	30	12	40.000	40	4.75	4.795	4.740	18.48	4.789
25.000	1.398	30	11	36.667	37	4.67	4.655	4.659	18.03	4.650
12.500	1.097	30	11	36.667	37	4.67	4.514	4.656	17.43	4.511
6.250	0.796	30	7	23.333	23	4.26	4.373	4.266	15.96	4.373

Regression equation: Y = 4.006 + 0.461X
Chi-squared is 0.596 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.157ppm
LC_{50} is 143.576ppm
95% confidence limits are 34.461 to 598.190ppm

Appendix Table DLXX: Larvicidal effect of *Po. hydropiper* (wp/CH_3OH) extracts against *C. quinquefasciatus* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	23	76.667	77	5.74	5.621	5.730	16.74	5.609
100.000	2.000	30	21	70.000	70	5.52	5.427	5.510	18.03	5.420
50.000	1.699	30	15	50.000	50	5.00	5.234	5.020	18.81	5.231
25.000	1.398	30	14	46.667	47	4.92	5.040	4.925	19.11	5.042
12.500	1.097	30	13	43.333	43	4.82	4.846	4.838	18.81	4.853
6.250	0.796	30	13	43.333	43	4.82	4.652	4.821	18.03	4.664

Regression equation: Y = 4.165 + 0.628X
Chi-squared is 1.939 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.331ppm
LC_{50} is 21.432ppm
95% confidence limits are 10.213 to 44.978ppm

Appendix Table DLXXI: Larvicidal effect of *Pz. zeylanica* (wp/PetE) extracts against *C. quinquefasciatus* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	3	10.000	10	3.72	3.753	3.720	10.08	3.748
100.000	2.000	30	2	6.667	7	3.52	3.453	3.540	7.14	3.462
50.000	1.699	30	1	3.333	3	3.12	3.153	3.116	4.62	3.176

Regression equation: Y = 1.564 + 0.949X
Chi-squared is 0.068 with 1 degrees of freedom
No significant heterogeneity
Log LC_{50} is 3.621ppm
LC_{50} is 4175.449ppm
95% confidence limits are 4.825 to 3613104 ppm

Appendix Table DLXXII: Larvicidal effect of *Pz. zeylanica* (wp/PetE) extracts against *C. quinquefasciatus* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	8	26.667	27	4.39	4.369	4.394	15.96	4.368
100.000	2.000	30	4	13.333	13	3.87	3.973	3.878	12.15	3.981
50.000	1.699	30	3	10.000	10	3.72	3.577	3.750	8.07	3.594
25.000	1.398	30	1	3.333	3	3.12	3.181	3.116	4.62	3.207

Regression equation: Y = 1.410 + 1.285X
Chi-squared is 0.3743358 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.793ppm
LC_{50} is 620.466ppm
95% confidence limits are 133.242 to 2889.315ppm

Appendix Table DLXXIII: Larvicidal effect of *Pz. zeylanica* (wp/PetE) extracts against *C. quinquefasciatus* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	12	40.000	40	4.75	4.844	4.760	18.81	4.820
100.000	2.000	30	8	26.667	27	4.39	4.303	4.394	15.96	4.315
50.000	1.699	30	4	13.333	13	3.87	3.762	3.894	10.08	3.809
25.000	1.398	30	1	3.333	3	3.12	3.221	3.121	5.40	3.304

Regression equation: Y = 0.958 + 1.678X
Chi-squared is 0.4213114 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.408ppm
LC_{50} is 256.030ppm
95% confidence limits are 133.495 to 491.042ppm

Appendix Table DLXXIV: Larvicidal effect of *Pz. zeylanica* (wp/PetE) extracts against *C. quinquefasciatus* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	21	70.000	70	5.52	5.573	5.500	17.43	5.562
100.000	2.000	30	18	60.000	60	5.25	5.155	5.240	19.02	5.148
50.000	1.699	30	12	40.000	40	4.75	4.737	4.740	18.48	4.733
25.000	1.398	30	7	23.333	23	4.26	4.319	4.266	15.96	4.319
12.500	1.097	30	4	13.333	13	3.87	3.901	3.878	12.15	3.904
6.250	0.796	30	2	6.667	7	3.52	3.483	3.540	7.14	3.490

Regression equation: Y = 2.394 + 1.377X
Chi-squared is 0.301 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.893ppm
LC_{50} is 78.121ppm
95% confidence limits are 53.341 to 114.414ppm

Appendix Table DLXXV: Larvicidal effect of *Pz. zeylanica* (wp/PetE) extracts against *C. quinquefasciatus* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	25	83.333	83	5.95	5.914	5.984	14.13	5.922
50.000	1.699	30	20	66.667	67	5.44	5.468	5.429	18.03	5.471
25.000	1.398	30	15	50.000	50	5.00	5.022	5.000	19.11	5.020
12.500	1.097	30	10	33.333	33	4.56	4.576	4.544	17.43	4.570
6.250	0.796	30	6	20.000	20	4.16	4.130	4.170	14.13	4.119

Regression equation: Y = 2.927 + 1.497X
Chi-squared is 0.143 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.384ppm
LC_{50} is 24.226ppm
95% confidence limits are 17.392 to 33.746ppm

Appendix Table DLXXVI: Larvicidal effect of *Pz. zeylanica* (wp/$CHCl_3$) extracts against *C. quinquefasciatus* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	10	33.333	33	4.56	4.429	4.570	16.74	4.445
200.000	2.301	30	5	16.667	17	4.05	4.239	4.048	15.09	4.250
100.000	2.000	30	6	20.000	20	4.16	4.050	4.160	13.17	4.054
50.000	1.699	30	3	10.000	10	3.72	3.860	3.720	11.10	3.859
25.000	1.398	30	3	10.000	10	3.72	3.671	3.730	9.06	3.664
12.500	1.097	30	2	6.667	7	3.52	3.481	3.540	7.14	3.469

Regression equation: Y = 2.758 + 0.648X
Chi-squared is 1.313 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 3.459ppm
LC_{50} is 2878.285ppm
95% confidence limits are 219.310 to 37775.37ppm

Appendix Table DLXXVII: Larvicidal effect of *Pz. zeylanica* (wp/$CHCl_3$) extracts against *C. quinquefasciatus* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	18	60.000	60	5.25	5.078	5.250	19.11	5.093
200.000	2.301	30	11	36.667	37	4.67	4.784	4.662	18.48	4.791
100.000	2.000	30	8	26.667	27	4.39	4.490	4.390	16.74	4.489
50.000	1.699	30	6	20.000	20	4.16	4.196	4.170	14.13	4.187
25.000	1.398	30	4	13.333	13	3.87	3.903	3.878	12.15	3.884
12.500	1.097	30	3	10.000	10	3.72	3.609	3.730	9.06	3.582

Regression equation: Y = 2.481 + 1.004X
Chi-squared is 1.143 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.510ppm
LC_{50} is 323.224ppm
95% confidence limits are 159.599 to 654.602ppm

Appendix Table DLXXVIII: Larvicidal effect of *Pz. zeylanica* (wp/$CHCl_3$) extracts against *C. quinquefasciatus* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	23	76.667	77	5.74	5.610	5.730	16.74	5.618
200.000	2.301	30	17	56.667	57	5.18	5.244	5.202	18.81	5.247
100.000	2.000	30	13	43.333	43	4.82	4.877	4.838	18.81	4.875
50.000	1.699	30	8	26.667	27	4.39	4.510	4.376	17.43	4.503
25.000	1.398	30	6	20.000	20	4.16	4.143	4.170	14.13	4.132
12.500	1.097	30	4	13.333	13	3.87	3.776	3.894	10.08	3.760

Regression equation: Y = 2.406 + 1.234X
Chi-squared is 0.756 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.101ppm
LC_{50} is 126.241ppm
95% confidence limits are 84.859 to 187.804ppm

Appendix Table DLXXIX: Larvicidal effect of *Pz. zeylanica* (wp/$CHCl_3$) extracts against *C. quinquefasciatus* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	26	86.667	87	6.13	5.875	6.038	15.09	5.818
200.000	2.301	30	20	66.667	67	5.44	5.464	5.429	18.03	5.414
100.000	2.000	30	13	43.333	43	4.82	5.054	4.825	19.11	5.010
50.000	1.699	30	8	26.667	27	4.39	4.643	4.389	18.03	4.606
25.000	1.398	30	7	23.333	23	4.26	4.232	4.252	15.09	4.202
12.500	1.097	30	5	16.667	17	4.05	3.822	4.077	11.10	3.798

Regression equation: Y = 2.325 + 1.342X
Chi-squared is 3.139 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.993ppm
LC_{50} is 98.301ppm
95% confidence limits are 69.327 to 139.382ppm

Appendix Table DLXXX: Larvicidal effect of *Pz. zeylanica* (wp/$CHCl_3$) extracts against *C. quinquefasciatus* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	27	90.000	90	6.28	6.058	6.210	13.17	5.997
200.000	2.301	30	22	73.333	73	5.61	5.636	5.610	16.74	5.589
100.000	2.000	30	14	46.667	47	4.92	5.213	4.942	18.81	5.180
50.000	1.699	30	11	36.667	37	4.67	4.790	4.662	18.48	4.771
25.000	1.398	30	9	30.000	30	4.48	4.368	4.490	15.96	4.363
12.500	1.097	30	5	16.667	17	4.05	3.945	4.062	12.15	3.954

Regression equation: Y = 2.465 + 1.357X
Chi-squared is 2.291 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.867ppm
LC_{50} is 73.680ppm
95% confidence limits are 52.412 to 103.580ppm

Appendix Table DLXXXI: Larvicidal effect of *S. nodiflora* (wp/PetE) extracts against *C. quinquefasciatus* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	10	33.333	33	4.56	4.453	4.570	16.74	4.518
100.000	2.000	30	2	6.667	7	3.52	3.733	3.546	10.08	3.717
50.000	1.699	30	1	3.333	3	3.12	3.013	3.135	3.93	2.916

Regression equation: Y = -1.608 + 2.662X
Chi-squared is 0.529 with 1 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.482ppm
LC_{50} is 303.296ppm
95% confidence limits are 166.973 to 550.917ppm

Appendix Table DXXXII: Larvicidal effect of *S. nodiflora* (wp/PetE) extracts against *C. quinquefasciatus* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	19	63.333	63	5.33	5.275	5.358	18.81	5.314
100.000	2.000	30	7	23.333	23	4.26	4.370	4.266	15.96	4.369
50.000	1.699	30	2	6.667	7	3.52	3.465	3.540	7.14	3.425

Regression equation: Y = -1.908 + 3.139X
Chi-squared is 0.302 with 1 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.201ppm
LC_{50} is 158.823ppm
95% confidence limits are 123.539 to 204.183ppm

Appendix Table DXXXIII: Larvicidal effect of *S. nodiflora* (wp/PetE) extracts against *C. quinquefasciatus* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	23	76.667	77	5.74	5.425	5.699	18.03	5.408
100.000	2.000	30	11	36.667	37	4.67	4.845	4.682	18.81	4.835
50.000	1.699	30	5	16.667	17	4.05	4.264	4.048	15.09	4.263
25.000	1.398	30	1	3.333	3	3.12	3.684	3.261	9.06	3.691
12.500	1.097	30	2	6.667	7	3.52	3.104	3.724	4.62	3.118
6.250	0.796	30	1	3.333	3	3.12	2.523	3.860	1.50	2.546

Regression equation: Y = 1.033 + 1.901X
Chi-squared is 8.627 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.087ppm
LC_{50} is 122.058ppm
95% confidence limits are 86.875 to 171.491ppm

Appendix Table DXXXIV: Larvicidal effect of *S. nodiflora* (wp/PetE) extracts against *C. quinquefasciatus* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	16	53.333	53	5.08	4.892	5.098	18.81	4.922
50.000	1.699	30	8	26.667	27	4.39	4.568	4.376	17.43	4.578
25.000	1.398	30	6	20.000	20	4.16	4.244	4.150	15.09	4.234
12.500	1.097	30	4	13.333	13	3.87	3.920	3.878	12.15	3.891
6.250	0.796	30	3	10.000	10	3.72	3.596	3.750	8.07	3.547

Regression equation: Y = 2.639 + 1.141X
Chi-squared is 1.738 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.069ppm
LC_{50} is 117.128ppm
95% confidence limits are 52.580 to 260.918ppm

Appendix Table DLXXXV: Larvicidal effect of *S. nodiflora* (wp/PetE) extracts against *C. quinquefasciatus* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
100.000	2.000	30	21	70.000	70	5.52	5.246	5.540	18.81	5.261
50.000	1.699	30	12	40.000	40	4.75	4.993	4.740	19.02	4.997
25.000	1.398	30	10	33.333	33	4.56	4.740	4.558	18.48	4.734
12.500	1.097	30	9	30.000	30	4.48	4.487	4.480	16.74	4.471
6.250	0.796	30	8	26.667	27	4.39	4.234	4.388	15.09	4.207

Regression equation: Y = 3.511 + 0.875X
Chi-squared is 3.793 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.702ppm
LC_{50} is 50.361ppm
95% confidence limits are 26.170 to 96.914ppm

Appendix Table DLXXXVI: Larvicidal effect of *S. nodiflora* (wp/$CHCl_3$) extracts against *C. quinquefasciatus* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	6	20.000	20	4.16	4.048	4.160	13.17	4.078
200.000	2.301	30	2	6.667	7	3.52	3.736	3.546	10.08	3.749
100.000	2.000	30	2	6.667	7	3.52	3.424	3.540	7.14	3.420
50.000	1.699	30	1	3.333	3	3.12	3.112	3.116	4.62	3.092

Regression equation: Y = 1.236 + 1.092X
Chi-squared is 0.610 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 3.446ppm
LC_{50} is 2793.540ppm
95% confidence limits are 190.263 to 41016.220ppm

Appendix Table DCXXXVII: Larvicidal effect of *S. nodiflora*(wp/$CHCl_3$) extracts against *C. quinquefasciatus* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	14	46.667	47	4.92	4.858	4.942	18.81	4.918
200.000	2.301	30	8	26.667	27	4.39	4.371	4.394	15.96	4.400
100.000	2.000	30	4	13.333	13	3.87	3.884	3.873	11.10	3.882
50.000	1.699	30	1	3.333	3	3.12	3.397	3.148	6.24	3.363
25.000	1.398	30	1	3.333	3	3.12	2.910	3.172	3.30	2.845

Regression equation: Y = 0.439 + 1.721X
Chi-squared is 0.655 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.650ppm
LC_{50} is 446.388ppm
95% confidence limits are 258.934 to 769.548ppm

Appendix Table DLXXXVIII: Larvicidal effect of *S. nodiflora* (wp/$CHCl_3$) extracts against *C. quinquefasciatus* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	21	70.000	70	5.52	5.558	5.500	17.43	5.561
200.000	2.301	30	17	56.667	57	5.18	5.027	5.175	19.11	5.026
100.000	2.000	30	8	26.667	27	4.39	4.496	4.390	16.74	4.491
50.000	1.699	30	4	13.333	13	3.87	3.965	3.878	12.15	3.956
25.000	1.398	30	2	6.667	7	3.52	3.434	3.540	7.14	3.422

Regression equation: Y = 0.938 + 1.776X
Chi-squared is 0.835 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.286ppm
LC_{50} is 193.416ppm
95% confidence limits are 139.520 to 268.130ppm

Appendix Table DLXXXIX: Larvicidal effect of *S. nodiflora* (wp/$CHCl_3$) extracts against *C. quinquefasciatus* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	26	86.667	87	6.13	5.934	6.136	14.13	5.922
200.000	2.301	30	19	63.333	63	5.33	5.411	5.321	18.03	5.394
100.000	2.000	30	11	36.667	37	4.67	4.888	4.682	18.81	4.867
50.000	1.699	30	7	23.333	23	4.26	4.365	4.266	15.96	4.339
25.000	1.398	30	5	16.667	17	4.05	3.842	4.077	11.10	3.812

Regression equation: Y = 1.362 + 1.753X
Chi-squared is 2.254 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.076ppm
LC_{50} is 119.114ppm
95% confidence limits are 88.830 to 159.723ppm

Appendix Table DXC: Larvicidal effect of *S. nodiflora* (wp/$CHCl_3$) extracts against *C. quinquefasciatus* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	27	90.000	90	6.28	6.108	6.270	12.15	6.060
200.000	2.301	30	21	70.000	70	5.52	5.571	5.500	17.43	5.533
100.000	2.000	30	13	43.333	43	4.82	5.034	4.825	19.11	5.007
50.000	1.699	30	8	26.667	27	4.39	4.497	4.390	16.74	4.480
25.000	1.398	30	6	20.000	20	4.16	3.960	4.200	12.15	3.953

Regression equation: Y = 1.506 + 1.750X
Chi-squared is 2.061 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.996ppm
LC_{50} is 99.141ppm
95% confidence limits are 73.979 to 132.860ppm

Appendix Table DXCI: Larvicidal effect of *S. nodiflora* (wp/CH_3OH) extracts against *C. quinquefasciatus* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	8	26.667	27	4.39	4.448	4.390	16.74	4.424
200.000	2.301	30	6	20.000	20	4.16	4.150	4.170	14.13	4.147
100.000	2.000	30	4	13.333	13	3.87	3.852	3.873	11.10	3.870
50.000	1.699	30	3	10.000	10	3.72	3.554	3.750	8.07	3.593
25.000	1.398	30	1	3.333	3	3.12	3.256	3.121	5.40	3.315

Regression equation: Y = 2.028 + 0.921X
Chi-squared is 0.431 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 3.227ppm
LC_{50} is 1686.443ppm
95% confidence limits are 252.683 to 11255.57ppm

Appendix Table DXCII: Larvicidal effect of *S. nodiflora* (wp/CH_3OH) extracts against *C. quinquefasciatus* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	15	50.000	50	5.00	4.970	4.990	19.02	4.950
200.000	2.301	30	10	33.333	33	4.56	4.610	4.551	18.03	4.598
100.000	2.000	30	6	20.000	20	4.16	4.249	4.150	15.09	4.246
50.000	1.699	30	5	16.667	17	4.05	3.888	4.077	11.10	3.893
25.000	1.398	30	2	6.667	7	3.52	3.527	3.519	8.07	3.541
12.500	1.097	30	1	3.333	3	3.12	3.166	3.116	4.62	3.189

Regression equation: Y = 1.905 + 1.170X
Chi-squared is 0.611 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.645ppm
LC_{50} is 441.278ppm
95% confidence limits are 215.263 to 904.595ppm

Appendix Table DXCIII: Larvicidal effect of *S. nodiflora* (wp/CH_3OH) extracts against *C. quinquefasciatus* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	20	66.667	67	5.44	5.474	5.429	18.03	5.441
200.000	2.301	30	15	50.000	50	5.00	5.025	5.000	19.11	5.011
100.000	2.000	30	10	33.333	33	4.56	4.575	4.544	17.43	4.581
50.000	1.699	30	7	23.333	23	4.26	4.125	4.284	14.13	4.150
25.000	1.398	30	3	10.000	10	3.72	3.675	3.730	9.06	3.720
12.500	1.097	30	1	3.333	3	3.12	3.226	3.121	5.40	3.290

Regression equation: Y = 1.721 + 1.430X
Chi-squared is 0.436 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.293ppm
LC_{50} is 196.477ppm
95% confidence limits are 131.411 to 293.762ppm

Appendix Table DXCIV: Larvicidal effect of *S. nodiflora* (wp/CH_3OH) extracts against *C. quinquefasciatus* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	22	73.333	73	5.61	5.609	5.610	16.74	5.618
200.000	2.301	30	18	60.000	60	5.25	5.167	5.240	19.02	5.168
100.000	2.000	30	11	36.667	37	4.67	4.726	4.662	18.48	4.719
50.000	1.699	30	7	23.333	23	4.26	4.284	4.252	15.09	4.270
25.000	1.398	30	3	10.000	10	3.72	3.843	3.720	11.10	3.821
12.500	1.097	30	2	6.667	7	3.52	3.401	3.540	7.14	3.371

Regression equation: Y = 1.734 + 1.492X
Chi-squared is 0.479 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.188ppm
LC_{50} is 154.247ppm
95% confidence limits are 108.216 to 219.856ppm

Appendix Table DXCV: Larvicidal effect of *S. nodiflora* (wp/CH_3OH) extracts against *C. quinquefasciatus* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	26	86.667	87	6.13	5.908	6.136	14.13	5.910
200.000	2.301	30	20	66.667	67	5.44	5.418	5.429	18.03	5.405
100.000	2.000	30	11	36.667	37	4.67	4.927	4.665	19.02	4.900
50.000	1.699	30	7	23.333	23	4.26	4.436	4.270	16.74	4.394
25.000	1.398	30	4	13.333	13	3.87	3.946	3.878	12.15	3.889
12.500	1.097	30	3	10.000	10	3.72	3.455	3.810	7.14	3.383

Regression equation: Y = 1.541 + 1.679X
Chi-squared is 3.335 with 4 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.060ppm
LC_{50} is 114.765ppm
95% confidence limits are 85.286 to 154.434ppm

Appendix Table DXCVI: Larvicidal effect of *Z. zerumbet* (ap/PetE) extracts against *C. quinquefasciatus* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	16	53.333	53	5.08	4.990	5.065	19.02	4.988
200.000	2.301	30	8	26.667	27	4.39	4.511	4.376	17.43	4.500
100.000	2.000	30	5	16.667	17	4.05	4.032	4.037	13.17	4.011
50.000	1.699	30	2	6.667	7	3.52	3.553	3.519	8.07	3.523
25.000	1.398	30	1	3.333	3	3.12	3.074	3.135	3.93	3.034

Regression equation: Y = 0.766 + 1.623X
Chi-squared is 0.428 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.609ppm
LC_{50} is 406.664ppm
95% confidence limits are 238.150 to 694.419ppm

Appendix Table DXCVII: Larvicidal effect of *Z. zerumbet* (ap/PetE) extracts against *C. quinquefasciatus* after12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	23	76.667	77	5.74	5.580	5.696	17.43	5.554
200.000	2.301	30	16	53.333	53	5.08	5.124	5.065	19.02	5.097
100.000	2.000	30	8	26.667	27	4.39	4.668	4.389	18.03	4.641
50.000	1.699	30	7	23.333	23	4.26	4.212	4.252	15.09	4.185
25.000	1.398	30	4	13.333	13	3.87	3.756	3.894	10.08	3.729

Regression equation: Y = 1.610 + 1.516X
Chi-squared is 1.863 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.237ppm
LC_{50} is 172.488ppm
95% confidence limits are 120.160 to 247.606ppm

Appendix Table DXCVIII: Larvicidal effect of *Z. zerumbet* (ap/PetE) extracts against *C. quinquefasciatus* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	29	96.667	97	6.88	6.235	6.587	11.10	6.215
200.000	2.301	30	21	70.000	70	5.52	5.678	5.520	16.74	5.662
100.000	2.000	30	13	43.333	43	4.82	5.122	4.815	19.02	5.109
50.000	1.699	30	11	36.667	37	4.67	4.566	4.656	17.43	4.556
25.000	1.398	30	6	20.000	20	4.16	4.009	4.160	13.17	4.003

Regression equation: Y = 1.435 + 1.837X
Chi-squared is 4.016 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.941ppm
LC_{50} is 87.267ppm
95% confidence limits are 65.915 to 115.536ppm

Appendix Table DXCIX: Larvicidal effect of *Z. zerumbet* (ap/PetE) extracts against *C. quinquefasciatus* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	23	76.667	77	5.74	5.718	5.734	15.96	5.715
100.000	2.000	30	16	53.333	53	5.08	5.236	5.098	18.81	5.239
50.000	1.699	30	15	50.000	50	5.00	4.754	5.000	18.48	4.762
25.000	1.398	30	6	20.000	20	4.16	4.272	4.150	15.09	4.286

Regression equation: Y = 2.073 + 1.583X
Chi-squared is 1.701 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.849ppm
LC_{50} is 70.661ppm
95% confidence limits are 50.046 to 99.768ppm

Appendix Table DC: Larvicidal effect of *Z. zerumbet* (ap/PetE) extracts against *C. quinquefasciatus* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
200.000	2.301	30	27	90.000	90	6.28	6.272	6.230	11.10	6.233
100.000	2.000	30	21	70.000	70	5.52	5.584	5.500	17.43	5.564
50.000	1.699	30	15	50.000	50	5.00	4.896	5.020	18.81	4.896
25.000	1.398	30	6	20.000	20	4.16	4.208	4.150	15.09	4.228

Regression equation: Y = 1.125 + 2.220X
Chi-squared is 0.453 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.746ppm
LC_{50} is 55.681ppm
95% confidence limits are 42.761 to 72.504ppm

Appendix Table DCI: Larvicidal effect of *Z. zerumbet* (ap/$CHCl_3$) extracts against *C. quinquefasciatus* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
800.000	2.903	30	10	33.333	33	4.56	4.540	4.544	17.43	4.533
400.000	2.602	30	5	16.667	17	4.05	4.055	4.037	13.17	4.046
200.000	2.301	30	2	6.667	7	3.52	3.570	3.519	8.07	3.558
100.000	2.000	30	1	3.333	3	3.12	3.085	3.135	3.93	3.071

Regression equation: Y = -0.168 + 1.619X
Chi-squared is 0.032 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 3.191ppm
LC_{50} is 1553.064ppm
95% confidence limits are 608.079 to 3966.607ppm

Appendix Table DCII: Larvicidal effect of *Z. zerumbet* (ap/$CHCl_3$) extracts against *C. quinquefasciatus* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
800.000	2.903	30	18	60.000	60	5.25	5.202	5.280	18.81	5.227
400.000	2.602	30	12	40.000	40	4.75	4.826	4.760	18.81	4.840
200.000	2.301	30	9	30.000	30	4.48	4.450	4.480	16.74	4.453
100.000	2.000	30	5	16.667	17	4.05	4.074	4.037	13.17	4.067
50.000	1.699	30	3	10.000	10	3.72	3.698	3.730	9.06	3.680

Regression equation: Y = 1.499 + 1.284X
Chi-squared is 0.220 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.727ppm
LC_{50} is 532.872ppm
95% confidence limits are 317.245 to 895.057ppm

Appendix Table DCIII: Larvicidal effect of *Z. zerumbet* (ap/$CHCl_3$) extracts against *C. quinquefasciatus* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
800.000	2.903	30	19	63.333	63	5.33	5.336	5.318	18.48	5.318
400.000	2.602	30	15	50.000	50	5.00	4.983	4.990	19.02	4.972
200.000	2.301	30	10	33.333	33	4.56	4.630	4.551	18.03	4.625
100.000	2.000	30	8	26.667	27	4.39	4.277	4.388	15.09	4.279
50.000	1.699	30	4	13.333	13	3.87	3.924	3.878	12.15	3.932

Regression equation: Y = 1.976 + 1.151X
Chi-squared is 0.321 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.627ppm
LC_{50} is 423.255ppm
95% confidence limits are 253.320 to 707.189ppm

Appendix Table DCIV: Larvicidal effect of *Z. zerumbet* (ap/$CHCl_3$) extracts against *C. quinquefasciatus* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
800.000	2.903	30	22	73.333	73	5.61	5.606	5.610	16.74	5.626
400.000	2.602	30	18	60.000	60	5.25	5.208	5.280	18.81	5.220
200.000	2.301	30	12	40.000	40	4.75	4.810	4.760	18.81	4.814
100.000	2.000	30	8	26.667	27	4.39	4.412	4.390	16.74	4.408
50.000	1.699	30	5	16.667	17	4.05	4.014	4.037	13.17	4.002

Regression equation: Y = 1.712 + 1.348X
Chi-squared is 0.149 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.439ppm
LC_{50} is 274.740ppm
95% confidence limits are 188.522 to 400.389ppm

Appendix Table DCV: Larvicidal effect of *Z. zerumbet* (ap/$CHCl_3$) extracts against *C. quinquefasciatus* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
800.000	2.903	30	29	96.667	97	6.88	6.297	6.587	11.10	6.281
400.000	2.602	30	22	73.333	73	5.61	5.736	5.606	15.96	5.725
200.000	2.301	30	15	50.000	50	5.00	5.176	4.990	19.02	5.168
100.000	2.000	30	10	33.333	33	4.56	4.616	4.551	18.03	4.612
50.000	1.699	30	7	23.333	23	4.26	4.055	4.283	13.17	4.056

Regression equation: Y = 0.915 + 1.848X
Chi-squared is 2.616 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.210ppm
LC_{50} is 162.143ppm
95% confidence limits are 122.329 to 214.917ppm

Appendix Table DCVI: Larvicidal effect of *Z. zerumbet* (rh/PetE) extracts against *C. quinquefasciatus* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
50.000	1.699	30	14	46.667	47	4.92	5.045	4.925	19.11	5.042
25.000	1.398	30	11	36.667	37	4.67	4.637	4.659	18.03	4.629
12.500	1.097	30	9	30.000	30	4.48	4.230	4.490	15.09	4.216
6.250	0.796	30	3	10.000	10	3.72	3.822	3.720	11.10	3.803
3.125	0.495	30	1	3.333	3	3.12	3.415	3.180	7.14	3.391

Regression equation: Y = 2.712 + 1.371X
Chi-squared is 1.802 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.668ppm
LC_{50} is 46.592ppm
95% confidence limits are 25.893 to 83.837ppm

Appendix Table DCVII: Larvicidal effect of *Z. zerumbet* (rh/PetE) extracts against *C. quinquefasciatus* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
50.000	1.699	30	25	83.333	83	5.95	5.766	5.926	15.96	5.738
25.000	1.398	30	17	56.667	57	5.18	5.307	5.162	18.48	5.284
12.500	1.097	30	11	36.667	37	4.67	4.848	4.682	18.81	4.829
6.250	0.796	30	8	26.667	27	4.39	4.389	4.394	15.96	4.375
3.125	0.495	30	5	16.667	17	4.05	3.930	4.062	12.15	3.920

Regression equation: Y = 3.173 + 1.510X
Chi-squared is 1.495 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.210ppm
LC_{50} is 16.216ppm
95% confidence limits are 11.574 to 22.720ppm

Appendix Table DCVIII: Larvicidal effect of *Z. zerumbet* (rh/PetE) extracts against *C. quinquefasciatus* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
50.000	1.699	30	28	93.333	93	6.48	6.133	6.408	12.15	6.157
25.000	1.398	30	21	70.000	70	5.52	5.627	5.520	16.74	5.644
12.500	1.097	30	14	46.667	47	4.92	5.120	4.915	19.02	5.131
6.250	0.796	30	12	40.000	40	4.75	4.613	4.740	18.03	4.618
3.125	0.495	30	6	20.000	20	4.16	4.107	4.170	14.13	4.105

Regression equation: Y = 3.262 + 1.704X
Chi-squared is 2.238 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 1.020ppm
LC_{50} is 10.475ppm
95% confidence limits are 7.767 to 14.126ppm

Appendix Table DCIX: Larvicidal effect of *Z. zerumbet* (rh/PetE) extracts against *C. quinquefasciatus* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
25.000	1.398	30	23	76.667	77	5.74	5.798	5.734	15.96	5.792
12.500	1.097	30	19	63.333	63	5.33	5.321	5.318	18.48	5.325
6.250	0.796	30	15	50.000	50	5.00	4.844	5.020	18.81	4.858
3.125	0.495	30	7	23.333	23	4.26	4.367	4.266	15.96	4.391

Regression equation: Y = 3.623 + 1.552X
Chi-squared is 0.798 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} IS 0.887ppm
LC_{50} is 7.717ppm
95% confidence limits are 5.411 to 11.007ppm

Appendix Table DCX: Larvicidal effect of *Z. zerumbet* (rh/PetE) extracts against *C. quinquefasciatus* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
25.000	1.398	30	25	83.333	83	5.95	5.986	5.984	14.13	6.009
12.500	1.097	30	21	70.000	70	5.52	5.542	5.500	17.43	5.553
6.250	0.796	30	18	60.000	60	5.25	5.098	5.250	19.11	5.097
3.125	0.495	30	10	33.333	33	4.56	4.654	4.551	18.03	4.642

Regression equation: Y = 3.892 + 1.514X
Chi-squared is 0.651 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 0.732ppm
LC_{50} is 5.389ppm
95% confidence limits are 3.564 to 8.150ppm

Appendix Table DCXI: Larvicidal effect of *Z. zerumbet* (rh/$CHCl_3$) extracts against *C. quinquefasciatus* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
800.000	2.903	30	14	46.667	47	4.92	4.999	4.915	19.02	4.970
400.000	2.602	30	9	30.000	30	4.48	4.398	4.490	15.96	4.407
200.000	2.301	30	4	13.333	13	3.87	3.797	3.894	10.08	3.845
100.000	2.000	30	1	3.333	3	3.12	3.196	3.116	4.62	3.282

Regression equation: Y = -0.454 + 1.868X
Chi-squared is 0.318 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.919ppm
LC_{50} is 830.202ppm
95% confidence limits are 500.995 to 1375.732ppm

Appendix Table DCXII: Larvicidal effect of *Z. zerumbet* (rh/$CHCl_3$) extracts against *C. quinquefasciatus* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
800.000	2.903	30	17	56.667	57	5.18	5.200	5.202	18.81	5.204
400.000	2.602	30	12	40.000	40	4.75	4.780	4.740	18.48	4.788
200.000	2.301	30	9	30.000	30	4.48	4.360	4.490	15.96	4.372
100.000	2.000	30	4	13.333	13	3.87	3.940	3.878	12.15	3.957

Regression equation: Y = 1.195 + 1.381X
Chi-squared is 0.339 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.755ppm
LC_{50} is 569.500ppm
95% confidence limits are 341.515 to 949.682ppm

Appendix Table DCXIII: Larvicidal effect of *Z. zerumbet* (rh/$CHCl_3$) extracts against *C. quinquefasciatus* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
800.000	2.903	30	18	60.000	60	5.25	5.350	5.240	18.48	5.324
400.000	2.602	30	16	53.333	53	5.08	4.975	5.065	19.02	4.962
200.000	2.301	30	10	33.333	33	4.56	4.600	4.544	17.43	4.599
100.000	2.000	30	8	26.667	27	4.39	4.225	4.388	15.09	4.237
50.000	1.699	30	3	10.000	10	3.72	3.850	3.720	11.10	3.875

Regression equation: Y = 1.829 + 1.204X
Chi-squared is 0.997 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.634ppm
LC_{50} is 430.237ppm
95% confidence limits are 262.051 to 706.368ppm

Appendix Table DCXIV: Larvicidal effect of *Z. zerumbet* (rh/$CHCl_3$) extracts against *C. quinquefasciatus* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
800.000	2.903	30	24	80.000	80	5.85	5.872	5.800	15.09	5.842
400.000	2.602	30	21	70.000	70	5.52	5.416	5.510	18.03	5.392
200.000	2.301	30	13	43.333	43	4.82	4.960	4.815	19.02	4.941
100.000	2.000	30	10	33.333	33	4.56	4.504	4.544	17.43	4.490
50.000	1.699	30	5	16.667	17	4.05	4.048	4.037	13.17	4.040

Regression equation: Y = 1.497 + 1.497X
Chi-squared is 0.632 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.340ppm
LC_{50} is 218.993ppm
95% confidence limits are 157.124 to 305.225ppm

Appendix Table DCXV: Larvicidal effect of *Z. zerumbet* (rh/$CHCl_3$) extracts against *C. quinquefasciatus* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	24	80.000	80	5.85	5.658	5.820	16.74	5.622
200.000	2.301	30	13	43.333	43	4.82	5.136	4.815	19.02	5.108
100.000	2.000	30	11	36.667	37	4.67	4.614	4.659	18.03	4.593
50.000	1.699	30	6	20.000	20	4.16	4.092	4.160	13.17	4.079

Regression equation: Y = 1.177 + 1.708X
Chi-squared is 2.449 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.238ppm
LC_{50} is 172.985ppm
95% confidence limits are 124.531 to 240.292ppm

Appendix Table DCXVI: Larvicidal effect of *Z. zerumbet* (rh/CH_3OH) extracts against *C. quinquefasciatus* after 6h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
800.000	2.903	30	12	40.000	40	4.75	4.889	4.760	18.81	4.905
400.000	2.602	30	11	36.667	37	4.67	4.513	4.656	17.43	4.521
200.000	2.301	30	7	23.333	23	4.26	4.138	4.284	14.13	4.137
100.000	2.000	30	3	10.000	10	3.72	3.762	3.720	10.08	3.753
50.000	1.699	30	1	3.333	3	3.12	3.387	3.148	6.24	3.369

Regression equation: Y = 1.202 + 1.275X
Chi-squared is 1.334 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} IS 2.978ppm
LC_{50} is 949.989ppm
95% confidence limits are 457.238 to 1973.761ppm

Appendix Table DCXVII: Larvicidal effect of *Z. zerumbet* (rh/CH_3OH) extracts against *C. quinquefasciatus* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
800.000	2.903	30	19	63.333	63	5.33	5.389	5.318	18.48	5.391
400.000	2.602	30	14	46.667	47	4.92	4.929	4.915	19.02	4.925
200.000	2.301	30	10	33.333	33	4.56	4.469	4.570	16.74	4.459
100.000	2.000	30	6	20.000	20	4.16	4.010	4.160	13.17	3.992
50.000	1.699	30	1	3.333	3	3.12	3.550	3.211	8.07	3.526

Regression equation: Y = 0.895 + 1.549X
Chi-squared is 1.480 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.651ppm
LC_{50} is 447.359ppm
95% confidence limits are 301.568 to 663.632ppm

Appendix Table DCXVIII: Larvicidal effect of *Z. zerumbet* (rh/CH_3OH) extracts against *C. quinquefasciatus* after 18h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
800.000	2.903	30	25	83.333	83	5.95	5.832	5.902	15.09	5.779
400.000	2.602	30	17	56.667	57	5.18	5.307	5.162	18.48	5.269
200.000	2.301	30	11	36.667	37	4.67	4.782	4.662	18.48	4.759
100.000	2.000	30	8	26.667	27	4.39	4.257	4.388	15.09	4.249
50.000	1.699	30	3	10.000	10	3.72	3.732	3.720	10.08	3.739

Regression equation: Y = 0.859 + 1.695X
Chi-squared is 0.909 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.443ppm
LC_{50} is 277.516ppm
95% confidence limits are 203.366 to 378.701ppm

Appendix Table DCXIX: Larvicidal effect of *Z. zerumbet* (rh/CH_3OH) extracts against *C. quinquefasciatus* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
800.000	2.903	30	29	96.667	97	6.88	6.351	6.656	10.08	6.361
400.000	2.602	30	22	73.333	73	5.61	5.688	5.610	16.74	5.697
200.000	2.301	30	13	43.333	43	4.82	5.025	4.825	19.11	5.033
100.000	2.000	30	8	26.667	27	4.39	4.362	4.394	15.96	4.369
50.000	1.699	30	4	13.333	13	3.87	3.700	3.931	9.06	3.705

Regression equation: Y = -0.042 + 2.206X
Chi-squared is 2.303 with 3 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.286ppm
LC_{50} is 193.248ppm
95% confidence limits are 151.477 to 246.538ppm

Appendix Table DCXX: Larvicidal effect of *Z. zerumbet* (rh/CH_3OH) extracts against *C. quinquefasciatus* after 30h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
400.000	2.602	30	24	80.000	80	5.85	5.801	5.800	15.09	5.755
200.000	2.301	30	16	53.333	53	5.08	5.147	5.065	19.02	5.118
100.000	2.000	30	9	30.000	30	4.48	4.493	4.480	16.74	4.480
50.000	1.699	30	4	13.333	13	3.87	3.839	3.873	11.10	3.843

Regression equation: Y = 0.244 + 2.118X
Chi-squared is 0.093 with 2 degrees of freedom
No significant heterogeneity
Log LC_{50} is 2.245ppm
LC_{50} is 175.940ppm
95% confidence limits are 133.551 to 231.784ppm

Appendix Table DCXXI: Dose mortality effect of *E. nummularius* (wp/PetE) extracts against *T. castaneum* after 30min of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
1.529	1.184	30	5	16.667	17	4.05	3.973	4.062	12.15	4.020
1.274	1.105	30	4	13.333	13	3.87	3.806	3.873	11.10	3.836
1.019	1.008	30	2	6.667	7	3.52	3.601	3.529	9.06	3.609
0.764	0.883	30	1	3.333	3	3.12	3.336	3.148	6.24	3.318
0.510	0.708	30	1	3.333	3	3.12	2.965	3.172	3.30	2.908

Regression equation: Y = 1.258 + 2.332X
Chi-squared is 0.505 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.604mg/cm^2
LD_{50} is 4.022mg/cm^2
95% confidence limits are 1.174 to 13.784mg/cm^2

Appendix Table DCXXII: Dose mortality effect of *E. nummularius* (wp/PetE) extracts against *T. castaneum* after12h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
1.529	1.184	30	23	76.667	77	5.74	5.364	5.682	18.48	5.364
1.274	1.105	30	15	50.000	50	5.00	5.001	5.000	19.11	4.990
1.019	1.008	30	8	26.667	27	4.39	4.557	4.376	17.43	4.534
0.764	0.883	30	1	3.333	3	3.12	3.983	3.418	12.15	3.944
0.510	0.708	30	1	3.333	3	3.12	3.179	3.116	4.62	3.117
0.255	0.407	30	1	3.333	3	3.12	1.799	18.835	0.18	1.699

Regression equation: Y = -0.216 + 4.711X
Chi-squared is 58.525 with 4 degrees of freedom
Variance has been adjusted for heterogeneity
Log LD_{50} is 1.107mg/cm^2
LD_{50} is 1.280mg/cm^2
95% confidence limits are 0.789 to 2.078mg/cm^2

Appendix Table DCXXIII: Dose mortality effect of *E. nummularius* (wp/PetE) extracts against *T. castaneum* after 24h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
1.529	1.184	30	24	80.000	80	5.85	5.500	5.780	18.03	5.469
1.274	1.105	30	17	56.667	57	5.18	5.112	5.165	19.02	5.090
1.019	1.008	30	9	30.000	30	4.48	4.636	4.470	18.03	4.627
0.764	0.883	30	1	3.333	3	3.12	4.024	3.463	13.17	4.029
0.510	0.708	30	1	3.333	3	3.12	3.164	3.116	4.62	3.189
0.255	0.407	30	1	3.333	3	3.12	1.689	25.675	0.15	1.750

Regression equation: Y = -0.193 + 4.781X
Chi-squared is 92.388 with 4 degrees of freedom
Variance has been adjusted for heterogeneity
Log LD_{50} is 1.086mg/cm^2
LD_{50} is 1.220mg/cm^2
95% confidence limits are 0.691 to 2.153mg/cm^2

Appendix Table DCXXIV: Dose mortality effect of *E. nummularius* (wp/PetE) extracts against *T. castaneum* after 36h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
1.529	1.184	30	28	93.333	93	6.48	5.707	6.246	15.96	5.724
1.274	1.105	30	19	63.333	63	5.33	5.321	5.318	18.48	5.328
1.019	1.008	30	9	30.000	30	4.48	4.849	4.500	18.81	4.842
0.764	0.883	30	3	10.000	10	3.72	4.241	3.810	15.09	4.216
0.510	0.708	30	2	6.667	7	3.52	3.386	3.572	6.24	3.338
0.255	0.407	30	1	3.333	3	3.12	1.921	10.783	0.33	1.831

Regression equation: Y = -0.204 + 5.005X
Chi-squared is 35.827 with 4 degrees of freedom
Variance has been adjusted for heterogeneity
Log LD_{50} is 1.040mg/cm^2
LD_{50} is 1.096 mg/cm^2
95% confidence limits are 0.799 to 1.502mg/cm^2

Appendix Table DCXXV: Dose mortality effect of *E. nummularius* (wp/PetE) extracts against *T. castaneum* after 48h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
1.529	1.184	30	29	96.667	97	6.88	5.842	6.378	15.09	5.846
1.274	1.105	30	20	66.667	67	5.44	5.455	5.429	18.03	5.455
1.019	1.008	30	12	40.000	40	4.75	4.980	4.740	19.02	4.975
0.764	0.883	30	3	10.000	10	3.72	4.368	3.850	15.96	4.357
0.510	0.708	30	3	10.000	10	3.72	3.510	3.750	8.07	3.490
0.255	0.407	30	1	3.333	3	3.12	2.037	8.468	0.45	2.002

Regression equation: Y = -0.007 + 4.942X
Chi-squared is 28.798 with 4 degrees of freedom
Variance has been adjusted for heterogeneity
Log LD_{50} is 1.013mg/cm^2
LD_{50} is 1.031mg/cm^2
95% confidence limits are 0.779 to 1.364mg/cm^2

Appendix Table DCXXVI: Dose mortality effect of *E. nummularius* (wp/$CHCl_3$) extracts against *T. castaneum* after 30min of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
4.076	0.610	30	1	3.333	3	3.12	3.120	3.116	4.62	3.116
3.567	0.552	30	2	6.667	7	3.52	3.520	3.519	8.07	3.519

Regression equation: Y = 7.361 + -6.957X
Chi-squared is -000008 with 0 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.339mg/cm^2
LD_{50} is 2.185mg/cm^2
95% confidence limits are 0.469 to 10.186mg/cm^2

Appendix Table DCXXVII: Dose mortality effect of *E. nummularius* (wp/$CHCl_3$) extracts against *T. castaneum* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
4.076	0.610	30	18	60.000	60	5.25	5.378	5.240	18.48	5.365
3.567	0.552	30	19	63.333	63	5.33	5.161	5.315	19.02	5.151
3.057	0.485	30	13	43.333	43	4.82	4.909	4.815	19.02	4.902
2.548	0.406	30	12	40.000	40	4.75	4.613	4.740	18.03	4.609
2.038	0.309	30	6	20.000	20	4.16	4.249	4.150	15.09	4.250

Regression equation: Y = 3.105 + 3.704X
Chi-squared is 1.408 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.512mg/cm^2
LD_{50} is 3.248mg/cm^2
95% confidence limits are 20.839 to 3.717mg/cm^2

Appendix Table DCXXVIII: Dose mortality effect of *E. nummularius* (wp/$CHCl_3$) extracts against *T. castaneum* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
4.076	0.610	30	21	70.000	70	5.52	5.572	5.500	17.43	5.554
3.567	0.552	30	20	66.667	67	5.44	5.328	5.422	18.48	5.315
3.057	0.485	30	14	46.667	47	4.92	5.045	4.925	19.11	5.039
2.548	0.406	30	13	43.333	43	4.82	4.712	4.818	18.48	4.714
2.038	0.309	30	7	23.333	23	4.26	4.303	4.266	15.96	4.315

Regression equation: Y = 3.042 + 4.116X
Chi-squared is 0.749 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} izs 0.476mg/cm^2
LD_{50} is 2.990mg/cm^2
95% confidence limits are 2.663 to 3.358mg/cm^2

Appendix Table DCXXIX: Dose mortality effect of *E. nummularius* (wp/$CHCl_3$) extracts against *T. castaneum* after 36h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
4.076	0.610	30	25	83.333	83	5.95	6.155	5.948	12.15	6.139
3.567	0.552	30	24	80.000	80	5.85	5.834	5.800	15.09	5.822
3.057	0.485	30	24	80.000	80	5.85	5.462	5.780	18.03	5.454
2.548	0.406	30	13	43.333	43	4.82	5.023	4.825	19.11	5.021
2.038	0.309	30	10	33.333	33	4.56	4.485	4.570	16.74	4.489
1.529	0.184	30	3	10.000	10	3.72	3.792	3.720	10.08	3.804

Regression equation: Y = 2.793 + 5.483X
Chi-squared is 3.278 with 4 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.402mg/cm^2
LD_{50} is 2.526mg/cm^2
95% confidence limits are 2.313 to 2.759mg/cm^2

Appendix Table DCXXX: Dose mortality effect of *E. nummularius* (wp/$CHCl_3$) extracts against *T. castaneum* after 48h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
4.076	0.610	30	27	90.000	90	6.28	6.486	6.290	9.06	6.454
3.567	0.552	30	27	90.000	90	6.28	6.171	6.270	12.15	6.139
3.057	0.485	30	27	90.000	90	6.28	5.806	6.140	15.09	5.774
2.548	0.406	30	15	50.000	50	5.00	5.375	4.980	18.48	5.343
2.038	0.309	30	12	40.000	40	4.75	4.846	4.760	18.81	4.815
1.529	0.184	30	7	23.333	23	4.26	4.166	4.284	14.13	4.135

Regression equation: Y = 3.131 + 5.446X
Chi-squared is 5.283 with 4 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.343mg/cm^2
LD_{50} is 2.204mg/cm^2
95% confidence limits are 2.000 to 2.429mg/cm^2

Appendix Table DCXXXI: Dose mortality effect of *E. nummularius* (wp/CH_3OH) extracts against *T. castaneum* after 30min of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
3.567	0.552	30	4	13.333	13	3.87	3.933	3.878	12.15	3.933
3.057	0.485	30	3	10.000	10	3.72	3.789	3.720	10.08	3.786
2.548	0.406	30	4	13.333	13	3.87	3.619	3.931	9.06	3.612
2.038	0.309	30	1	3.333	3	3.12	3.411	3.180	7.14	3.398

Regression equation: Y = 2.717 + 2.203X
Chi-squared is 1.345 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.036mg/cm^2
LD_{50} is 10.876mg/cm^2
95% confidence limits are 1.195 to 98.945mg/cm^2

Appendix Table DCXXXII: Dose mortality effect of *E. nummularius* (wp/CH_3OH) extracts against *T. castaneum* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
3.567	0.552	30	19	63.333	63	5.33	5.399	5.318	18.48	5.389
3.057	0.485	30	17	56.667	57	5.18	5.094	5.175	19.11	5.086
2.548	0.406	30	12	40.000	40	4.75	4.734	4.740	18.48	4.729
2.038	0.309	30	7	23.333	23	4.26	4.293	4.252	15.09	4.291

Regression equation: Y = 2.895 + 4.516X
Chi-squared is 0.268 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.466mg/cm^2
LD_{50} is 2.925mg/cm^2
95% confidence limits are 2.590 to 3.305mg/cm^2

Appendix Table DCXXXIII: Dose mortality effect of *E. nummularius* (wp/CH_3OH) extracts against *T. castaneum* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
3.567	0.552	30	29	96.667	97	6.88	7.621	5.712	1.20	7.681
3.057	0.485	30	29	96.667	97	6.88	6.973	6.844	4.62	7.025
2.548	0.406	30	27	90.000	90	6.28	6.208	6.230	11.10	6.251
2.038	0.309	30	24	80.000	80	5.85	5.270	5.800	18.81	5.301
1.529	0.184	30	2	6.667	7	3.52	4.063	3.627	13.17	4.079

Regression equation: Y = 2.274 + 9.789X
Chi-squared is 12.185 with 3 degrees of freedom
Variance has been adjusted for heterogeneity
Log LD_{50} is 0.278mg/cm^2
LD_{50} is 1.899mg/cm^2
95% confidence limits are 1.645 to 2.191mg/cm^2

Appendix Table DCXXXIV: Dose mortality effect of *E. nummularius* (wp/CH_3OH) extracts against *T. castaneum* after 36h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
2.548	0.406	30	28	93.333	93	6.48	6.851	6.401	5.40	6.885
2.038	0.309	30	24	80.000	80	5.85	5.501	5.780	17.43	5.513
1.529	0.184	30	2	6.667	7	3.52	3.764	3.546	10.08	3.748

Regression equation: Y = 1.139 + 14.147X
Chi-squared is 2.918 with 1 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.273mg/cm^2
LD_{50} is 1.875mg/cm^2
95% confidence limits are 1.772 to 1.984mg/cm^2

Appendix TableDCXXXV: Dose mortality effect of *E. nummularius* (wp/CH_3OH) extracts against *T. castaneum* after 48h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
2.038	0.309	30	27	90.000	90	6.28	6.280	6.230	11.10	6.230
1.529	0.184	30	2	6.667	7	3.52	3.520	3.519	8.07	3.519

Regression equation: Y = -0.487 + 21.724X
Chi-squared is -0.00003 with 0 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.253mg/cm^2
LD_{50} is 1.789mg/cm^2
95% confidence limits are 1.706 to 1.876mg/cm^2

Appendix Table DCXXXVI: Dose mortality effect of *L. camara* (ap/PetE) extracts against *T. castaneum* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
4.076	0.610	30	9	30.000	30	4.48	4.576	4.460	17.43	4.565
3.567	0.552	30	7	23.333	23	4.26	4.044	4.283	13.17	4.025
3.057	0.485	30	1	3.333	3	3.12	3.428	3.180	7.14	3.401

Regression equation: Y = -1.120 + 9.316X
Chi-squared is 1.416 with 1 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.657mg/cm^2
LD_{50} is 4.539mg/cm^2
95% confidence limits are 3.824 to 5.388mg/cm^2

Appendix Table DCXXXVII: Dose mortality effect of *L. camara* (ap/PetE) extracts against *T. castaneum* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
4.076	0.610	30	14	46.667	47	4.92	4.993	4.915	19.02	4.970
3.567	0.552	30	12	40.000	40	4.75	4.644	4.740	18.03	4.634
3.057	0.485	30	6	20.000	20	4.16	4.240	4.150	15.09	4.246
2.548	0.406	30	4	13.333	13	3.87	3.764	3.894	10.08	3.787
2.038	0.309	30	1	3.333	3	3.12	3.179	3.116	4.62	3.224

Regression equation: Y = 1.431 + 5.799X
Chi-squared is 0.567 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.615mg/cm^2
LD_{50} is 4.125mg/cm^2
95% confidence limits are 3.572 to 4.763mg/cm^2

Appendix Table DCXXXVIII: Dose mortality effect of *L. camara* (ap/PetE) extracts against *T. castaneum* after 36h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
4.076	0.610	30	19	63.333	63	5.33	5.385	5.318	18.48	5.379
3.567	0.552	30	16	53.333	53	5.08	4.994	5.065	19.02	4.987
3.057	0.485	30	9	30.000	30	4.48	4.543	4.460	17.43	4.533
2.548	0.406	30	6	20.000	20	4.16	4.010	4.160	13.17	3.998
2.038	0.309	30	1	3.333	3	3.12	3.356	3.148	6.24	3.341

Regression equation: Y = 1.247 + 6.772X
Chi-squared is 0.858 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.554mg/cm^2
LD_{50} is 3.583mg/cm^2
95% confidence limits are 3.281 to 3.912mg/cm^2

Appendix Table DCXXXIX: Dose mortality effect of *L. camara* (ap/PetE) extracts against *T. castaneum* after 48h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
4.076	0.610	30	26	86.667	87	6.13	6.050	6.087	13.17	5.996
3.567	0.552	30	20	66.667	67	5.44	5.572	5.416	17.43	5.537
3.057	0.485	30	15	50.000	50	5.00	5.018	5.000	19.11	5.006
2.548	0.406	30	9	30.000	30	4.48	4.365	4.490	15.96	4.379
2.038	0.309	30	2	6.667	7	3.52	3.565	3.519	8.07	3.611

Regression equation: Y = 1.161 + 7.922X
Chi-squared is 0.628 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.485mg/cm^2
LD_{50} is 3.052mg/cm^2
95% confidence limits are 2.856 to 3.261mg/cm^2

Appendix Table DCXL: Dose mortality effect of *L. camara* (ap/$CHCl_3$) extracts against *T. castaneum* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
2.548	0.406	30	15	50.000	50	5.00	4.817	5.020	18.81	4.838
2.038	0.309	30	5	16.667	17	4.05	4.305	4.074	15.96	4.318
1.529	0.184	30	2	6.667	7	3.52	3.646	3.529	9.06	3.647
1.019	0.008	30	1	3.333	3	3.12	2.716	3.379	2.28	2.701

Regression equation: Y = 2.657 + 5.370X
Chi-squared is 2.742 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.436mg/cm^2
LD_{50} is 2.731mg/cm^2
95% confidence limits are 2.253 to 3.310mg/cm^2

Appendix Table DCXLI: Dose mortality effect of *L. camara* (ap/$CHCl_3$) extracts against *T. castaneum* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
2.548	0.406	30	18	60.000	60	5.25	5.116	5.240	19.02	5.147
2.038	0.309	30	11	36.667	37	4.67	4.689	4.659	18.03	4.694
1.529	0.184	30	4	13.333	13	3.87	4.140	3.904	14.13	4.111
1.019	0.008	30	2	6.667	7	3.52	3.365	3.572	6.24	3.287

Regression equation: Y = 3.249 + 4.674X
Chi-squared is 1.296 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.375mg/cm^2
LD_{50} is 2.370mg/cm^2
95% confidence limits are 2.018 to 2.783mg/cm^2

Appendix Table DCXLII: Dose mortality effect of *L. camara* (ap/$CHCl_3$) extracts against *T. castaneum* after 36h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
2.548	1.406	30	24	80.000	80	5.85	5.472	5.780	18.03	5.472
2.038	1.309	30	14	46.667	47	4.92	5.059	4.925	19.11	5.058
1.529	1.184	30	7	23.333	23	4.26	4.528	4.264	17.43	4.527
1.019	1.008	30	3	10.000	10	3.72	3.779	3.720	10.08	3.776
0.510	0.708	30	1	3.333	3	3.12	2.500	4.268	1.20	2.495

Regression equation: Y = -0.520 + 4.261X
Chi-squared is 7.061 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.296mg/cm^2
LD_{50} is 1.975mg/cm^2
95% confidence limits are 1.721 to 2.266mg/cm^2

Appendix Table DCXLIII: Dose mortality effect of *L. camara* (ap/$CHCl_3$) extracts against *T. castaneum* after 48h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
2.548	1.406	30	29	96.667	97	6.88	6.108	6.592	12.15	6.132
2.038	1.309	30	20	66.667	67	5.44	5.617	5.430	16.74	5.635
1.529	1.184	30	13	43.333	43	4.82	4.986	4.815	19.02	4.995
1.019	1.008	30	5	16.667	17	4.05	4.094	4.037	13.17	4.091
0.510	0.708	30	1	3.333	3	3.12	2.574	3.860	1.50	2.550

Regression equation: Y = -1.079 + 5.128X
Chi-squared is 6.500 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.185mg/cm^2
LD_{50} is 1.533mg/cm^2
95% confidence limits are 1.369 to 1.716mg/cm^2

Appendix Table DCXLIV: Dose mortality effect of *L. camara* (ap/CH_3OH) extracts against *T. castaneum* after 12h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
2.038	1.309	30	12	40.000	40	4.75	4.696	4.740	18.03	4.730
1.529	1.184	30	10	33.333	33	4.56	4.425	4.570	16.74	4.442
1.019	1.008	30	3	10.000	10	3.72	4.041	3.750	13.17	4.035
0.510	0.708	30	2	6.667	7	3.52	3.387	3.572	6.24	3.342

Regression equation: Y = 1.709 + 2.307X
Chi-squared is 1.679 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.426mg/cm^2
LD_{50} is 2.668mg/cm^2
95% confidence limits are 1.625 to 4.381mg/cm^2

Appendix Table DCXLV: Dose mortality effect of *L. camara* (ap/CH_3OH) extracts against *T. castaneum* after 24h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
2.038	1.309	30	13	43.333	43	4.82	4.846	4.838	18.81	4.847
1.529	1.184	30	12	40.000	40	4.75	4.703	4.740	18.48	4.704
1.019	1.008	30	9	30.000	30	4.48	4.502	4.460	17.43	4.501
0.510	0.708	30	6	20.000	20	4.16	4.159	4.170	14.13	4.155

Regression equation: Y = 3.340 + 1.151X
Chi-squared is 0.059 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.442mg/cm^2
LD_{50} is 2.765mg/cm^2
95% confidence limits are 1.095 to 6.982mg/cm^2

Appendix Table DCXLVI: Dose mortality effect of *L. camara* (ap/CH_3OH) extracts against *T. castaneum* after 36h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
2.038	1.309	30	23	76.667	77	5.74	5.518	5.696	17.43	5.492
1.529	1.184	30	16	53.333	53	5.08	5.281	5.098	18.81	5.261
1.019	1.008	30	13	43.333	43	4.82	4.946	4.815	19.02	4.935
0.510	0.708	30	9	30.000	30	4.48	4.375	4.490	15.96	4.379

Regression equation: Y = 3.070 + 1.850X
Chi-squared is 1.697 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.043mg/cm^2
LD_{50} is 1.105mg/cm^2
95% confidence limits are 0.827 to 1.477mg/cm^2

Appendix Table DCXLVII: Dose mortality effect of *L. camara* (ap/CH_3OH) extracts against *T. castaneum* after 48h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
2.038	1.309	30	29	96.667	97	6.88	6.276	6.587	11.10	6.264
1.529	1.184	30	22	73.333	73	5.61	5.889	5.562	15.09	5.877
1.019	1.008	30	18	60.000	60	5.25	5.343	5.240	18.48	5.331
0.510	0.708	30	11	36.667	37	4.67	4.411	4.690	16.74	4.399
0.255	0.407	30	1	3.333	3	3.12	3.477	3.180	7.14	3.465

Regression equation: Y = 2.205 + 3.101X
Chi-squared is 4.810 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.902mg/cm^2
LD_{50} is 0.797mg/cm^2
95% confidence limits are 0.666 to 0.954mg/cm^2

Appendix Table DCXLVIII: Dose mortality effect of *L. camara* (r/PetE) extracts against *T. castaneum* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
3.567	0.552	30	15	50.000	50	5.00	5.126	4.990	19.02	5.097
3.057	0.485	30	11	36.667	37	4.67	4.438	4.690	16.74	4.465
2.548	0.406	30	2	6.667	7	3.52	3.626	3.529	9.06	3.719

Regression equation: Y = -0.111 + 9.429X
Chi-squared is 1.392 with 1 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.542mg/cm^2
LD_{50} is 3.483mg/cm^2
95% confidence limits are 3.178 to 3.818mg/cm^2

Appendix Table DCXLIX: Dose mortality effect of *L. camara* (r/PetE) extracts against *T. castaneum* after 36h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
3.567	0.552	30	19	63.333	63	5.33	5.475	5.321	18.03	5.471
3.057	0.485	30	16	53.333	53	5.08	4.903	5.065	19.02	4.890
2.548	0.406	30	7	23.333	23	4.26	4.227	4.252	15.09	4.205
2.038	0.309	30	1	3.333	3	3.12	3.398	3.148	6.24	3.364

Regression equation: Y = 0.685 + 8.666X
Chi-squared is 1.312 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.498mg/cm^2
LD_{50} is 3.148mg/cm^2
95% confidence limits are 2.925 to 3.388mg/cm^2

Appendix Table DCL: Dose mortality effect of *L. camara* (r/PetE) extracts against *T. castaneum* after 48h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
3.567	0.552	30	25	83.333	83	5.95	5.871	5.902	15.09	5.864
3.057	0.485	30	20	66.667	67	5.44	5.418	5.429	18.03	5.403
2.548	0.406	30	13	43.333	43	4.82	4.883	4.838	18.81	4.859
2.038	0.309	30	5	16.667	17	4.05	4.227	4.048	15.09	4.191
1.529	0.184	30	2	6.667	7	3.52	3.383	3.572	6.24	3.333

Regression equation: Y = 2.064 + 6.880X
Chi-squared is 0.710 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.427mg/cm^2
LD_{50} is 2.672mg/cm^2
95% confidence limits are 2.474 to 2.885mg/cm^2

Appendix Table DCLI: Dose mortality effect of *M. piperita* (wp/PetE) extracts against *T. castaneum* after 30min of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
1.529	1.184	30	13	43.333	43	4.82	4.701	4.818	18.48	4.723
1.019	1.008	30	5	16.667	17	4.05	4.239	4.048	15.09	4.233
0.510	0.708	30	2	6.667	7	3.52	3.450	3.540	7.14	3.396

Regression equation: Y = 1.427 + 2.783X
Chi-squared is 0.829 with 1 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.284mg/cm^2
LD_{50} is 1.923mg/cm^2
95% confidence limits are 1.228 to 3.011mg/cm^2

Appendix Table DCLII: Dose mortality effect of *M. piperita* (wp/PetE) extracts against *T. castaneum* after 12h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
1.529	1.184	30	24	80.000	80	5.85	5.499	5.780	18.03	5.505
1.019	1.008	30	15	50.000	50	5.00	5.123	4.990	19.02	5.128
0.510	0.708	30	6	20.000	20	4.16	4.480	4.180	16.74	4.486
0.255	0.407	30	4	13.333	13	3.87	3.837	3.873	11.10	3.842
0.127	0.104	30	2	6.667	7	3.52	3.191	3.724	4.62	3.195

Regression equation: Y = 2.974 + 2.137X
Chi-squared is 4.595 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.948mg/cm^2
LD_{50} is 0.888mg/cm^2
95% confidence limits are 0.677 to 1.163mg/cm^2

Appendix Table DCLIII: Dose mortality effect of *M. piperita* (wp/PetE) extracts against *T. castaneum* after 24h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
1.529	1.184	30	29	96.667	97	6.88	5.954	6.516	14.13	5.984
1.019	1.008	30	19	63.333	63	5.33	5.556	5.304	17.43	5.581
0.510	0.708	30	10	33.333	33	4.56	4.877	4.578	18.81	4.894
0.255	0.407	30	6	20.000	20	4.16	4.198	4.170	14.13	4.206
0.127	0.104	30	4	13.333	13	3.87	3.514	3.981	8.07	3.513

Regression equation: Y = 3.276 + 2.287X
Chi-squared is 8.995 with 3 degrees of freedom
Variance has been adjusted for heterogeneity
Log LD_{50} is 0.754mg/cm^2
LD_{50} is 0.567mg/cm^2
95% confidence limits are 0.380 to 0.848mg/cm^2

Appendix Table DCLIV: Dose mortality effect of *M. piperita* (wp/PetE) extracts against *T. castaneum* after 36h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
1.019	1.008	30	22	73.333	73	5.61	5.542	5.584	17.43	5.525
0.510	0.708	30	15	50.000	50	5.00	5.056	5.000	19.11	5.039
0.255	0.407	30	9	30.000	30	4.48	4.570	4.460	17.43	4.551
0.127	0.104	30	6	20.000	20	4.16	4.081	4.160	13.17	4.061

Regression equation: Y = 3.893 + 1.619X
Chi-squared is 0.363 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.684mg/cm^2
LD_{50} is 0.483mg/cm^2
95% confidence limits are 0.339 to 0.688mg/cm^2

Appendix Table DCLV: Dose mortality effect of *M. piperita* (wp/PetE) extracts against *T. castaneum* after 48h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
1.019	1.008	30	24	80.000	80	5.85	5.812	5.800	15.09	5.771
0.510	0.708	30	19	63.333	63	5.33	5.351	5.318	18.48	5.329
0.255	0.407	30	13	43.333	43	4.82	4.890	4.838	18.81	4.886
0.127	0.104	30	9	30.000	30	4.48	4.426	4.480	16.74	4.440

Regression equation: Y = 4.288 + 1.472X
Chi-squared is 0.084 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.484mg/cm^2
LD_{50} is 0.305mg/cm^2
95% confidence limits are 0.209 to 0.444mg/cm^2

Appendix Table DCLVI: Dose mortality effect of *M. piperita* (wp/$CHCl_3$) extracts against *T. castaneum* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
2.548	0.406	30	15	50.000	50	5.00	4.908	4.990	19.02	4.915
2.038	0.309	30	7	23.333	23	4.26	4.423	4.270	16.74	4.421
1.529	0.184	30	4	13.333	13	3.87	3.799	3.894	10.08	3.784

Regression equation: Y = 2.844 + 5.099X
Chi-squared is 0.607 with 1 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.423mg/cm^2
LD_{50} is 2.647mg/cm^2
95% confidence limits are 2.160 to 3.244mg/cm^2

Appendix Table DCLVII: Dose mortality effect of *M. piperita* (wp/$CHCl_3$) extracts against *T. castaneum* after 24h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
2.548	1.406	30	22	73.333	73	5.61	5.277	5.618	18.81	5.280
2.038	1.309	30	11	36.667	37	4.67	4.924	4.665	19.02	4.926
1.529	1.184	30	7	23.333	23	4.26	4.469	4.270	16.74	4.471
1.019	1.008	30	4	13.333	13	3.87	3.826	3.873	11.10	3.828
0.510	0.708	30	1	3.333	3	3.12	2.730	3.379	2.28	2.732

Regression equation: Y = 0.152 + 3.647X
Chi-squared is 5.101 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.329mg/cm^2
LD_{50} is 2.135mg/cm^2
95% confidence limits are 1.798 to 2.536mg/cm^2

Appendix Table DCLVIII: Dose mortality effect of *M. piperita* (wp/$CHCl_3$) extracts against *T. castaneum* after 36h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
2.548	1.406	30	27	90.000	90	6.28	5.796	6.150	15.96	5.719
2.038	1.309	30	16	53.333	53	5.08	5.461	5.051	18.03	5.389
1.529	1.184	30	13	43.333	43	4.82	5.030	4.825	19.11	4.964
1.019	1.008	30	8	26.667	27	4.39	4.421	4.390	16.74	4.364
0.510	0.708	30	2	6.667	7	3.52	3.383	3.572	6.24	3.341

Regression equation: Y = 0.932 + 3.405X
Chi-squared is 5.736 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.195mg/cm^2
LD_{50} is 1.567mg/cm^2
95% confidence limits are 1.345 to 1.824mg/cm^2

Appendix Table DCLIX: Dose mortality effect of *M. piperita* (wp/$CHCl_3$) extracts against *T. castaneum* after 48h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
2.038	1.309	30	24	80.000	80	5.85	5.697	5.820	16.74	5.698
1.529	1.184	30	18	60.000	60	5.25	5.292	5.280	18.81	5.283
1.019	1.008	30	9	30.000	30	4.48	4.719	4.480	18.48	4.696
0.510	0.708	30	4	13.333	13	3.87	3.742	3.894	10.08	3.695

Regression equation: Y = 1.338 + 3.330X
Chi-squared is 1.509 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.099mg/cm^2
LD_{50} is 1.257mg/cm^2
95% confidence limits are 1.061 to 1.490mg/cm^2

Appendix Table DCLX: Dose mortality effect of *M. piperita* (wp/CH_3OH) extracts against *T. castaneum* after 30min of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
1.529	1.184	30	20	66.667	67	5.44	5.372	5.422	18.48	5.360
1.019	1.008	30	14	46.667	47	4.92	5.028	4.925	19.11	5.020
0.510	0.708	30	9	30.000	30	4.48	4.440	4.480	16.74	4.440

Regression equation: Y = 3.074 + 1.930X
Chi-squared is 0.270 with 1 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.998mg/cm^2
LD_{50} is 0.995mg/cm^2
95% confidence limits are 0.723 to 1.369mg/cm^2

Appendix Table DCLXI: Dose mortality effect of *M. piperita* (wp/CH_3OH) extracts against *T. castaneum* after12h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
1.529	1.184	30	24	80.000	80	5.85	5.781	5.830	15.96	5.752
1.019	1.008	30	19	63.333	63	5.33	5.426	5.321	18.03	5.407
0.510	0.708	30	12	40.000	40	4.75	4.819	4.760	18.81	4.819
0.255	0.407	30	8	26.667	27	4.39	4.212	4.388	15.09	4.230
0.127	0.104	30	2	6.667	7	3.52	3.602	3.529	9.06	3.637

Regression equation: Y = 3.434 + 1.957X
Chi-squared is 0.780 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.800mg/cm^2
LD_{50} is 0.631mg/cm^2
95% confidence limits are 0.484 to 0.823mg/cm^2

Appendix Table DCLXII: Dose mortality effect of *M. piperita* (wp/CH_3OH) extracts against *T. castaneum* after 24h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
1.529	1.184	30	29	96.667	97	6.88	6.039	6.497	13.17	6.034
1.019	1.008	30	20	66.667	67	5.44	5.713	5.414	15.96	5.705
0.510	0.708	30	15	50.000	50	5.00	5.157	4.990	19.02	5.144
0.255	0.407	30	9	30.000	30	4.48	4.601	4.470	18.03	4.582
0.127	0.104	30	7	23.333	23	4.26	4.041	4.283	13.17	4.017

Regression equation: Y = 3.823 + 1.867X
Chi-squared is 5.784 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.630mg/cm^2
LD_{50} is 0.427mg/cm^2
95% confidence limits are 0.325 to 0.561mg/cm^2

Appendix Table DCLXIII: Dose mortality effect of *M. piperita* (wp/CH_3OH) extracts against *T. castaneum* after 36h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
1.019	1.008	30	22	73.333	73	5.61	5.595	5.584	17.43	5.569
0.510	0.708	30	17	56.667	57	5.18	5.187	5.165	19.02	5.170
0.255	0.407	30	12	40.000	40	4.75	4.779	4.740	18.48	4.770
0.127	0.104	30	8	26.667	27	4.39	4.368	4.394	15.96	4.368

Regression equation: Y = 4.231 + 1.328X
Chi-squared is 0.032 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.580mg/cm^2
LD_{50} is 0.380mg/cm^2
95% confidence limits are 0.253 to 0.569mg/cm^2

Appendix Table DCLXIV: Dose mortality effect of *M. piperita* (wp/CH_3OH) extracts against *T. castaneum* after 48h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
1.019	1.008	30	26	86.667	87	6.13	6.094	6.087	13.17	6.053
0.510	0.708	30	21	70.000	70	5.52	5.581	5.500	17.43	5.552
0.255	0.407	30	16	53.333	53	5.08	5.066	5.075	19.11	5.050
0.127	0.104	30	10	33.333	33	4.56	4.549	4.544	17.43	4.545

Regression equation: Y = 4.372 + 1.668X
Chi-squared is 0.074 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.377mg/cm^2
LD_{50} is 0.238mg/cm^2
95% confidence limits are 0.166 to 0.342mg/cm^2

Appendix Table DCLXV: Dose mortality effect of *P. hysterophorus* (wp/PetE) extracts against *T. castaneum* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
3.567	0.552	30	15	50.000	50	5.00	5.044	5.000	19.11	5.032
3.057	0.485	30	7	23.333	23	4.26	4.179	4.284	14.13	4.204
2.548	0.406	30	1	3.333	3	3.12	3.157	3.116	4.62	3.228

Regression equation: Y = -1.788 + 12.349 X
Chi-squared is 0.167 with 1 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.550mg/cm^2
LD_{50} is 3.546mg/cm^2
95% confidence limits are 3.284 to 3.828mg/cm^2

Appendix Table DCLXVI: Dose mortality effect of *P. hysterophorus* (wp/PetE) extracts against *T. castaneum* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
3.567	0.552	30	21	70.000	70	5.52	5.361	5.500	18.48	5.355
3.057	0.485	30	10	33.333	33	4.56	4.854	4.578	18.81	4.842
2.548	0.406	30	8	26.667	27	4.39	4.255	4.388	15.09	4.237

Regression equation: Y = 1.130 + 7.648X
Chi-squared is 2.046 with 1 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.506mg/cm^2
LD_{50} is 3.206mg/cm^2
95% confidence limits are 2.941 to 3.494mg/cm^2

Appendix Table DCLXVII: Dose mortality effect of *P. hysterophorus* (wp/PetE) extracts against *T. castaneum* after 36h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
3.567	0.552	30	23	76.667	77	5.74	5.691	5.730	16.74	5.660
3.057	0.485	30	14	46.667	47	4.92	5.116	4.915	19.02	5.111
2.548	0.406	30	11	36.667	37	4.67	4.438	4.690	16.74	4.463
2.038	0.309	30	2	6.667	7	3.52	3.606	3.529	9.06	3.668

Regression equation: Y = 1.135 + 8.192X
Chi-squared is 1.851 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.472mg/cm^2
LD_{50} is 2.963mg/cm^2
95% confidence limits are 2.759 to 3.183mg/cm^2

Appendix Table DCLXVIII: Dose mortality effect of *P. hysterophorus* (wp/PetE) extracts against *T. castaneum* after 48h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
3.567	0.552	30	26	86.667	87	6.13	5.956	6.136	14.13	5.974
3.057	0.485	30	19	63.333	63	5.33	5.474	5.321	18.03	5.474
2.548	0.406	30	15	50.000	50	5.00	4.905	4.990	19.02	4.883
2.038	0.309	30	4	13.333	13	3.87	4.207	3.912	15.09	4.159
1.529	0.184	30	2	6.667	7	3.52	3.309	3.572	6.24	3.227

Regression equation: Y = 1.850 + 7.468X
Chi-squared is 2.671 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.422mg/cm^2
LD_{50} is 2.642mg/cm^2
95% confidence limits are 2.460 to 2.836mg/cm^2

Appendix Table DCLXIX: Dose mortality effect of *P. hysterophorus* (wp/$CHCl_3$) extracts against *T. castaneum* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
4.076	0.610	30	9	30.000	30	4.48	4.532	4.460	17.43	4.520
3.567	0.552	30	8	26.667	27	4.39	4.230	4.388	15.09	4.225
3.057	0.485	30	3	10.000	10	3.72	3.880	3.720	11.10	3.884
2.548	0.406	30	2	6.667	7	3.52	3.467	3.540	7.14	3.481

Regression equation: Y = 1.413 + 5.092X
Chi-squared is 0.786 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.704mg/cm^2
LD_{50} is 5.063mg/cm^2
95% confidence limits are 3.668 to 6.990mg/cm^2

Appendix Table DCLXX: Dose mortality effect of *P. hysterophorus* (wp/$CHCl_3$) extracts against *T. castaneum* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
4.076	0.610	30	15	50.000	50	5.00	5.045	5.000	19.11	5.043
3.567	0.552	30	13	43.333	43	4.82	4.771	4.818	18.48	4.769
3.057	0.485	30	9	30.000	30	4.48	4.454	4.480	16.74	4.452
2.548	0.406	30	5	16.667	17	4.05	4.080	4.037	13.17	4.078

Regression equation: Y = 2.157 + 4.730X
Chi-squared is 0.115 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.601mg/cm^2
LD_{50} is 3.991mg/cm^2
95% confidence limits are 3.371 to 4.725mg/cm^2

Appendix Table DCLXXI: Dose mortality effect of *P. hysterophorus* (wp/$CHCl_3$) extracts against *T. castaneum* after 36h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
4.076	0.610	30	23	76.667	77	5.74	5.836	5.698	15.09	5.783
3.567	0.552	30	20	66.667	67	5.44	5.335	5.422	18.48	5.310
3.057	0.485	30	11	36.667	37	4.67	4.755	4.662	18.48	4.763
2.548	0.406	30	7	23.333	23	4.26	4.071	4.283	13.17	4.117
2.038	0.309	30	1	3.333	3	3.12	3.233	3.121	5.40	3.325

Regression equation: Y = 0.801 + 8.164X
Chi-squared is 1.116 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.514mg/cm^2
LD_{50} is 3.268mg/cm^2
95% confidence limits are 3.058 to 3.493mg/cm^2

Appendix Table DCLXXII: Dose mortality effect of *P. hysterophorus* (wp/$CHCl_3$) extracts against *T. castaneum* after 48h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
4.076	0.610	30	28	93.333	93	6.48	6.300	6.424	10.08	6.222
3.567	0.552	30	23	76.667	77	5.74	5.788	5.734	15.96	5.726
3.057	0.485	30	14	46.667	47	4.92	5.196	4.915	19.02	5.152
2.548	0.406	30	10	33.333	33	4.56	4.497	4.570	16.74	4.475
2.038	0.309	30	3	10.000	10	3.72	3.639	3.730	9.06	3.644

Regression equation: Y = 0.997 + 8.564X
Chi-squared is 1.700 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.467mg/cm^2
LD_{50} is 2.934mg/cm^2
95% confidence limits are 2.755 to 3.125mg/cm^2

Appendix Table DCLXXIII: Dose mortality effect of *P. hysterophorus* (wp/CH_3OH) extracts against *T. castaneum* after 30min of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
2.548	0.406	30	12	40.000	40	4.75	4.622	4.740	18.03	4.651
2.038	0.309	30	4	13.333	13	3.87	4.097	3.873	13.17	4.089
1.529	0.184	30	2	6.667	7	3.52	3.421	3.540	7.14	3.366

Regression equation: Y = 2.297 + 5.796X
Chi-squared is 0.974 with 1 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.466mg/cm^2
LD_{50} is 2.927mg/cm^2
95% confidence limits are 2.301 to 3.723mg/cm^2

Appendix Table DCLXXIV: Dose mortality effect of *P. hysterophorus* (wp/CH_3OH) extracts against *T. castaneum* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
2.548	0.406	30	15	50.000	50	5.00	5.044	5.000	19.11	5.035
2.038	0.309	30	12	40.000	40	4.75	4.672	4.740	18.03	4.673
1.529	0.184	30	6	20.000	20	4.16	4.194	4.170	14.13	4.207

Regression equation: Y = 3.519 + 3.734X
Chi-squared is 0.124 with 1 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.397mg/cm^2
LD_{50} is 2.493mg/cm^2
95% confidence limits are 1.970 to 3.154mg/cm^2

Appendix Table DCLXXV: Dose mortality effect of *P. hysterophorus* (wp/CH_3OH) extracts against *T. castaneum* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
2.548	0.406	30	19	63.333	63	5.33	5.253	5.358	18.81	5.290
2.038	0.309	30	13	43.333	43	4.82	4.863	4.838	18.81	4.882
1.529	0.184	30	7	23.333	23	4.26	4.361	4.266	15.96	4.358
1.019	0.008	30	3	10.000	10	3.72	3.653	3.730	9.06	3.617

Regression equation: Y = 3.583 + 4.202X
Chi-squared is 0.374 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.337mg/cm^2
LD_{50} is 2.174mg/cm^2
95% confidence limits are 1.861 to 2.539mg/cm^2

Appendix Table DCLXXVI: Dose mortality effect of *P. hysterophorus* (wp/CH_3OH) extracts against *T. castaneum* after 36h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
2.548	0.406	30	26	86.667	87	6.13	5.823	6.038	15.09	5.729
2.038	0.309	30	14	46.667	47	4.92	5.322	4.902	18.48	5.250
1.529	0.184	30	11	36.667	37	4.67	4.678	4.659	18.03	4.634
1.019	0.008	30	4	13.333	13	3.87	3.768	3.894	10.08	3.764

Regression equation: Y = 3.723 + 4.938X
Chi-squared is 3.862 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.259mg/cm^2
LD_{50} is 1.814mg/cm^2
95% confidence limits are 1.614 to 2.038mg/cm^2

Appendix Table DCLXXVII: Dose mortality effect of *P. hysterophorus* (wp/CH_3OH) extracts against *T. castaneum* after 48h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
2.038	1.309	30	19	63.333	63	5.33	5.371	5.318	18.48	5.367
1.529	1.184	30	15	50.000	50	5.00	4.900	4.990	19.02	4.893
1.019	1.008	30	6	20.000	20	4.16	4.236	4.150	15.09	4.223
0.510	0.708	30	1	3.333	3	3.12	3.103	3.116	4.62	3.080

Regression equation: Y = 0.389 + 3.802X
Chi-squared is 0.311 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.213mg/cm^2
LD_{50} is 1.631mg/cm^2
95% confidence limits are 1.376 to 1.935mg/cm^2

Appendix Table DCLXXVIII: Dose mortality effect of *Ph. niruri* (wp/PetE) extracts against *T. castaneum* after 30min of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
2.037	1.309	30	10	33.333	33	4.56	4.512	4.544	17.43	4.496
1.528	1.184	30	6	20.000	20	4.16	4.181	4.170	14.13	4.170
1.019	1.008	30	2	6.667	7	3.52	3.713	3.546	10.08	3.710
0.509	0.707	30	1	3.333	3	3.12	2.913	3.172	3.30	2.922

Regression equation: Y = 1.074 + 2.614X
Chi-squared is 0.517 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.502mg/cm^2
LD_{50} is 3.174mg/cm^2
95% confidence limits are 1.778 to 5.665mg/cm^2

Appendix Table DCLXXIX: Dose mortality effect of *Ph. niruri* (wp/PetE) extracts against *T. castaneum* after 12h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
2.037	1.309	30	20	66.667	67	5.44	5.297	5.462	18.81	5.295
1.528	1.184	30	15	50.000	50	5.00	4.949	4.990	19.02	4.949
1.019	1.008	30	5	16.667	17	4.05	4.459	4.090	16.74	4.461
0.509	0.707	30	3	10.000	10	3.72	3.620	3.730	9.06	3.626
0.255	0.407	30	1	3.333	3	3.12	2.784	3.379	2.28	2.794

Regression equation: Y = 1.668 + 2.771X
Chi-squared is 3.743 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.203mg/cm^2
LD_{50} is 1.595mg/cm^2
95% confidence limits are 1.272 to 1.999mg/cm^2

Appendix Table DCLXXX: Dose mortality effect of *Ph. niruri* (wp/PetE) extracts against *T. castaneum* after 24h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
2.037	1.309	30	25	83.333	83	5.95	5.575	5.864	17.43	5.570
1.528	1.184	30	18	60.000	60	5.25	5.246	5.280	18.81	5.244
1.019	1.008	30	7	23.333	23	4.26	4.781	4.298	18.48	4.784
0.509	0.707	30	5	16.667	17	4.05	3.986	4.062	12.15	3.996
0.255	0.407	30	2	6.667	7	3.52	3.193	3.724	4.62	3.212

Regression equation: Y = 2.150 + 2.613X
Chi-squared is 7.160 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.091mg/cm^2
LD_{50} is 1.233mg/cm^2
95% confidence limits are 1.001 to 1.519mg/cm^2

Appendix Table DCLXXXI: Dose mortality effect of *Ph. niruri* (wp/PetE) extracts against *T. castaneum* after 36h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
2.037	1.309	30	29	96.667	97	6.88	5.952	6.516	14.13	5.943
1.528	1.184	30	22	73.333	72	5.58	5.583	5.556	17.43	5.579
1.019	1.008	30	9	30.000	28	4.42	5.063	4.450	19.11	5.066
0.509	0.707	30	7	23.333	21	4.19	4.173	4.208	14.13	4.186
0.255	0.407	30	4	13.333	10	3.72	3.286	4.010	5.40	3.311

Regression equation: Y = 2.125 + 2.917X
Chi-squared is 14.537 with 3 degrees of freedom
Variance has been adjusted for heterogeneity
Log LD_{50} is 0.986mg/cm^2
LD_{50} is 0.967mg/cm^2
95% confidence limits are 0.644 to 1.454mg/cm^2

Appendix Table DCLXXXII: Dose mortality effect of *Ph. niruri* (wp/PetE) extracts against *T. castaneum* after 48h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
1.528	1.184	30	25	83.333	83	5.95	5.910	5.984	14.13	5.911
1.019	1.008	30	21	70.000	69	5.50	5.575	5.472	17.43	5.576
0.509	0.707	30	16	53.333	52	5.05	5.003	5.050	19.11	5.001
0.255	0.407	30	9	30.000	28	4.42	4.432	4.420	16.74	4.430

Regression equation: Y = 3.655 + 1.905X
Chi-squared is 0.310 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.706mg/cm^2
LD_{50} is 0.508mg/cm^2
95% confidence limits are 0.374 to 0.691mg/cm^2

Appendix Table DCLXXXIII: Dose mortality effect of *Ph. niruri* (wp/$CHCl_3$) extracts against *T. castaneum* after 30min of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
3.565	0.552	30	6	20.000	20	4.16	4.259	4.150	15.09	4.228
3.056	0.485	30	5	16.667	17	4.05	3.967	4.062	12.15	3.962
2.547	0.406	30	3	10.000	10	3.72	3.623	3.730	9.06	3.649
2.037	0.309	30	1	3.333	3	3.12	3.201	3.121	5.40	3.264

Regression equation: Y = 2.040 + 3.963X
Chi-squared is 0.382 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.747mg/cm^2
LD_{50} is 5.585mg/cm^2
95% confidence limits are 2.999 to 10.398mg/cm^2

Appendix Table DCLXXXIV: Dose mortality effect of *Ph. niruri* (wp/$CHCl_3$) extracts against *T. castaneum* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
3.565	0.552	30	10	33.333	33	4.56	4.618	4.551	18.03	4.587
3.056	0.485	30	7	23.333	23	4.26	4.362	4.266	15.96	4.366
2.547	0.406	30	8	26.667	27	4.39	4.060	4.447	13.17	4.103
2.037	0.309	30	2	6.667	7	3.52	3.690	3.529	9.06	3.781

Regression equation: Y = 2.756 + 3.317X
Chi-squared is 2.316 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.676mg/cm^2
LD_{50} is 4.747mg/cm^2
95% confidence limits are 2.891 to 7.796mg/cm^2

Appendix Table DLXXXV: Dose mortality effect of *Ph. niruri* (wp/$CHCl_3$) extracts against *T. castaneum* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
3.565	0.552	30	14	46.667	45	4.87	4.988	4.865	19.02	4.996
3.056	0.485	30	11	36.667	34	4.59	4.615	4.578	18.03	4.622
2.547	0.406	30	10	33.333	31	4.50	4.174	4.588	14.13	4.180
2.037	0.309	30	3	10.000	7	3.52	3.633	3.529	9.06	3.638
1.528	0.184	30	1	3.333	0	0.00	2.936	2.490	3.30	2.941

Regression equation: Y = 1.913 + 5.585X
Chi-squared is 3.489 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.553mg/cm^2
LD_{50} is 3.571mg/cm^2
95% confidence limits are 3.085 to 4.133mg/cm^2

Appendix Table DCLXXXVI: Dose mortality effect of *Ph. niruri* (wp/$CHCl_3$) extracts against *T. castaneum* after 36h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
3.565	0.552	30	18	60.000	59	5.23	5.282	5.254	18.81	5.292
3.056	0.485	30	15	50.000	48	4.95	5.002	4.950	19.11	5.011
2.547	0.406	30	14	46.667	45	4.87	4.671	4.875	18.03	4.680
2.037	0.309	30	7	23.333	21	4.19	4.264	4.184	15.09	4.273
1.528	0.184	30	4	13.333	10	3.72	3.741	3.720	10.08	3.750

Regression equation: Y = 2.978 + 4.192X
Chi-squared is 0.915 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.483mg/cm^2
LD_{50} is 3.037mg/cm^2
95% confidence limits are 2.645 to 3.488mg/cm^2

Appendix Table DCLXXXVII: Dose mortality effect of *Ph. niruri* (wp/$CHCl_3$) extracts against *T. castaneum* after 48h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
3.565	0.552	30	25	83.333	83	5.95	5.917	5.984	14.13	5.919
3.056	0.485	30	20	66.667	66	5.41	5.552	5.388	17.43	5.552
2.547	0.406	30	19	63.333	62	5.31	5.120	5.290	19.02	5.117
2.037	0.309	30	10	33.333	31	4.50	4.591	4.488	17.43	4.584
1.528	0.184	30	5	16.667	14	3.92	3.909	3.924	12.15	3.898

Regression equation: Y = 2.887 + 5.494X
Chi-squared is 1.264 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.385mg/cm^2
LD_{50} is 2.425mg/cm^2
95% confidence limits are 2.212 to 2.659mg/cm^2

Appendix Table DCLXXXVIII: Dose mortality effect of *Ph. niruri* (wp/CH_3OH) extracts against *T. castaneum* after 30min of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
3.565	0.552	30	14	46.667	47	4.92	4.779	4.922	18.48	4.810
3.056	0.485	30	5	16.667	17	4.05	4.309	4.074	15.96	4.312
2.547	0.406	30	4	13.333	13	3.87	3.751	3.894	10.08	3.721

Regression equation: Y = 0.704 + 7.439X
Chi-squared is 1.439 with 1 degree of freedom
No significant heterogeneity
Log LD_{50} is 0.578mg/cm^2
LD_{50} is 3.781mg/cm^2
95% confidence limits are 3.218 to 4.442mg/cm^2

Appendix Table DCLXXXIX: Dose mortality effect of *Ph. niruri* (wp/CH_3OH) extracts against *T. castaneum* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
3.565	0.552	30	17	56.667	57	5.18	4.988	5.165	19.02	5.014
3.056	0.485	30	9	30.000	30	4.48	4.683	4.470	18.03	4.698
2.547	0.406	30	9	30.000	30	4.48	4.320	4.490	15.96	4.322
2.037	0.309	30	2	6.667	7	3.52	3.879	3.567	11.10	3.864
1.528	0.184	30	2	6.667	7	3.52	3.309	3.572	6.24	3.274

Regression equation: Y = 2.403 + 4.731X
Chi-squared is 3.356 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.549mg/cm^2
LD_{50} is 3.541mg/cm^2
95% confidence limits are 3.001 to 4.176mg/cm^2

Appendix Table DCXC: Dose mortality effect of *Ph. niruri* (wp/CH_3OH) extracts against *T. castaneum* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
3.565	0.552	30	27	90.000	90	6.28	5.814	6.140	15.09	5.761
3.056	0.485	30	20	66.667	67	5.44	5.531	5.416	17.43	5.474
2.547	0.406	30	17	56.667	57	5.18	5.194	5.165	19.02	5.134
2.037	0.309	30	6	20.000	20	4.16	4.785	4.220	18.48	4.719
1.528	0.184	30	6	20.000	20	4.16	4.256	4.150	15.09	4.184
1.019	0.008	30	4	13.333	13	3.87	3.511	3.981	8.07	3.431

Regression equation: Y = 3.396 + 4.284X
Chi-squared is 9.319 with 4 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.375mg/cm^2
LD_{50} is 2.369mg/cm^2
95% confidence limits are 2.122 to 2.644mg/cm^2

Appendix Table DCXCI: Dose mortality effect of *Ph. niruri* (wp/CH_3OH) extracts against *T. castaneum* after 36h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
3.056	0.485	30	26	86.667	87	6.13	5.931	6.136	14.13	5.902
2.547	0.406	30	23	76.667	77	5.74	5.556	5.696	17.43	5.520
2.037	0.309	30	10	33.333	33	4.56	5.100	4.565	19.02	5.056
1.528	0.184	30	9	30.000	30	4.48	4.511	4.460	17.43	4.456
1.019	0.008	30	4	13.333	13	3.87	3.681	3.931	9.06	3.611

Regression equation: Y = 3.572 + 4.802X
Chi-squared is 6.822 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.297mg/cm^2
LD_{50} is 1.983mg/cm^2
95% confidence limits are 1.782 to 2.207mg/cm^2

Appendix Table DCXCII: Dose mortality effect of *Ph. niruri* (wp/CH_3OH) extracts against *T. castaneum* after 48h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
3.056	0.485	30	27	90.000	90	6.28	6.261	6.230	11.10	6.170
2.547	0.406	30	26	86.667	87	6.13	5.850	6.038	15.09	5.773
2.037	0.309	30	14	46.667	47	4.92	5.348	4.902	18.48	5.289
1.528	0.184	30	12	40.000	40	4.75	4.701	4.740	18.48	4.665
1.019	0.008	30	4	13.333	13	3.87	3.789	3.894	10.08	3.785

Regression equation: Y = 3.744 + 5.001X
Chi-squared is 4.097 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.251mg/cm^2
LD_{50} is 1.783mg/cm^2
95% confidence limits are 1.601 to 1.986mg/cm^2

Appendix Table DCXCIII: Dose mortality effect of *Po. hydropiper* (wp/PetE) extracts against *T. castaneum* after 30min of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
2.293	0.360	30	2	6.667	7	3.52	3.384	3.572	6.24	3.437
2.038	0.309	30	1	3.333	3	3.12	3.284	3.121	5.40	3.314
1.783	0.251	30	1	3.333	3	3.12	3.171	3.116	4.62	3.175
1.529	0.184	30	1	3.333	3	3.12	3.041	3.135	3.93	3.015

Y =2.572 + 2.399X
Chi-squared is 0.388 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.012mg/cm^2
LD_{50} is 10.282mg/cm^2
95% confidence limits are 0.090 to 1170.104mg/cm^2

Appendix Table DCXCIV: Dose mortality effect of *Po. hydropiper* (wp/PetE) extracts against *T. castaneum* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
2.293	0.360	30	16	53.333	53	5.08	5.006	5.075	19.11	5.003
2.038	0.309	30	12	40.000	40	4.75	4.862	4.760	18.81	4.861
1.783	0.251	30	10	33.333	33	4.56	4.699	4.551	18.03	4.700
1.529	0.184	30	13	43.333	43	4.82	4.512	4.824	17.43	4.515
1.274	0.105	30	6	20.000	20	4.16	4.290	4.150	15.09	4.295

Regression equation: Y = 4.003 + 2.774X
Chi-squared is 2.675 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.359mg/cm^2
LD_{50} is 2.288mg/cm^2
95% confidence limits are 1.734 to 3.017mg/cm^2

Appendix Table DCXCV: Dose mortality effect of *Po. hydropiper* (wp/PetE) extracts against *T. castaneum* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
2.293	0.360	30	21	70.000	70	5.52	5.689	5.520	16.74	5.674
2.038	0.309	30	21	70.000	70	5.52	5.385	5.500	18.48	5.380
1.783	0.251	30	15	50.000	50	5.00	5.041	5.000	19.11	5.046
1.529	0.184	30	13	43.333	43	4.82	4.646	4.821	18.03	4.663
1.274	0.105	30	6	20.000	20	4.16	4.176	4.170	14.13	4.207
1.019	0.008	30	2	6.667	7	3.52	3.602	3.529	9.06	3.650

Regression equation: Y = 3.603 + 5.746X
Chi-squared is 1.309 with 4 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.243mg/cm^2
LD_{50} is 1.750mg/cm^2
95% confidence limits are 1.613 to 1.899mg/cm^2

Appendix Table DCXCVI: Dose mortality effect of *Po. hydropiper* (wp/PetE) extracts against *T. castaneum* after 36h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
2.293	0.360	30	22	73.333	73	5.61	5.788	5.606	15.96	5.788
2.038	0.309	30	22	73.333	73	5.61	5.486	5.591	18.03	5.486
1.783	0.251	30	18	60.000	60	5.25	5.145	5.240	19.02	5.145
1.529	0.184	30	13	43.333	43	4.82	4.752	4.818	18.48	4.752
1.274	0.105	30	6	20.000	20	4.16	4.285	4.150	15.09	4.286
1.019	0.008	30	3	10.000	10	3.72	3.714	3.720	10.08	3.715

Regression equation: Y = 3.667 + 5.883X
Chi-squared is 1.255 with 4 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.227mg/cm^2
LD_{50} is 1.685mg/cm^2
95% confidence limits are 1.558 to 1.822mg/cm^2

Appendix Table DCXCVII: Dose mortality effect of *Po. hydropiper* (wp/PetE) extracts against *T. castaneum* after 48h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
2.293	0.360	30	23	76.667	77	5.74	6.115	5.672	12.15	6.102
2.038	0.309	30	26	86.667	87	6.13	5.768	6.054	15.96	5.757
1.783	0.251	30	21	70.000	70	5.52	5.374	5.500	18.48	5.366
1.529	0.184	30	14	46.667	47	4.92	4.922	4.915	19.02	4.916
1.274	0.105	30	7	23.333	23	4.26	4.384	4.266	15.96	4.383
1.019	0.008	30	3	10.000	10	3.72	3.727	3.720	10.08	3.729

Regression equation: Y = 3.674 + 6.737X
Chi-squared is 4.203 with 4 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.197mg/cm^2
LD_{50} is 1.573mg/cm^2
95% confidence limits are 1.466 to 1.688mg/cm^2

Appendix Table DCXCVIII: Dose mortality effect of *Po. hydropiper* (wp/$CHCl_3$) extracts against *T. castaneum* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
4.586	0.661	30	16	53.333	53	5.08	5.080	5.075	19.11	5.078
4.076	0.610	30	6	20.000	20	4.16	4.160	4.170	14.13	4.163
3.567	0.552	30	1	3.333	3	3.12	3.120	3.116	4.62	3.127

Regression equation: Y = -6.749 + 17.880X
Chi-squared is 7.43866e-04 with 1 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.657mg/cm^2
LD_{50} is 4.540mg/cm^2
95% confidence limits are 4.313 to 4.780mg/cm^2

Appendix Table DCXCIX: Dose mortality effect of *Po. hydropiper* (wp/$CHCl_3$) extracts against *T. castaneum* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
4.586	0.661	30	19	63.333	63	5.33	5.154	5.315	19.02	5.146
4.076	0.610	30	6	20.000	20	4.16	4.432	4.180	16.74	4.427
3.567	0.552	30	2	6.667	7	3.52	3.615	3.529	9.06	3.613
3.057	0.485	30	1	3.333	3	3.12	2.670	3.568	1.86	2.671

Regression equation: Y = -4.148 + 14.052 X
Chi-squared is 3.121 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.651mg/cm^2
LD_{50} is 4.478mg/cm^2
95% confidence limits are 4.222 to 4.749mg/cm^2

Appendix Table DCC: Dose mortality effect of *Po. hydropiper* (wp/$CHCl_3$) extracts against *T. castaneum* after 36h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
4.586	0.661	30	24	80.000	80	5.85	5.484	5.780	18.03	5.483
4.076	0.610	30	6	20.000	20	4.16	4.633	4.200	18.03	4.634
3.567	0.552	30	3	10.000	10	3.72	3.670	3.730	9.06	3.672
3.057	0.485	30	1	3.333	3	3.12	2.557	3.860	1.50	2.560

Regression equation: Y = -5.493 + 16.595X
Chi-squared is 7.541 with 2 degrees of freedom
Variance has been adjusted for heterogeneity
Log LD_{50} is 0.632mg/cm^2
LD_{50} is 4.288mg/cm^2
95% confidence limits are 3.948 to 4.658mg/cm^2

Appendix Table DCCI: Dose mortality effect of *Po. hydropiper* (wp/$CHCl_3$) extracts against *T. castaneum* after 48h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
4.586	0.661	30	27	90.000	90	6.28	5.722	6.150	15.96	5.725
4.076	0.610	30	13	43.333	43	4.82	5.075	4.825	19.11	5.077
3.567	0.552	30	4	13.333	13	3.87	4.343	3.946	15.96	4.344
3.057	0.485	30	3	10.000	10	3.72	3.496	3.810	7.14	3.495
2.548	0.406	30	1	3.333	3	3.12	2.496	4.268	1.20	2.494

Regression equation: Y = -2.647 + 12.658X
Chi-squared is 11.101 with 3 degrees of freedom
Variance has been adjusted for heterogeneity
Log LD_{50} is 0.604mg/cm^2
LD_{50} is 4.019mg/cm^2
95% confidence limits are 3.668 to 4.405mg/cm^2

Appendix Table DCCII: Dose mortality effect of *Po. hydropiper* (wp/CH_3OH) extracts against *T. castaneum* after 30min of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
1.529	1.184	30	12	40.000	40	4.75	4.694	4.740	18.03	4.698
1.019	1.008	30	7	23.333	23	4.26	4.333	4.266	15.96	4.332
0.510	0.708	30	3	10.000	10	3.72	3.719	3.720	10.08	3.707
0.255	0.407	30	1	3.333	3	3.12	3.104	3.116	4.62	3.082

Regression equation: Y = 2.237 + 2.078X
Chi-squared is 0.108 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.330mg/cm^2
LD_{50} is 2.137mg/cm^2
95% confidence limits are 1.215 to 3.759mg/cm^2

Appendix Table DCCIII: Dose mortality effect of *Po. hydropiper* (wp/CH_3OH) extracts against *T. castaneum* after12h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
1.529	1.184	30	25	83.333	83	5.95	6.196	5.948	12.15	6.230
1.019	1.008	30	23	76.667	77	5.74	5.652	5.730	16.74	5.668
0.510	0.708	30	16	53.333	53	5.08	4.723	5.078	18.48	4.710
0.255	0.407	30	1	3.333	3	3.12	3.792	3.314	10.08	3.751

Regression equation: Y = 2.455 + 3.188X
Chi-squared is 5.453 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.798mg/cm^2
LD_{50} is 0.629mg/cm^2
95% confidence limits are 0.520 to 0.760mg/cm^2

Appendix Table DCCIV: Dose mortality effect of *Po. hydropiper* (wp/CH_3OH) extracts against *T. castaneum* after 24h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
1.529	1.184	30	29	96.667	97	6.88	6.932	6.844	4.62	6.908
1.019	1.008	30	27	90.000	90	6.28	6.242	6.230	11.10	6.224
0.510	0.708	30	17	56.667	57	5.18	5.063	5.175	19.11	5.058
0.255	0.407	30	2	6.667	7	3.52	3.884	3.567	11.10	3.890
0.127	0.104	30	1	3.333	3	3.12	2.697	3.568	1.86	2.716

Regression equation: Y = 2.313 + 3.880X
Chi-squared is 2.791 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.693mg/cm^2
LD_{50} is 0.493mg/cm^2
95% confidence limits are 0.416 to 0.584mg/cm^2

Appendix Table DCCV: Dose mortality effect of *Po. hydropiper* (wp/CH_3OH) extracts against *T. castaneum* after 36h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.510	0.708	30	21	70.000	70	5.52	5.407	5.510	18.03	5.411
0.255	0.407	30	3	10.000	10	3.72	4.033	3.750	13.17	4.019
0.127	0.104	30	1	3.333	3	3.12	2.652	3.568	1.86	2.619

Regression equation: Y = 2.138 + 4.626X
Chi-squared is 2.804 with 1 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.619mg/cm^2
LD_{50} is 0.416mg/cm^2
95% confidence limits are 0.347 to 0.498mg/cm^2

Appendix Table DCCVI: Dose mortality effect of *Po. hydropiper* (wp/CH_3OH) extracts against *T. castaneum* after 48h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
0.510	0.708	30	26	86.667	87	6.13	6.004	6.087	13.17	5.953
0.255	0.407	30	5	16.667	17	4.05	4.312	4.074	15.96	4.294
0.127	0.104	30	1	3.333	3	3.12	2.611	3.568	1.86	2.626

Regression equation: Y = 2.054 + 5.511X
Chi-squared is 2.661 with 1 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.535mg/cm^2
LD_{50} is 0.342mg/cm^2
95% confidence limits are 0.295 to 0.397mg/cm^2

Appendix Table DCCVII: Dose mortality effect of *Pz. zeylanica* (wp/PetE) extracts against *T. castaneum* after 30min of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
3.056	0.485	30	15	50.000	50	5.00	4.845	5.020	18.81	4.865
2.547	0.406	30	10	33.333	33	4.56	4.652	4.551	18.03	4.664
2.037	0.309	30	7	23.333	23	4.26	4.415	4.270	16.74	4.419
1.528	0.184	30	6	20.000	20	4.16	4.109	4.170	14.13	4.103
1.019	0.008	30	3	10.000	10	3.72	3.680	3.730	9.06	3.657

Regression equation: Y = 3.637 + 2.531X
Chi-squared is 1.168 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.539mg/cm^2
LD_{50} is 3.457mg/cm^2
95% confidence limits are 2.413 to 4.951mg/cm^2

Appendix Table DCCVIII: Dose mortality effect of *Pz. zeylanica* (wp/PetE) extracts against *T. castaneum* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
3.056	0.485	30	25	83.333	83	5.95	5.691	5.910	16.74	5.653
2.547	0.406	30	19	63.333	63	5.33	5.440	5.321	18.03	5.410
2.037	0.309	30	13	43.333	43	4.82	5.133	4.815	19.02	5.113
1.528	0.184	30	13	43.333	43	4.82	4.737	4.818	18.48	4.730
1.019	0.008	30	7	23.333	23	4.26	4.179	4.284	14.13	4.190

Regression equation: Y = 4.165 + 3.066X
Chi-squared is 3.204 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.272mg/cm^2
LD_{50} is 1.872mg/cm^2
95% confidence limits are 1.597 to 2.195mg/cm^2

Appendix Table DCCIX: Dose mortality effect of *Pz. zeylanica* (wp/PetE) extracts against *T. castaneum* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
3.056	0.485	30	29	96.667	97	6.88	6.248	6.587	11.10	6.224
2.547	0.406	30	25	83.333	83	5.95	5.957	5.984	14.13	5.939
2.037	0.309	30	18	60.000	60	5.25	5.600	5.220	17.43	5.588
1.528	0.184	30	16	53.333	53	5.08	5.141	5.065	19.02	5.138
1.019	0.008	30	11	36.667	37	4.67	4.494	4.690	16.74	4.503

Regression equation: Y = 4.473 + 3.610X
Chi-squared is 4.544 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.150mg/cm^2
LD_{50} is 1.400mg/cm^2
95% confidence limits are 1.180 to 1.660mg/cm^2

Appendix Table DCCX: Dose mortality effect of *Pz. zeylanica* (wp/PetE) extracts against *T. castaneum* after 36h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
2.037	0.309	30	21	70.000	70	5.52	5.543	5.500	17.43	5.541
1.528	0.184	30	19	63.333	63	5.33	5.291	5.358	18.81	5.293
1.019	0.008	30	14	46.667	47	4.92	4.936	4.915	19.02	4.942

Regression equation: Y = 4.926 + 1.993X
Chi-squared is 0.124 with 1 degree of freedom
No significant heterogeneity
Log LD_{50} is 0.037mg/cm^2
LD_{50} is 1.090mg/cm^2
95% confidence limits are 0.705 to 1.685mg/cm^2

Appendix Table DCCXI: Dose mortality effect of *Pz. zeylanica* (wp/PetE) extracts against *T. castaneum* after 48h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
2.037	0.309	30	27	90.000	90	6.28	6.174	6.270	12.15	6.133
1.528	0.184	30	22	73.333	73	5.61	5.792	5.606	15.96	5.785
1.019	0.008	30	19	63.333	63	5.33	5.254	5.358	18.81	5.295

Regression equation: Y = 5.272 + 2.784X
Chi-squared is 0.815 with 1 degree of freedom
No significant heterogeneity
Log LD_{50} is -0.098mg/cm^2
LD_{50} is 0.799mg/cm^2
95% confidence limits are 0.471 to 1.353mg/cm^2

Appendix Table DCCXII: Dose mortality effect of *Pz. zeylanica* (wp/$CHCl_3$) extracts against *T. castaneum* after 30min of exposure

Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro	
3.056	0.485	30	8	26.667	27	4.39	4.264	4.388	15.09	4.274
2.547	0.406	30	5	16.667	17	4.05	4.157	4.056	14.13	4.163
2.037	0.309	30	5	16.667	17	4.05	4.027	4.037	13.17	4.027
1.528	0.184	30	3	10.000	10	3.72	3.859	3.720	11.10	3.852
1.019	0.008	30	3	10.000	10	3.72	3.623	3.730	9.06	3.605

Regression equation: Y = 3.594 + 1.402X
Chi-squared is 0.694 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.003mg/cm^2
LD_{50} is 10.073mg/cm^2
95% confidence limits are 1.632 to 62.165mg/cm^2

Appendix Table DCCXIII: Dose mortality effect of *Pz. zeylanica* (wp/$CHCl_3$) extracts against *T. castaneum* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
3.056	0.485	30	16	53.333	53	5.08	4.988	5.065	19.02	4.991
2.547	0.406	30	13	43.333	43	4.82	4.840	4.838	18.81	4.840
2.037	0.309	30	10	33.333	33	4.56	4.659	4.551	18.03	4.656
1.528	0.184	30	8	26.667	27	4.39	4.426	4.390	16.74	4.418
1.019	0.008	30	6	20.000	20	4.16	4.098	4.160	13.17	4.084

Regression equation: Y = 4.068 + 1.902X
Chi-squared is 0.393 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.490mg/cm^2
LD_{50} is 3.089mg/cm^2
95% CONFIDENCE LIMITS ARE 2.075 to 4.601mg/cm^2

Appendix Table DCCXIV: Dose mortality effect of *Pz. zeylanica* (wp/$CHCl_3$) extracts against *T. castaneum* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
3.056	0.485	30	25	83.333	83	5.95	5.739	5.926	15.96	5.709
2.547	0.406	30	20	66.667	67	5.44	5.521	5.416	17.43	5.497
2.037	0.309	30	16	53.333	53	5.08	5.254	5.098	18.81	5.238
1.528	0.184	30	13	43.333	43	4.82	4.910	4.815	19.02	4.904
1.019	0.008	30	10	33.333	33	4.56	4.425	4.570	16.74	4.434

Regression equation: Y = 4.412 + 2.673X
Chi-squared is 1.698 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.220mg/cm^2
LD_{50} is 1.659mg/cm^2
95% confidence limits are 1.372 to 2.007mg/cm^2

Appendix Table DCCXV: Dose mortality effect of *Pz. zeylanica* (wp/$CHCl_3$) extracts against *T. castaneum* after 36h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
3.056	0.485	30	29	96.667	97	6.88	6.324	6.656	10.08	6.302
2.547	0.406	30	25	83.333	83	5.95	6.054	5.923	13.17	6.040
2.037	0.309	30	21	70.000	70	5.52	5.722	5.510	15.96	5.719
1.528	0.184	30	18	60.000	60	5.25	5.295	5.280	18.81	5.305
1.019	0.008	30	13	43.333	43	4.82	4.693	4.821	18.03	4.722

Regression equation: Y = 4.695 + 3.313X
Chi-squared is 2.325 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.092mg/cm^2
LD_{50} is 1.236mg/cm^2
95% confidence limits are 0.998 to 1.532mg/cm^2

Appendix Table DCCXVI: Dose mortality effect of *Pz. zeylanica* (wp/$CHCl_3$) extracts against *T. castaneum* after 48h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
2.547	0.406	30	28	93.333	93	6.48	6.339	6.424	10.08	6.260
2.037	0.309	30	25	83.333	83	5.95	6.047	5.923	13.17	5.993
1.528	0.184	30	21	70.000	70	5.52	5.671	5.520	16.74	5.649
1.019	0.008	30	18	60.000	60	5.25	5.142	5.240	19.02	5.165

Regression equation: Y = 5.142 + 2.753X
Chi-squared is 0.722 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is -0.0517mg/cm^2
LD_{50} is 0.888mg/cm^2
95% confidence limits are 0.587 to 1.342mg/cm^2

Appendix Table DCCXVII: Dose mortality effect of *S. nodiflora* (wp/PetE) extracts against *T. castaneum* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
1.529	0.184	30	15	50.000	50	5.00	4.962	4.990	19.02	4.969
1.274	0.105	30	5	16.667	17	4.05	4.120	4.056	14.13	4.107
1.019	0.008	30	1	3.333	3	3.12	3.089	3.135	3.93	3.052

Regression equation: Y = 2.963 + 10.877X
Chi-squared is 0.072 with 1 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.187mg/cm^2
LD_{50} is 1.539mg/cm^2
95% confidence limits are 1.404 to 1.687mg/cm^2

Appendix Table DCCXVIII: Dose mortality effect of *S. nodiflora* (wp/PetE) extracts against *T. castaneum* after 24h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
1.529	1.184	30	21	70.000	70	5.52	5.238	5.540	18.81	5.268
1.274	1.105	30	6	20.000	20	4.16	4.589	4.180	17.43	4.608
1.019	1.008	30	4	13.333	13	3.87	3.794	3.894	10.08	3.801
0.764	0.883	30	1	3.333	3	3.12	2.769	3.379	2.28	2.759

Regression equation: Y = -4.595 + 8.327X
Chi-squared is 5.552 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.152mg/cm^2
LD_{50} is 1.420mg/cm^2
95% confidence limits are 1.298 to 1.553mg/cm^2

Appendix Table DCCXIX: Dose mortality effect of *S. nodiflora* (wp/PetE) extracts against *T. castaneum* after 36h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
1.529	1.184	30	23	76.667	77	5.74	5.511	5.696	17.43	5.482
1.274	1.105	30	9	30.000	30	4.48	4.879	4.500	18.81	4.854
1.019	1.008	30	7	23.333	23	4.26	4.104	4.284	14.13	4.085
0.764	0.883	30	1	3.333	3	3.12	3.106	3.116	4.62	3.094

Regression equation: Y = -3.906 + 7.926X
Chi-squared is 3.716 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.124mg/cm^2
LD_{50} is 1.329mg/cm^2
95% confidence limits are 1.224 to 1.444mg/cm^2

Appendix Table DCCXX: Dose mortality effect of *S. nodiflora* (wp/PetE) extracts against *T. castaneum* after 48h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
1.529	1.184	30	26	86.667	87	6.13	5.717	6.054	15.96	5.744
1.274	1.105	30	10	33.333	33	4.56	5.060	4.575	19.11	5.075
1.019	1.008	30	10	33.333	33	4.56	4.257	4.592	15.09	4.257
0.764	0.883	30	1	3.333	3	3.12	3.220	3.121	5.40	3.202

Regression equation: Y = -4.246 + 8.435X
Chi-squared is 8.047 with 2 degrees of freedom
Variance has been adjusted for heterogeneity
Log LD_{50} is 1.096mg/cm^2
LD_{50} is 1.248mg/cm^2
95% confidence limits are 1.078 to 1.445mg/cm^2

Appendix Table DCCXXI: Dose mortality effect of *S. nodiflora* (wp/CH_3OH) extracts against *T. castaneum* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
3.567	0.552	30	10	33.333	33	4.56	4.574	4.544	17.43	4.633
3.057	0.485	30	8	26.667	27	4.39	4.118	4.436	14.13	4.161
2.548	0.406	30	1	3.333	3	3.12	3.579	3.211	8.07	3.604
2.038	0.309	30	1	3.333	3	3.12	2.919	3.172	3.30	2.920

Regression equation: Y = 0.741 + 7.047X
Chi-squared is 2.661 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.604mg/cm^2
LD_{50} is 4.021mg/cm^2
95% confidence limits are 3.333 to 4.852mg/cm^2

Appendix Table DCCXXII: Dose mortality effect of *S. nodiflora* (wp/CH_3OH) extracts against *T. castaneum* after 36h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
3.567	0.552	30	19	63.333	63	5.33	5.213	5.358	18.81	5.284
3.057	0.485	30	13	43.333	43	4.82	4.734	4.818	18.48	4.767
2.548	0.406	30	3	10.000	10	3.72	4.168	3.790	14.13	4.157
2.038	0.309	30	3	10.000	10	3.72	3.474	3.810	7.14	3.409

Regression equation: Y = 1.025 + 7.712X
Chi-squared is 3.203 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.515mg/cm^2
LD_{50} is 3.277mg/cm^2
95% confidence limits are 2.995 to 3.585mg/cm^2

Appendix Table DCCXXIII: Dose mortality effect of *S. nodiflora* (wp/CH_3OH) extracts against *T. castaneum* after 48h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
3.567	0.552	30	22	73.333	73	5.61	5.560	5.584	17.43	5.531
3.057	0.485	30	16	53.333	53	5.08	5.212	5.098	18.81	5.202
2.548	0.406	30	12	40.000	40	4.75	4.801	4.760	18.81	4.814
2.038	0.309	30	10	33.333	33	4.56	4.297	4.592	15.09	4.338
1.529	0.184	30	2	6.667	7	3.52	3.649	3.529	9.06	3.725

Regression equation: Y = 2.819 + 4.911X
Chi-squared is 1.631 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.444mg/cm^2
LD_{50} is 2.780mg/cm^2
95% confidence limits are 2.499 to 3.094mg/cm^2

Appendix Table DCCXXIV: Dose mortality effect of *Z. zerumbet* (ap/PetE) extracts against *T. castaneum* after 30min of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
2.548	0.406	30	18	60.000	60	5.25	5.228	5.280	18.81	5.260
2.038	0.309	30	7	23.333	23	4.26	4.299	4.252	15.09	4.295
1.529	0.184	30	1	3.333	3	3.12	3.103	3.116	4.62	3.054

Regression equation: Y = 1.219 + 9.948X
Chi-squared is 0.053 with 1 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.380mg/cm^2
LD_{50} is 2.399mg/cm^2
95% confidence limits are 2.209 to 2.605mg/cm^2

Appendix Table DCCXXV: Dose mortality effect of *Z. zerumbet* (ap/PetE) extracts against *T. castaneum* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
2.548	0.406	30	23	76.667	77	5.74	5.482	5.699	18.03	5.493
2.038	0.309	30	10	33.333	33	4.56	4.746	4.558	18.48	4.747
1.529	0.184	30	2	6.667	7	3.52	3.800	3.546	10.08	3.787
1.019	0.008	30	1	3.333	3	3.12	2.463	4.268	1.20	2.431

Regression equation: Y = 2.369 + 7.692X
Chi-squared is 6.058 with 2 degrees of freedom
Variance has been adjusted for heterogeneity
Log LD_{50} is 0.342mg/cm^2
LD_{50} is 2.198mg/cm^2
95% confidence limits are 1.883 to 2.567mg/cm^2

Appendix Table DCCXXVI: Dose mortality effect of *Z. zerumbet* (ap/PetE) extracts against *T. castaneum* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
2.548	0.406	30	29	96.667	97	6.88	6.068	6.497	13.17	6.073
2.038	0.309	30	13	43.333	43	4.82	5.228	4.838	18.81	5.236
1.529	0.184	30	6	20.000	20	4.16	4.147	4.170	14.13	4.158
1.019	0.008	30	1	3.333	3	3.12	2.620	3.568	1.86	2.637

Regression equation: Y = 2.567 + 8.632X
Chi-squared is 6.957 with 2 degrees of freedom
Variance has been adjusted for heterogeneity
Log LD_{50} is 0.282mg/cm^2
LD_{50} is 1.914mg/cm^2
95% confidence limits are 1.662 to 2.204mg/cm^2

Appendix Table DCCXXVII: Dose mortality effect of *Z. zerumbet* (ap/PetE) extracts against *T. castaneum* after 36h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
2.038	0.309	30	18	60.000	60	5.25	5.261	5.280	18.81	5.278
1.529	0.184	30	10	33.333	33	4.56	4.542	4.544	17.43	4.548
1.019	0.008	30	2	6.667	7	3.52	3.527	3.519	8.07	3.516

Regression equation: Y = 3.468 + 5.854X
Chi-squared is 0.0002 with 1 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.262mg/cm^2
LD_{50} is 1.827mg/cm^2
95% confidence limits are 1.603 to 2.081mg/cm^2

Appendix Table DCCXXVIII: Dose mortality effect of *Z. zerumbet* (ap/PetE) extracts against *T. castaneum* after 48h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
2.038	1.309	30	22	73.333	73	5.61	5.470	5.591	18.03	5.470
1.529	1.184	30	13	43.333	43	4.82	4.897	4.838	18.81	4.893
1.019	1.008	30	4	13.333	13	3.87	4.088	3.873	13.17	4.079
0.510	0.708	30	1	3.333	3	3.12	2.708	3.379	2.28	2.689

Regression equation: Y = -0.581 + 4.622X
Chi-squared is 1.963 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.207mg/cm^2
LD_{50} is 1.612mg/cm^2
95% confidence limits are 1.400 to 1.857mg/cm^2

Appendix Table DCCXXIX: Dose mortality effect of *Z. zerumbet* (ap/$CHCl_3$) extracts against *T. castaneum* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
3.567	0.552	30	14	46.667	47	4.92	4.881	4.942	18.81	4.908
3.057	0.485	30	7	23.333	23	4.26	4.333	4.266	15.96	4.340
2.548	0.406	30	3	10.000	10	3.72	3.687	3.730	9.06	3.670

Regression equation: Y = 0.229 + 8.473X
Chi-squared is 0.142 with 1 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.563mg/cm^2
LD_{50} is 3.657mg/cm^2
95% confidence limits are 3.229 to 4.143mg/cm^2

Appendix Table DCCXXX: Dose mortality effect of *Z. zerumbet* (ap/$CHCl_3$) extracts against *T. castaneum* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
3.567	0.552	30	19	63.333	63	5.33	5.151	5.315	19.02	5.154
3.057	0.485	30	10	33.333	33	4.56	4.772	4.558	18.48	4.766
2.548	0.406	30	7	23.333	23	4.26	4.323	4.266	15.96	4.309
2.038	0.309	30	4	13.333	13	3.87	3.774	3.894	10.08	3.748

Regression equation: Y = 1.959 + 5.784X
Chi-squared is 1.540 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.526mg/cm^2
LD_{50} is 3.355mg/cm^2
95% confidence limits are 2.958 to 3.805mg/cm^2

Appendix Table DCCXXXI: Dose mortality effect of *Z. zerumbet* (ap/$CHCl_3$) extracts against *T. castaneum* after 36h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
3.567	0.552	30	26	86.667	87	6.13	6.013	6.087	13.17	5.977
3.057	0.485	30	20	66.667	67	5.44	5.481	5.429	18.03	5.448
2.548	0.406	30	11	36.667	37	4.67	4.853	4.682	18.81	4.824
2.038	0.309	30	6	20.000	20	4.16	4.082	4.160	13.17	4.058
1.529	0.184	30	1	3.333	3	3.12	3.091	3.135	3.93	3.073

Regression equation: Y = 1.618 + 7.893X
Chi-squared is 0.696 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.428mg/cm^2
LD_{50} is 2.682 mg/cm^2
95% confidence limits are 2.501 to 2.876mg/cm^2

Appendix Table DCCXXXII: Dose mortality effect of *Z. zerumbet* (ap/$CHCl_3$) extracts against *T. castaneum* after 48h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
3.057	0.485	30	21	70.000	70	5.52	5.474	5.510	18.03	5.479
2.548	0.406	30	16	53.333	53	5.08	5.024	5.075	19.11	5.021
2.038	0.309	30	7	23.333	23	4.26	4.471	4.270	16.74	4.459
1.529	0.184	30	4	13.333	13	3.87	3.761	3.894	10.08	3.737

Regression equation: Y = 2.669 + 5.791X
Chi-squared is 0.923 with 2 degrees of freedom
No significant heterogeneity
LOG LD_{50} IS 0.403mg/cm^2
LD_{50} IS 2.527mg/cm^2
95% confidence limits are 2.280 to 2.800mg/cm^2

Appendix Table DCCXXXIII: Dose mortality effect of *Z. zerumbet* (ap/CH_3OH) extracts against *T. castaneum* after 30min of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
2.548	0.406	30	11	36.667	37	4.67	4.700	4.662	18.48	4.692
2.038	0.309	30	9	30.000	30	4.48	4.426	4.480	16.74	4.420
1.529	0.184	30	5	16.667	17	4.05	4.074	4.037	13.17	4.070

Regression equation: Y = 3.553 + 2.806X
Chi-squared is 0.091 with 1 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.516mg/cm^2
LD_{50} is 3.280mg/cm^2
95% confidence limits are 1.836 to 5.859mg/cm^2

Appendix Table DCCXXXIV: Dose mortality effect of *Z. zerumbet* (ap/CH_3OH) extracts against *T. castaneum* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
2.548	0.406	30	19	63.333	63	5.33	5.288	5.358	18.81	5.317
2.038	0.309	30	12	40.000	40	4.75	4.824	4.760	18.81	4.834
1.529	0.184	30	7	23.333	23	4.26	4.227	4.252	15.09	4.212

Regression equation: Y = 3.293 + 4.981X
Chi-squared is 0.158 with 1 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.343mg/cm^2
LD_{50} is 2.201mg/cm^2
95% confidence limits are 1.925 to 2.517mg/cm^2

Appendix Table DCCXXXV: Dose mortality effect of *Z. zerumbet* (ap/CH_3OH) extracts against *T. castaneum* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
2.548	0.406	30	23	76.667	77	5.74	5.698	5.730	16.74	5.664
2.038	0.309	30	15	50.000	50	5.00	5.186	4.990	19.02	5.173
1.529	0.184	30	12	40.000	40	4.75	4.528	4.740	17.43	4.542
1.019	0.008	30	2	6.667	7	3.52	3.598	3.519	8.07	3.652

Regression equation: Y = 3.610 + 5.055X
Chi-squared is 1.535 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.275mg/cm^2
LD_{50} is 1.883mg/cm^2
95% confidence limits are 1.679 to 2.112mg/cm^2

Appendix Table DCCXXXVI: Dose mortality effect of *Z. zerumbet* (ap/CH_3OH) extracts against *T. castaneum* after 36h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
2.548	0.406	30	29	96.667	97	6.88	6.163	6.592	12.15	6.176
2.038	0.309	30	19	63.333	63	5.33	5.667	5.310	16.74	5.681
1.529	0.184	30	15	50.000	50	5.00	5.029	5.000	19.11	5.044
1.019	0.008	30	7	23.333	23	4.26	4.128	4.284	14.13	4.144

Regression equation: Y = 4.102 + 5.104X
Chi-squared is 4.718 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.176mg/cm^2
LD_{50} is 1.499mg/cm^2
95% confidence limits are 1.332 to 1.687mg/cm^2

Appendix Table DCCXXXVII: Dose mortality effect of *Z. zerumbet* (ap/CH_3OH) extracts against *T. castaneum* after 48h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
2.038	1.309	30	23	76.667	77	5.74	5.821	5.698	15.09	5.802
1.529	1.184	30	19	63.333	63	5.33	5.270	5.358	18.81	5.275
1.019	1.008	30	10	33.333	33	4.56	4.493	4.570	16.74	4.530
0.510	0.708	30	1	3.333	3	3.12	3.166	3.116	4.62	3.259

Regression equation: Y = 0.268 + 4.227X
Chi-squared is 0.416 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.119mg/cm^2
LD_{50} is 1.316mg/cm^2
95% confidence limits are 1.140 to 1.520mg/cm^2

Appendix Table DCCXXXVIII: Dose mortality effect part of *Z. zerumbet* (rh/PetE) extracts against *T. castaneum* after 30min of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
2.038	1.309	30	12	40.000	40	4.75	4.633	4.740	18.03	4.633
1.529	1.184	30	6	20.000	20	4.16	4.281	4.150	15.09	4.283
1.019	1.008	30	3	10.000	10	3.72	3.785	3.720	10.08	3.788
0.510	0.708	30	1	3.333	3	3.12	2.938	3.172	3.30	2.943

Regression equation: Y = 0.956 + 2.809X
Chi-squared is 0.690 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.440mg/cm^2
LD_{50} is 2.753mg/cm^2
95% confidence limits are 1.745 to 4.344mg/cm^2

Appendix Table DCCXXXIX: Dose mortality effect of *Z. zerumbet* (rh/PetE) extracts against *T. castaneum* after 12h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
2.038	1.309	30	18	60.000	60	5.25	5.035	5.250	19.11	5.056
1.529	1.184	30	9	30.000	30	4.48	4.704	4.480	18.48	4.704
1.019	1.008	30	6	20.000	20	4.16	4.235	4.150	15.09	4.207
0.510	0.708	30	2	6.667	7	3.52	3.436	3.540	7.14	3.359

Regression equation: Y = 1.364 + 2.820X
Chi-squared is 1.929 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.289mg/cm^2
LD_{50} is 1.947mg/cm^2
95% confidence limits are 1.479 to 2.564mg/cm^2

Appendix Table DCCXL: Dose mortality effect of *Z. zerumbet* (rh/PetE) extracts against *T. castaneum* after 24h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
2.038	1.309	30	22	73.333	73	5.61	5.404	5.591	18.03	5.407
1.529	1.184	30	16	53.333	53	5.08	5.094	5.075	19.11	5.097
1.019	1.008	30	9	30.000	30	4.48	4.656	4.470	18.03	4.659
0.510	0.708	30	3	10.000	10	3.72	3.909	3.740	12.15	3.912
0.255	0.407	30	2	6.667	7	3.52	3.160	3.724	4.62	3.164

Regression equation: Y = 2.154 + 2.484X
Chi-squared is3.072 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.145mg/cm^2
LD_{50} is 1.398mg/cm^2
95% confidence limits are 1.110 to 1.761mg/cm^2

Appendix Table DCCXLI: Dose mortality effect of *Z. zerumbet* (rh/PetE) extracts against *T. castaneum* after 36h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
2.038	1.309	30	27	90.000	90	6.28	5.810	6.140	15.09	5.745
1.529	1.184	30	18	60.000	60	5.25	5.475	5.240	18.03	5.408
1.019	1.008	30	12	40.000	40	4.75	5.002	4.750	19.11	4.933
0.510	0.708	30	4	13.333	13	3.87	4.196	3.904	14.13	4.121
0.255	0.407	30	3	10.000	10	3.72	3.388	3.890	6.24	3.309

Regression equation: Y = 2.211 + 2.699X
Chi-squared is6.276 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.033mg/cm^2
LD_{50} is 1.079mg/cm^2
95% confidence limits are 0.886 to 1.315mg/cm^2

Appendix Table DCCXLII: Dose mortality effect of *Z. zerumbet* (rh/PetE) extracts against *T. castaneum* after 48h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
1.529	1.184	30	21	70.000	70	5.52	5.333	5.500	18.48	5.334
1.019	1.008	30	13	43.333	43	4.82	4.968	4.815	19.02	4.960
0.510	0.708	30	6	20.000	20	4.16	4.346	4.170	15.96	4.322
0.255	0.407	30	4	13.333	13	3.87	3.722	3.894	10.08	3.684

Regression equation: Y = 2.822 + 2.121X
Chi-squared is1.726 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.0271mg/cm^2
LD_{50} is 1.064mg/cm^2
95% confidence limits are 0.789 to 1.436mg/cm^2

Appendix Table DCCXLIII: Dose mortality effect of *Z. zerumbet* (rh/$CHCl_3$) extracts against *T. castaneum* after 12h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
3.567	0.552	30	10	33.333	33	4.56	4.671	4.551	18.03	4.647
3.057	0.485	30	8	26.667	27	4.39	4.186	4.436	14.13	4.209
2.548	0.406	30	2	6.667	7	3.52	3.614	3.529	9.06	3.691

Regression equation: Y = 1.034 + 6.543X
Chi-squared is 1.135 with 1 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.606mg/cm^2
LD_{50} is 4.038mg/cm^2
95% confidence limits are 3.198 to 5.099mg/cm^2

Appendix Table DCCXLIV: Dose mortality effect of *Z. zerumbet* (rh/$CHCl_3$) extracts against *T. castaneum* after 24h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
3.567	0.552	30	17	56.667	57	5.18	5.281	5.202	18.81	5.277
3.057	0.485	30	13	43.333	43	4.82	4.700	4.818	18.48	4.711
2.548	0.406	30	5	16.667	17	4.05	4.015	4.037	13.17	4.043
2.038	0.309	30	1	3.333	3	3.12	3.174	3.116	4.62	3.224

Regression equation: Y = 0.613 + 8.444X
Chi-squared is 0.371 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.520mg/cm^2
LD_{50} is 3.308mg/cm^2
95% confidence limits are 3.041 to 3.598mg/cm^2

Appendix Table DCCXLV: Dose mortality effect of *Z. zerumbet* (rh/$CHCl_3$) extracts against *T. castaneum* after 36h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
3.567	0.552	30	20	66.667	67	5.44	5.454	5.429	18.03	5.449
3.057	0.485	30	16	53.333	53	5.08	5.024	5.075	19.11	5.017
2.548	0.406	30	9	30.000	30	4.48	4.518	4.460	17.43	4.508
2.038	0.309	30	4	13.333	13	3.87	3.897	3.873	11.10	3.884
1.529	0.184	30	1	3.333	3	3.12	3.097	3.135	3.93	3.081

Regression equation: Y = 1.894 + 6.436X
Chi-squared is 0.124 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.483mg/cm^2
LD_{50} is 3.038mg/cm^2
95% confidence limits are 2.772 to 3.330mg/cm^2

Appendix Table DCCXLVI: Dose mortality effect of *Z. zerumbet* (rh/$CHCl_3$) extracts against *T. castaneum* after 48h of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
3.567	0.552	30	27	90.000	90	6.28	6.084	6.210	13.17	6.031
3.057	0.485	30	21	70.000	70	5.52	5.595	5.500	17.43	5.545
2.548	0.406	30	13	43.333	43	4.82	5.017	4.825	19.11	4.972
2.038	0.309	30	7	23.333	23	4.26	4.308	4.266	15.96	4.269
1.529	0.184	30	2	6.667	7	3.52	3.396	3.572	6.24	3.365

Regression equation: Y = 2.028 + 7.247X
Chi-squared is 1.140 with 3 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.410mg/cm^2
LD_{50} is 2.571mg/cm^2
95% confidence limits are 2.389 to 2.767mg/cm^2

Appendix Table DCCXLVII: Dose mortality effect of *Z. zerumbet* (rh/CH_3OH) extracts against *T. castaneum* after 30min of exposure

Dose	Ldos	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
2.038	0.309	30	19	63.333	63	5.33	5.311	5.318	18.48	5.301
1.529	0.184	30	12	40.000	40	4.75	4.783	4.740	18.48	4.770
1.019	0.008	30	5	16.667	17	4.05	4.036	4.037	13.17	4.020

Regression equation: Y = 3.985 + 4.255X
Chi-squared is 0.026 with 1 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.239mg/cm^2
LD_{50} is 1.732mg/cm^2
95% confidence limits are 1.469 to 2.043mg/cm^2

Appendix Table DCCXLVIII: Dose mortality effect of *Z. zerumbet* (rh/CH_3OH) extracts against *T. castaneum* after 12h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
2.038	1.309	30	24	80.000	80	5.85	5.674	5.820	16.74	5.673
1.529	1.184	30	16	53.333	53	5.08	5.205	5.098	18.81	5.188
1.019	1.008	30	8	26.667	27	4.39	4.544	4.376	17.43	4.503
0.510	0.708	30	2	6.667	7	3.52	3.417	3.540	7.14	3.335

Regression equation: Y = 0.585 + 3.887X
Chi-squared is 1.096 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.136mg/cm^2
LD_{50} is 1.368mg/cm^2
95% confidence limits are 1.176 to 1.591mg/cm^2

Appendix Table DCCXLIX: Dose mortality effect of *Z. zerumbet* (rh/CH_3OH) extracts against *T. castaneum* after 24h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
2.038	1.309	30	29	96.667	97	6.88	6.231	6.587	11.10	6.213
1.529	1.184	30	20	66.667	67	5.44	5.663	5.430	16.74	5.659
1.019	1.008	30	12	40.000	40	4.75	4.860	4.760	18.81	4.877
0.510	0.708	30	3	10.000	10	3.72	3.491	3.810	7.14	3.544

Regression equation: Y = 0.404 + 4.437X
Chi-squared is 3.198 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.036mg/cm^2
LD_{50} is 1.086mg/cm^2
95% confidence limits are 0.941 to 1.253mg/cm^2

Appendix Table DCCL: Dose mortality effect of *Z. zerumbet* (rh/CH_3OH) extracts against *T. castaneum* after 36h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
1.529	1.184	30	22	73.333	73	5.61	5.565	5.584	17.43	5.539
1.019	1.008	30	14	46.667	47	4.92	5.017	4.925	19.11	5.003
0.510	0.708	30	6	20.000	20	4.16	4.082	4.160	13.17	4.087
0.255	0.407	30	1	3.333	3	3.12	3.146	3.116	4.62	3.170

Regression equation: Y = 1.932 + 3.046X
Chi-squared is 0.234 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 1.007mg/cm^2
LD_{50} is 1.017mg/cm^2
95% confidence limits are 0.825 to 1.253mg/cm^2

Appendix Table DCCLI: Dose mortality effect of *Z. zerumbet* (rh/CH_3OH) extracts against *T. castaneum* after 48h of exposure

Dose	Ldos (+1)	#U	Kl	%Kill	Cr%	E Pr	Ex Pr	Wk Pro	Weght	F Pro
1.529	1.184	30	25	83.333	83	5.95	5.888	5.902	15.09	5.845
1.019	1.008	30	18	60.000	60	5.25	5.352	5.240	18.48	5.322
0.510	0.708	30	9	30.000	30	4.48	4.438	4.480	16.74	4.431
0.255	0.407	30	2	6.667	7	3.52	3.523	3.519	8.07	3.538

Regression equation: Y = 2.333 + 2.965X
Chi-squared is 0.218 with 2 degrees of freedom
No significant heterogeneity
Log LD_{50} is 0.899mg/cm^2
LD_{50} is 0.793mg/cm^2
95% confidence limits are 0.650 to 0.969mg/cm^2

Appendix Table DCCLII: Repellency of PetE extracts of *E. nummularius* (wp) against *A. gossypii*

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	30	R_1	10	9	9	10	10	9.67	9	9.33	9.33	9.67
		R_2	10	10	10	10	10					
		R_3	9	8	9	8	9					
0.197	30	R_1	10	10	10	10	10	9.67	9.33	9.67	9.67	9.33
		R_2	10	10	10	9	9					
		R_3	9	8	9	10	9					
0.098	30	R_1	10	10	10	10	9	10	10	9.67	10	9.33
		R_2	10	10	10	10	10					
		R_3	10	10	9	10	9					
0.049	30	R_1	7	10	9	9	9	8	9.67	9.67	9.67	9.33
		R_2	8	9	10	10	10					
		R_3	9	10	10	10	9					
0.025	30	R_1	9	10	9	10	10	7.67	8.67	8.67	9.33	8.67
		R_2	9	9	9	9	8					
		R_3	5	7	8	9	8					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	93.4	80	86.6	86.6	93.4	75.11	63.43	68.53	68.53	75.11
0.197	93.4	86.6	93.4	93.4	86.6	75.11	68.53	75.11	75.11	68.53
0.098	100	100	93.4	100	86.6	90	90	75.11	90	68.53
0.049	60	93.4	93.4	93.4	86.6	50.77	75.11	75.11	75.11	68.53
0.025	53.4	73.4	73.4	86.6	73.4	46.95	58.9	58.9	68.53	58.9

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	1507.867	4	376.9667	5.755511	0.004569	3.006917
Between exposures	200.868	4	50.217	0.766711	0.56228	3.006917
Error	1047.946	16	65.49665			
Total	2756.681	24				

Appendix Table DCCLIII: Repellency of $CHCl_3$ extracts of *E. nummularius* (wp) against *A. gossypii*

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	30	R_1	10	10	10	9	10	10	10	9.67	9.67	9.33
		R_2	10	10	9	10	9					
		R_3	10	10	10	10	9					
0.197	30	R_1	8	9	9	8	8	9	9.33	9.33	9.33	8.67
		R_2	10	9	9	10	9					
		R_3	9	10	10	10	9					
0.098	30	R_1	10	9	10	10	9	9	8.67	8.67	8.67	9.33
		R_2	9	9	8	8	9					
		R_3	8	8	8	8	10					
0.049	30	R_1	10	9	10	8	9	10	9.33	10	9	9.33
		R_2	10	9	10	9	10					
		R_3	10	10	10	10	9					
0.025	30	R_1	10	9	10	10	9	9.67	8.67	9	8.33	9.33
		R_2	9	9	8	6	9					
		R_3	10	8	9	9	10					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	100	100	93.4	93.4	86.6	90	90	75.11	75.11	68.53
0.197	80	86.6	86.6	86.6	73.4	63.43	68.53	68.53	68.53	58.9
0.098	80	73.4	73.4	73.4	86.6	63.43	58.9	58.9	58.9	68.53
0.049	100	86.6	100	80	86.6	90	68.53	90	63.43	68.53
0.025	93.4	73.4	80	66.6	86.6	75.11	58.9	63.43	54.70	68.53

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	1265.294	4	316.3235	5.028055	0.008101	3.006917
Between exposures	439.2413	4	109.8103	1.745468	0.18933	3.006917
Error	1006.587	16	62.91169			
Total	2711.122	24				

Appendix Table DCCLIV: Repellency of CH_3OH extracts of *E. nummularius* (wp) against *A. gossypii*

Dose (mg/cm²)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	30	R_1	10	9	10	10	10	9.67	9	9.33	9.67	10
		R_2	9	8	8	9	10					
		R_3	10	10	10	10	10					
0.197	30	R_1	10	10	10	10	10	9.67	9.67	10	10	10
		R_2	10	9	10	10	10					
		R_3	9	10	10	10	10					
0.098	30	R_1	8	8	9	9	10	8.33	8.67	9.33	9.33	9.33
		R_2	8	8	9	9	9					
		R_3	9	10	10	10	9					
0.049	30	R_1	10	9	8	9	10	9	9.33	9	9.33	9.67
		R_2	8	9	9	9	9					
		R_3	9	10	10	10	10					
0.025	30	R_1	9	9	9	9	8	8.67	8.67	9.67	9.33	8.67
		R_2	7	8	10	9	9					
		R_3	10	9	10	10	9					

Dose (mg/cm²)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	93.4	80	86.6	93.4	100	75.11	63.43	68.53	75.11	90
0.197	93.4	93.4	100	100	100	75.11	75.11	90	90	90
0.098	66.6	73.4	86.6	86.6	86.6	54.70	58.9	68.53	68.53	68.53
0.049	80	86.6	80	86.6	93.4	63.43	68.53	63.43	68.53	75.11
0.025	73.4	73.4	93.4	86.6	73.4	58.9	58.9	75.11	68.53	58.9

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	1532.415	4	383.1039	10.2523	0.00026	3.006917
Between exposures	528.8686	4	132.2172	3.538281	0.029885	3.006917
Error	597.8819	16	37.36762			
Total	2659.166	24				

Appendix Table DCCLV: Repellency of PetE extracts of *L. camara* (ap) against *A. gossypii*

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	30	R_1	10	10	9	10	9	7.33	8	7.67	9	9
		R_2	5	6	5	7	9					
		R_3	7	8	9	10	9					
0.197	30	R_1	9	10	10	9	10	5.33	7	7.67	9.33	9.33
		R_2	4	5	6	9	10					
		R_3	3	6	7	10	8					
0.098	30	R_1	10	10	9	9	9	9	9.33	9	8.67	8
		R_2	7	8	9	7	7					
		R_3	10	10	9	10	8					
0.049	30	R_1	9	9	10	9	9	9.33	8	8	9.33	9
		R_2	9	7	8	10	10					
		R_3	10	8	6	9	8					
0.025	30	R_1	9	10	9	10	8	8.33	6.67	7	8.67	8.67
		R_2	8	6	4	7	8					
		R_3	8	4	8	9	10					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	46.6	60	53.4	80	80	43.05	50.77	46.95	63.43	63.43
0.197	6.6	40	53.4	86.6	86.6	14.89	39.23	46.95	68.53	68.53
0.098	80	86.6	80	73.4	60	63.43	68.53	63.43	58.90	50.77
0.049	86.6	60	60	86.6	80	68.53	63.43	63.43	68.53	63.43
0.025	66.6	33.4	40	73.4	73.4	54.70	35.30	39.23	58.90	58.90

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	1163.871	4	290.9676	2.070271	0.132537	3.006917
Between exposures	844.1975	4	211.0494	1.501643	0.248573	3.006917
Error	2248.73	16	140.5456			
Total	4256.798	24				

Appendix Table DCCLVI: Repellency of $CHCl_3$ extracts of *L. camara* (ap) against *A. gossypii*

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	30	R_1	7	8	9	8	9	7.33	9	9.33	8	9.33
		R_2	7	9	10	8	9					
		R_3	8	10	9	8	10					
0.197	30	R_1	10	10	10	10	10	9.67	9.67	9.67	9.33	9
		R_2	9	9	9	10	8					
		R_3	10	10	9	8	9					
0.098	30	R_1	6	8	9	8	10	7	8.33	8.33	8.33	9.33
		R_2	7	8	8	8	8					
		R_3	8	9	8	9	10					
0.049	30	R_1	9	10	9	10	9	6.67	9	9.33	9.67	9.33
		R_2	4	9	10	9	9					
		R_3	7	8	9	10	8					
0.025	30	R_1	10	10	10	10	9	9	10	9.33	9.67	9
		R_2	10	10	9	10	9					
		R_3	7	10	9	9	9					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	46.6	80	86.6	60	86.6	43.05	63.43	68.53	50.77	68.53
0.197	93.4	93.4	93.4	86.6	80	75.11	75.11	75.11	68.53	63.43
0.098	40	66.6	66.6	66.6	86.6	39.23	54.70	54.70	54.70	68.53
0.049	33.4	80	86.6	93.4	86.6	35.30	63.43	68.53	75.11	68.53
0.025	80	100	86.6	93.4	80	63.43	90	68.53	75.11	63.43

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	1217.151	4	304.2878	3.264134	0.03884	3.006917
Between exposures	1039.326	4	259.8315	2.787246	0.062361	3.006917
Error	1491.546	16	93.2216			
Total	3748.023	24				

Appendix Table DCCLVII: Repellency of CH_3OH extracts of *L. camara* (ap) against *A. gossypii*

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	30	R_1	10	9	10	10	8	10	9.67	9.67	10	8.67
		R_2	10	10	10	10	8					
		R_3	10	10	9	10	10					
0.197	30	R_1	10	10	9	10	10	9.67	10	9.67	9.67	9.67
		R_2	10	10	10	10	10					
		R_3	9	10	10	9	9					
0.098	30	R_1	7	8	9	9	7	8	6.33	7.33	7.67	8
		R_2	8	8	8	8	9					
		R_3	9	3	5	6	8					
0.049	30	R_1	8	8	8	6	9	6.33	7.33	8	7	8.33
		R_2	6	8	9	6	7					
		R_3	5	6	7	9	9					
0.025	30	R_1	9	10	9	10	10	7.33	8	8	9.67	9
		R_2	6	5	6	10	8					
		R_3	7	9	9	9	9					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	100	93.4	93.4	100	73.4	90	75.11	75.11	90	58.90
0.197	93.4	100	93.4	93.4	93.4	75.11	90	75.11	75.11	75.11
0.098	60	26.6	46.6	53.4	60	50.77	31.05	43.05	46.95	50.77
0.049	26.6	46.6	60	40	66.6	31.05	43.05	50.77	39.23	54.70
0.025	46.6	60	60	93.4	80	43.05	50.77	50.77	75.11	63.43

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	5700.778	4	1425.194	11.78373	0.000119	3.006917
Between exposures	174.4039	4	43.60099	0.3605	0.833032	3.006917
Error	1935.135	16	120.946			
Total	7810.317	24				

Appendix Table DCCLVIII: Repellency of PetE extracts of *L. camara* (r) against *A. gossypii*

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	30	R_1	9	10	10	9	9	7.33	9	9.67	9.67	9.33
		R_2	7	8	9	10	9					
		R_3	6	9	10	10	10					
0.197	30	R_1	10	10	9	9	10	8.67	10	9	9.33	9
		R_2	8	10	9	10	9					
		R_3	8	10	9	9	8					
0.098	30	R_1	10	9	8	10	9	9.33	9.67	8.67	9.33	8.33
		R_2	9	10	9	9	8					
		R_3	9	10	9	9	8					
0.049	30	R_1	9	9	8	8	7	7.67	8.33	7.33	7	7.33
		R_2	8	9	7	7	9					
		R_3	6	7	7	6	6					
0.025	30	R_1	10	8	10	9	8	6	6.33	7.67	5.67	5.67
		R_2	5	4	7	5	5					
		R_3	3	7	6	3	4					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	46.6	80	93.4	93.4	86.6	43.05	63.43	75.11	75.11	68.53
0.197	73.4	100	80	86.6	80	58.90	90	63.43	68.53	63.43
0.098	86.6	93.4	73.4	86.6	66.6	68.53	75.11	58.90	68.53	54.70
0.049	53.4	66.6	46.6	40	46.6	46.95	54.70	43.05	39.23	43.05
0.025	20	26.6	53.4	13.4	13.4	26.57	31.05	46.95	21.47	21.47

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	5691.184	4	1422.796	15.03707	2.78E-05	3.006917
Between exposures	645.1875	4	161.2969	1.704694	0.198105	3.006917
Error	1513.908	16	94.61923			
Total	7850.279	24				

Appendix Table DCCLIX: Repellency of $CHCl_3$ extracts of *L. camara* (r) against *A. gossypii*

Dose (mg/cm^2)	Insect used	Replications	Hourly observation 1h	2h	3h	4h	5h	Average of hourly observation (Nc) 1h	2h	3h	4h	5h
0.393	30	R_1	4	7	5	7	9	4	8	6	8	9
		R_2	5	8	5	7	8					
		R_3	3	9	8	10	10					
0.197	30	R_1	5	7	5	7	8	6	6.33	5.67	7.33	8.67
		R_2	6	5	7	8	9					
		R_3	7	7	5	7	9					
0.098	30	R_1	2	8	7	10	9	5	7	7.33	8.67	9.33
		R_2	7	10	9	10	10					
		R_3	6	3	6	6	8					
0.049	30	R_1	7	8	10	9	10	7.33	8.33	8.67	9	9
		R_2	8	9	9	9	8					
		R_3	7	8	7	9	9					
0.025	30	R_1	8	9	10	10	10	8	8.67	9	8.67	9
		R_2	8	8	7	7	9					
		R_3	8	9	10	9	8					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	-20	60	20	60	80	26.57	50.77	26.57	50.77	63.43
0.197	20	26.6	13.4	46.6	73.4	26.57	31.05	21.47	43.05	58.90
0.098	0	40	46.6	73.4	86.6	0	39.23	43.05	58.90	68.53
0.049	46.6	66.6	73.4	80	80	43.05	54.70	58.90	63.43	63.43
0.025	60	73.4	80	73.4	80	50.77	58.90	63.43	58.90	63.43

ANOVA result with the arcsine transformed data

Source of Variation	SS	df	MS	F	P-value	F crit
Between doses	1961.755	4	490.4387	4.351441	0.014313	3.006917
Between exposures	3326.139	4	831.5347	7.37783	0.001444	3.006917
Error	1803.315	16	112.7072			
Total	7091.209	24				

Appendix Table DCCLX: Repellency of CH_3OH extracts of *L. camara* (r) against *A. gossypii*

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	30	R_1	10	10	9	10	10	9.33	9.33	8.67	9	9
		R_2	9	9	9	8	9					
		R_3	9	9	8	9	8					
0.197	30	R_1	7	6	8	7	10	8	8	8.67	8.33	8.67
		R_2	9	9	9	9	9					
		R_3	8	9	9	9	7					
0.098	30	R_1	10	9	8	10	10	6.67	6	6	7.67	8
		R_2	4	6	7	9	9					
		R_3	6	3	3	4	5					
0.049	30	R_1	5	7	6	8	8	7	7.33	7.33	7	8
		R_2	9	8	8	7	10					
		R_3	7	7	8	6	6					
0.025	30	R_1	8	8	8	9	9	7.33	6	7	8	7.67
		R_2	6	5	7	8	9					
		R_3	8	5	6	7	5					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	86.6	86.6	73.4	80	80	68.53	68.53	58.90	63.43	63.43
0.197	60	60	73.4	66.6	73.4	50.77	50.77	58.90	54.70	58.90
0.098	33.4	20	20	53.4	60	35.30	26.57	26.57	46.95	50.77
0.049	40	46.6	46.6	40	60	39.23	43.05	43.05	39.23	50.77
0.025	46.6	20	40	60	53.4	43.05	26.57	39.23	50.77	46.95

ANOVA result with the arcsine transformed data

Source of Variation	SS	df	MS	F	P-value	F crit
Between doses	2514.49	4	628.6226	14.73903	3.14E-05	3.006917
Between exposures	391.2995	4	97.82489	2.293655	0.104243	3.006917
Error	682.4034	16	42.65021			
Total	3588.193	24				

Appendix Table DCCLXI: Repellency of PetE extracts of *M. piperita* (wp) against *A. gossypii*

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	30	R_1	8	7	8	7	8	9	9	8.33	8.67	8
		R_2	9	10	9	10	10					
		R_3	10	10	8	9	6					
0.197	30	R_1	7	8	8	10	6	8.33	7.67	7.67	8.33	7.67
		R_2	8	9	10	8	9					
		R_3	10	6	5	7	8					
0.098	30	R_1	9	8	9	8	10	9	9	8.33	8.67	10
		R_2	10	10	9	10	10					
		R_3	8	9	7	8	10					
0.049	30	R_1	10	10	9	10	9	9	9.67	8	8.67	8
		R_2	8	9	6	9	8					
		R_3	9	10	9	7	7					
0.025	30	R_1	9	8	9	10	9	9	9.33	7.33	8.67	8.67
		R_2	9	10	6	7	8					
		R_3	9	10	7	9	9					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	80	80	66.6	73.4	60	63.43	63.43	54.70	58.90	50.77
0.197	66.6	53.4	53.4	66.6	53.4	54.70	46.95	46.95	54.70	46.95
0.098	80	80	66.6	73.4	100	63.43	63.43	54.70	58.90	90
0.049	80	93.4	60	73.4	60	63.43	75.11	50.77	58.90	50.77
0.025	80	86.6	46.6	73.4	73.4	63.43	68.53	43.05	58.90	58.90

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	653.8842	4	163.471	2.183051	0.117338	3.006917
Between exposures	539.2455	4	134.8114	1.800319	0.178167	3.006917
Error	1198.111	16	74.88193			
Total	2391.241	24				

Appendix Table DCCLXII: Repellency of $CHCl_3$ extracts of *M. piperita* (wp) against *A. gossypii*

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	30	R_1	6	7	8	8	9	7	8.67	9.33	8.67	9.33
		R_2	5	9	10	8	10					
		R_3	10	10	10	10	9					
0.197	30	R_1	9	9	9	10	10	9	9.67	9	9.33	9.33
		R_2	9	10	9	9	9					
		R_3	9	10	9	9	9					
0.098	30	R_1	9	8	9	9	8	9	8.33	9.33	8.67	9
		R_2	9	9	10	7	10					
		R_3	9	8	9	10	9					
0.049	30	R_1	7	7	7	8	8	8.33	8	8.33	9	8.67
		R_2	10	7	9	9	8					
		R_3	8	10	9	10	10					
0.025	30	R_1	5	9	8	8	9	5.33	7	7	7.67	8
		R_2	6	7	7	8	9					
		R_3	5	5	6	7	6					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	40	73.4	86.6	73.4	86.6	39.23	58.90	68.53	58.90	68.53
0.197	80	93.4	80	86.6	86.6	63.43	75.11	63.43	68.53	68.53
0.098	80	66.6	86.6	73.4	80	63.43	54.70	68.53	58.90	63.43
0.049	66.6	60	66.6	80	73.4	54.70	50.77	54.70	63.43	58.90
0.025	6.6	40	40	53.4	60	14.89	39.23	39.23	46.95	50.77

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	2477.822	4	619.4556	10.06319	0.000288	3.006917
Between exposures	662.708	4	165.677	2.691459	0.06877	3.006917
Error	984.9054	16	61.55659			
Total	4125.436	24				

Appendix Table DCCLXIII: Repellency of CH_3OH extracts of *M. piperita* (wp) against *A. gossypii*

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	30	R_1	10	10	9	9	10	7	7.33	7.33	6.67	7.33
		R_2	5	6	6	5	5					
		R_3	6	6	7	6	7					
0.197	30	R_1	10	10	10	9	10	8.67	9.33	10	9.33	9.33
		R_2	7	9	10	10	9					
		R_3	9	9	10	9	9					
0.098	30	R_1	7	7	8	8	8	7	8.33	7.67	8.33	8.67
		R_2	8	9	8	10	10					
		R_3	6	9	7	7	8					
0.049	30	R_1	4	2	5	6	3	6	4	5.67	6.33	6
		R_2	7	4	5	6	8					
		R_3	7	6	7	7	7					
0.025	30	R_1	6	7	8	8	9	6.67	7	6.67	7.33	8
		R_2	8	7	8	9	9					
		R_3	6	7	4	5	6					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	40	46.6	46.6	33.4	46.6	39.23	43.05	43.05	35.30	43.05
0.197	73.4	86.6	100	86.6	86.6	58.90	68.53	90	68.53	68.53
0.098	40	66.6	53.4	66.6	73.4	39.23	54.70	46.95	54.70	58.90
0.049	20	-20	13.4	26.6	20	26.57	26.57	21.47	31.05	26.57
0.025	33.4	40	33.4	46.6	60	35.30	39.23	35.30	43.05	50.77

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	5408.527	4	1352.132	28.19058	4.55E-07	3.006917
Between exposures	264.1979	4	66.04947	1.377064	0.285921	3.006917
Error	767.4234	16	47.96396			
Total	6440.148	24				

Appendix Table DCCLXIV: Repellency of PetE extracts of *Mi. pudica* (wp) against *A. gossypii*

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	30	R_1	10	10	9	10	9	10	9	8.67	10	9.67
		R_2	10	9	8	10	10					
		R_3	10	8	9	10	10					
0.197	30	R_1	10	9	10	10	9	9.33	8.33	8.67	9.33	8.33
		R_2	9	7	7	8	8					
		R_3	9	9	9	10	8					
0.098	30	R_1	10	9	9	9	10	9.33	7.67	8	9	8.67
		R_2	10	8	8	10	10					
		R_3	8	6	7	8	6					
0.049	30	R_1	9	10	9	10	9	7	8.33	8.33	7.67	8.67
		R_2	5	7	7	7	7					
		R_3	7	8	9	9	10					
0.025	30	R_1	10	10	9	10	9	9	9	9.33	10	9.67
		R_2	8	8	9	10	10					
		R_3	9	9	10	10	10					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	100	80	73.4	100	93.4	90	63.43	58.90	60	75.11
0.197	86.6	66.6	73.4	86.6	66.6	68.53	54.70	58.90	68.53	54.70
0.098	86.6	53.4	60	80	73.4	68.53	46.95	50.77	63.43	58.90
0.049	40	66.6	66.6	53.4	73.4	39.23	54.70	54.70	46.95	58.90
0.025	80	80	86.6	100	93.4	63.43	63.43	68.53	90	75.11

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	1501.346	4	375.3365	3.872217	0.021928	3.006917
Between exposures	389.8238	4	97.45595	1.005419	0.433596	3.006917
Error	1550.89	16	96.93065			
Total	3442.06	24				

Appendix Table DCCLXV: Repellency of $CHCl_3$ extracts of *Mi. pudica* (wp) against *A. gossypii*

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	30	R_1	8	8	10	9	9	7.33	8	8.67	8.67	8.67
		R_2	8	8	8	9	9					
		R_3	6	8	8	8	8					
0.197	30	R_1	6	7	7	6	7	7.67	8	8.33	7.67	8.33
		R_2	9	8	9	9	9					
		R_3	8	9	9	8	9					
0.098	30	R_1	9	10	10	10	10	9	9.33	10	9.33	9.33
		R_2	9	10	10	9	8					
		R_3	9	8	10	9	10					
0.049	30	R_1	9	10	10	9	9	7.67	9.33	9	9.33	9
		R_2	6	8	8	9	8					
		R_3	8	10	9	10	10					
0.025	30	R_1	10	10	10	10	10	9.33	9.67	9.33	9.67	8.33
		R_2	9	10	9	9	6					
		R_3	9	9	9	10	9					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	46.6	60	73.4	73.4	73.4	43.05	50.77	58.90	58.90	58.90
0.197	53.4	60	66.6	53.4	66.6	46.95	50.77	54.70	46.95	54.70
0.098	80	86.6	100	86.6	86.6	63.43	68.53	90	68.53	68.53
0.049	53.4	86.6	80	86.6	80	46.95	68.53	63.43	68.53	63.43
0.025	86.6	93.4	86.6	93.4	66.6	68.53	75.11	68.53	75.11	54.70

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	1615.321	4	403.8303	8.141239	0.000883	3.006917
Between exposures	495.5975	4	123.8994	2.497817	0.084042	3.006917
Error	793.6489	16	49.60306			
Total	2904.568	24				

Appendix Table DCCLXVI: Repellency of CH_3OH extracts of *Mi. pudica* (wp) against *A. gossypii*

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	30	R_1	9	10	10	10	10	6.67	8.67	8.67	9	8.67
		R_2	6	10	6	7	6					
		R_3	5	6	10	10	10					
0.197	30	R_1	8	8	10	10	10	8.67	8.33	9	9.67	9.67
		R_2	9	9	9	10	10					
		R_3	9	8	8	9	9					
0.098	30	R_1	8	8	8	7	9	8	8	8.33	8	8.67
		R_2	8	7	7	8	8					
		R_3	8	9	10	9	9					
0.049	30	R_1	9	8	8	10	10	8.67	9	8.67	9.33	10
		R_2	9	9	9	9	10					
		R_3	8	10	9	9	10					
0.025	30	R_1	10	10	10	10	10	9.67	9.67	9.33	10	10
		R_2	10	10	10	10	10					
		R_3	9	9	8	10	10					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	33.4	73.4	73.4	80	73.4	35.30	58.90	58.90	63.43	58.90
0.197	73.4	66.6	80	93.4	93.4	58.90	54.70	63.43	75.11	75.11
0.098	60	60	66.6	60	73.4	50.77	50.77	54.70	50.77	58.90
0.049	73.4	80	73.4	86.6	100	58.90	63.43	58.90	68.53	90
0.025	93.4	93.4	86.6	100	100	75.11	75.11	68.53	90	90

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	2309.343	4	577.3357	11.54536	0.000133	3.006917
Between exposures	1156.13	4	289.0326	5.779972	0.004485	3.006917
Error	800.0941	16	50.00588			
Total	**4265.567**	**24**				

Appendix Table DCCLXVII: Repellency of PetE extracts of *P. hysterophorus* (wp) against *A. gossypii*

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	30	R_1	7	6	7	10	6	6	6.33	5.67	7.67	7
		R_2	5	6	5	6	7					
		R_3	6	7	5	7	8					
0.197	30	R_1	8	9	9	9	8	9	9	8	8.67	8.33
		R_2	9	10	9	10	9					
		R_3	10	8	6	7	8					
0.098	30	R_1	9	8	8	9	9	9	7.67	7.67	8.67	8.67
		R_2	9	7	6	7	8					
		R_3	9	8	9	10	9					
0.049	30	R_1	9	9	9	9	8	8.33	9	9.67	8.67	8.33
		R_2	8	9	10	8	8					
		R_3	8	9	10	9	9					
0.025	30	R_1	8	10	9	10	9	5.67	8.67	8.33	8.67	7.33
		R_2	6	10	9	10	6					
		R_3	3	6	7	6	7					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	20	26.6	13.4	53.4	40	26.57	31.05	21.47	46.95	39.23
0.197	80	80	60	73.4	66.6	63.43	63.43	50.77	58.90	54.70
0.098	80	53.4	53.4	73.4	73.4	63.43	46.95	46.95	58.90	58.90
0.049	66.6	80	93.4	73.4	66.6	54.70	63.43	75.11	58.90	54.70
0.025	13.4	73.4	66.6	73.4	46.6	21.47	58.90	54.70	58.90	43.05

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	2555.984	4	638.996	5.825189	0.004334	3.006917
Between exposures	307.2777	4	76.81942	0.700298	0.602978	3.006917
Error	1755.125	16	109.6953			
Total	4618.387	24				

Appendix Table DCCLXVIII: Repellency of $CHCl_3$ extracts of *P. hysterophorus* (wp) against *A. gossypii*

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	30	R_1	9	10	10	9	9	9.67	10	9.33	9.67	9.33
		R_2	10	10	10	10	9					
		R_3	10	10	8	10	10					
0.197	30	R_1	10	10	9	10	10	9.33	9.33	9	9.67	9.33
		R_2	8	8	8	10	8					
		R_3	10	10	10	9	10					
0.098	30	R_1	9	10	10	10	10	8.67	10	9.33	9.67	9.33
		R_2	9	10	9	10	9					
		R_3	8	10	9	9	9					
0.049	30	R_1	5	6	4	6	9	7.33	7.67	6	7.33	8.67
		R_2	8	8	6	7	8					
		R_3	9	9	8	9	8					
0.025	30	R_1	9	10	9	10	10	8.33	9.33	9.33	9.33	9.33
		R_2	6	8	9	8	9					
		R_3	**10**	**10**	**10**	**10**	**9**					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	93.4	100	86.6	93.4	86.6	75.11	90	68.53	75.11	68.53
0.197	86.6	86.6	80	93.4	86.6	68.53	68.53	63.43	75.11	68.53
0.098	73.4	100	86.6	93.4	86.6	58.90	90	68.53	75.11	68.53
0.049	46.6	53.4	20	46.6	73.4	43.05	46.95	26.57	43.05	58.90
0.025	66.6	86.6	86.6	86.6	86.6	54.70	68.53	68.53	68.53	68.53

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	3149.627	4	787.4068	13.19434	6.12E-05	3.006917
Between exposures	639.7669	4	159.9417	2.680095	0.069577	3.006917
Error	954.8421	16	59.67763			
Total	4744.236	24				

Appendix Table DCCLXIX: Repellency of CH_3OH extracts of *P. hysterophorus* (wp) against *A. gossypii*

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	30	R_1	9	7	8	9	9	9	8.33	9	9.33	9
		R_2	10	9	10	10	10					
		R_3	8	9	9	9	8					
0.197	30	R_1	9	9	10	10	10	8.33	9.33	10	9.67	9.67
		R_2	8	10	10	10	10					
		R_3	8	9	10	9	9					
0.098	30	R_1	8	9	10	9	7	8.67	8.33	9.33	8.33	8
		R_2	9	9	9	8	9					
		R_3	9	7	9	8	8					
0.049	30	R_1	9	10	10	9	9	9	9.33	9	8.67	8.67
		R_2	10	10	9	8	9					
		R_3	8	8	8	9	8					
0.025	30	R_1	10	10	10	9	10	9	9.67	8.67	9	9.67
		R_2	10	10	8	10	10					
		R_3	7	9	8	8	9					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	80	66.6	80	86.6	80	63.43	54.70	63.43	68.53	63.43
0.197	66.6	86.6	100	93.4	93.4	54.70	68.53	90	75.11	75.11
0.098	73.4	66.6	86.6	66.6	60	58.90	54.70	68.53	54.70	50.77
0.049	80	86.6	80	73.4	73.4	63.43	68.53	63.43	58.90	58.90
0.025	80	93.4	73.4	80	93.4	63.43	75.11	58.90	63.43	75.11

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	648.7264	4	162.1816	2.453351	0.088049	3.006917
Between exposures	165.143	4	41.28574	0.624537	0.651746	3.006917
Error	1057.698	16	66.10615			
Total	1871.568	24				

Appendix Table DCCLXX: Repellency of PetE extracts of *Ph. niruri* (wp) against *A. gossypii*

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	30	R_1	10	10	10	10	10	9	9.33	9.67	10	10
		R_2	8	9	10	10	10					
		R_3	9	9	9	10	10					
0.197	30	R_1	9	9	10	10	10	8.33	9.33	9.33	9.33	9.33
		R_2	8	10	10	10	9					
		R_3	8	9	8	8	9					
0.098	30	R_1	7	9	8	8	10	7.67	9	8.33	9	10
		R_2	10	10	9	9	10					
		R_3	6	8	8	10	10					
0.049	30	R_1	8	8	9	10	9	7.67	8.67	9.33	9.33	8.67
		R_2	9	10	10	9	8					
		R_3	6	8	9	9	9					
0.025	30	R_1	5	10	9	10	10	6.67	9.67	9	9.67	9
		R_2	7	9	9	9	9					
		R_3	8	10	9	10	8					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	80	86.6	93.4	100	100	63.43	68.53	75.11	90	90
0.197	66.6	86.6	86.6	86.6	86.6	54.70	68.53	68.53	68.53	68.53
0.098	53.4	80	66.6	80	100	46.95	63.43	54.70	63.43	90
0.049	53.4	73.4	86.6	86.6	73.4	46.95	58.9	68.53	68.53	58.9
0.025	33.4	93.4	80	93.4	80	35.30	75.11	63.43	75.11	63.43

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	899.0281	4	224.757	2.942904	0.053298	3.006917
Between exposures	1958.234	4	489.5585	6.41014	0.002816	3.006917
Error	1221.96	16	76.37252			
Total	4079.223	24				

Appendix Table DCCLXXI: Repellency of $CHCl_3$ extracts of *Ph. niruri* (wp) against *A. gossypii.*

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	30	R_1	9	9	9	10	10	9.33	9.67	9.33	9.67	10
		R_2	10	10	10	10	10					
		R_3	9	10	9	9	10					
0.197	30	R_1	7	8	10	10	10	8.33	9.33	10	9.67	9.67
		R_2	8	10	10	10	10					
		R_3	10	10	10	9	9					
0.098	30	R_1	9	10	9	9	10	8.67	9.67	9.33	9.33	9.67
		R_2	9	10	10	10	9					
		R_3	8	9	9	10	10					
0.049	30	R_1	9	8	7	9	9	8.67	8.67	8.67	9.33	9.33
		R_2	7	8	9	10	10					
		R_3	10	10	10	9	9					
0.025	30	R_1	10	8	7	7	9	9	7.33	7.67	8	8.67
		R_2	9	7	8	8	9					
		R_3	8	7	8	9	8					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	86.6	93.4	86.6	93.4	100	68.53	75.11	68.53	75.11	90
0.197	66.6	86.6	100	93.4	93.4	54.70	68.53	90	75.11	75.11
0.098	73.4	93.4	86.6	86.6	93.4	58.9	75.11	68.53	68.53	75.11
0.049	73.4	73.4	73.4	86.6	86.6	58.9	58.9	58.9	68.53	68.53
0.025	80	46.6	53.4	60	73.4	63.43	43.05	46.95	50.77	58.9

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	1663.504	4	415.8759	6.086491	0.003565	3.006917
Between exposures	438.3304	4	109.5826	1.60378	0.221702	3.006917
Error	1093.243	16	68.32769			
Total	**3195.077**	**24**				

Appendix Table DCCLXXII: Repellency of CH_3OH extracts of *Ph. niruri* (wp) against *A. gossypii*

Dose (mg/cm^2)	Insect used	Replications	Hourly observation 1h	2h	3h	4h	5h	Average of hourly observation (Nc) 1h	2h	3h	4h	5h
0.393	30	R_1	9	8	8	9	10	8.33	8	7.33	8	8.33
		R_2	6	6	7	7	6					
		R_3	10	10	7	8	9					
0.197	30	R_1	9	9	8	9	7	7.33	8.67	8.67	8.33	6.33
		R_2	7	9	10	7	6					
		R_3	6	8	8	9	6					
0.098	30	R_1	8	8	7	7	7	7.33	7.67	7	7.67	6.67
		R_2	6	8	8	9	8					
		R_3	8	7	6	7	5					
0.049	30	R_1	8	10	9	10	10	8	9.67	9.33	9.67	8
		R_2	8	9	9	9	8					
		R_3	8	10	10	10	6					
0.025	30	R_1	9	8	10	10	8	7	8.33	9.33	9	6.67
		R_2	6	8	9	8	4					
		R_3	6	9	9	9	8					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	66.6	60	46.6	60	66.6	54.70	50.77	43.05	50.77	54.70
0.197	46.6	73.4	73.4	66.6	26.6	43.05	58.9	58.9	54.70	31.05
0.098	46.6	53.4	40	53.4	33.4	43.05	46.95	39.23	46.95	35.30
0.049	60	93.4	86.6	93.4	60	50.77	75.11	68.53	75.11	50.77
0.025	40	66.6	86.6	80	33.4	39.23	54.70	68.53	63.43	35.30

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	1239.57	4	309.8925	4.417044	0.013522	3.006917
Between exposures	1126.076	4	281.5189	4.012622	0.019311	3.006917
Error	1122.534	16	70.15835			
Total	3488.179	24				

Appendix Table DCCLXXIII: Repellency of PetE extracts of *Po. hydropiper* (wp) against *A. gossypii*

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	30	R_1	10	10	10	10	10	10	9.67	10	10	10
		R_2	10	9	10	10	10					
		R_3	10	10	10	10	10					
0.197	30	R_1	10	10	10	10	9	9.67	9.33	9.33	9.67	9.33
		R_2	10	10	10	10	10					
		R_3	9	8	8	9	9					
0.098	30	R_1	10	8	9	9	10	9	9	9.67	9.67	10
		R_2	9	10	10	10	10					
		R_3	8	9	10	10	10					
0.049	30	R_1	10	7	10	10	10	8.33	8	9.33	9.67	9.67
		R_2	9	9	9	9	9					
		R_3	6	8	9	10	10					
0.025	30	R_1	8	8	8	9	9	6.67	8	8	8.67	8.33
		R_2	7	9	8	9	9					
		R_3	5	7	8	8	7					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	100	93.4	100	100	100	90	75.11	90	90	90
0.197	93.4	86.6	86.6	93.4	86.6	75.11	68.53	68.53	75.11	68.53
0.098	80	80	93.4	93.4	100	63.43	63.53	75.11	75.11	90
0.049	66.6	60	86.6	93.4	93.4	54.70	50.77	68.53	75.11	75.11
0.025	33.4	60	60	73.4	66.6	35.30	50.77	50.77	58.9	54.70

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	3617.172	4	904.2931	19.41863	5.53E-06	3.006917
Between exposures	808.3241	4	202.081	4.339452	0.014463	3.006917
Error	745.0933	16	46.56833			
Total	5170.59	24				

Appendix Table DCCLXXIV: Repellency of $CHCl_3$ extracts of *Po. hydropiper* (wp) against *A. gossypii*

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	30	R_1	9	10	9	10	10	9.67	10	9.67	10	10
		R_2	10	10	10	10	10					
		R_3	10	10	10	10	10					
0.197	30	R_1	10	10	10	10	10	9.67	9.33	9	8.33	8.67
		R_2	9	9	8	8	8					
		R_3	10	9	9	7	8					
0.098	30	R_1	9	9	9	8	9	9.67	9	9.33	9	9.33
		R_2	10	8	10	10	10					
		R_3	10	10	9	9	9					
0.049	30	R_1	9	10	9	10	10	8.67	9.33	9	9.33	9
		R_2	8	8	8	8	8					
		R_3	9	10	10	10	9					
0.025	30	R_1	10	8	9	9	9	9.67	9.33	9.33	9.67	9
		R_2	9	10	10	10	9					
		R_3	10	10	9	10	9					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	93.4	100	93.4	100	100	75.11	90	75.11	90	90
0.197	93.4	86.6	80	66.6	73.4	75.11	68.53	63.43	54.70	58.9
0.098	93.4	80	86.6	80	86.6	75.11	63.43	68.53	63.43	68.53
0.049	73.4	86.6	80	86.6	80	58.9	68.53	63.43	68.53	63.43
0.025	93.4	86.66	86.6	93.4	80	75.11	68.53	68.53	75.11	63.43

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	1329.663	4	332.4157	7.421022	0.001403	3.006917
Between exposures	64.45868	4	16.11467	0.359752	0.833544	3.006917
Error	716.7007	16	44.79379			
Total	**2110.822**	**24**				

Appendix Table DCCLXXV: Repellency of CH_3OH extracts of *Po. hydropiper* (wp) against *A. gossypii*

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	30	R_1	8	9	9	9	9	7.33	8.33	9.33	8.33	9.33
		R_2	8	8	10	8	9					
		R_3	6	8	9	8	10					
0.197	30	R_1	8	8	8	9	8	8.67	7.33	8.67	9	7.33
		R_2	9	8	10	9	8					
		R_3	9	6	8	9	6					
0.098	30	R_1	10	10	10	10	10	9	9	9.33	9.33	9.33
		R_2	9	8	10	9	8					
		R_3	8	9	8	9	10					
0.049	30	R_1	9	9	10	10	10	9	9	9.33	9	9.33
		R_2	9	9	9	9	9					
		R_3	9	9	9	8	9					
0.025	30	R_1	9	9	9	9	8	9.33	9.33	9	9.33	9
		R_2	9	9	8	9	9					
		R_3	10	10	10	10	10					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	46.6	66.6	86.6	66.6	86.6	43.05	54.70	68.53	54.7	68.53
0.197	73.4	46.6	73.4	80	46.6	58.9	43.05	58.9	63.43	43.05
0.098	80	80	86.6	86.6	86.6	63.43	63.43	68.53	68.53	68.53
0.049	80	80	86.6	80	86.6	63.43	63.43	68.53	63.43	68.53
0.025	86.6	86.6	80	86.6	80	68.53	68.53	63.43	68.53	63.43

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	709.8862	4	177.4715	3.701472	0.025655	3.006917
Between exposures	168.8171	4	42.20426	0.880242	0.49758	3.006917
Error	767.1393	16	47.94621			
Total	1645.843	24				

Appendix Table DCCLXXVI: Repellency of PetE extracts of *Pz. zeylanica* (wp) against *A. gossypii*

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	30	R_1	10	9	10	10	10	9.67	8.33	9	10	10
		R_2	9	8	9	10	10					
		R_3	10	8	8	10	10					
0.197	30	R_1	9	9	8	9	10	8.67	9	8.67	9	9.33
		R_2	9	10	10	9	9					
		R_3	8	8	8	9	9					
0.098	30	R_1	9	10	10	10	10	8.33	9	8.67	9.33	9.67
		R_2	8	8	8	9	9					
		R_3	8	9	8	9	10					
0.049	30	R_1	9	10	10	9	9	9	8.67	9.33	9.33	9
		R_2	9	8	9	10	10					
		R_3	9	8	9	9	8					
0.025	30	R_1	8	9	9	10	10	8	8.67	9	9.33	9.33
		R_2	8	9	8	9	8					
		R_3	8	8	10	9	10					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	93.4	86.6	80	100	100	75.11	68.53	63.43	90	90
0.197	73.4	80	73.4	80	86.6	58.9	63.43	58.9	63.43	68.53
0.098	66.6	80	73.4	86.6	93.4	54.70	63.43	58.9	68.53	75.11
0.049	80	73.4	86.6	86.6	80	63.43	58.9	68.53	68.53	63.43
0.025	60	73.4	80	86.6	86.6	50.77	58.9	63.43	68.53	68.53

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	813.7461	4	203.4365	6.19686	0.003287	3.006917
Between exposures	681.0966	4	170.2742	5.186704	0.007127	3.006917
Error	525.2635	16	32.82897			
Total	2020.106	24				

Appendix Table DCCLXXVII: Repellency of $CHCl_3$ extracts of *Pz. zeylanica* (wp) against *A. gossypii*

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	30	R_1	10	9	10	10	10	8.67	8.33	9.33	9.67	10
		R_2	9	8	9	10	10					
		R_3	7	8	9	9	10					
0.197	30	R_1	8	8	9	9	7	7.67	7.67	8.67	8.67	7.33
		R_2	8	9	9	8	8					
		R_3	7	6	8	9	7					
0.098	30	R_1	8	8	7	8	9	8.33	7.33	6.67	6.67	7
		R_2	8	6	6	6	5					
		R_3	9	8	7	6	7					
0.049	30	R_1	9	10	10	9	10	8.33	9.33	9	8.67	9.33
		R_2	7	9	9	9	9					
		R_3	9	9	8	8	9					
0.025	30	R_1	7	8	6	7	5	7.33	8.67	7.33	7.67	6
		R_2	8	10	9	9	8					
		R_3	7	8	7	7	5					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	73.4	66.6	86.6	93.4	100	58.9	54.70	68.53	75.11	90
0.197	53.4	53.4	73.4	73.4	46.6	46.95	46.95	58.9	58.9	43.05
0.098	66.6	46.6	33.4	33.4	40	54.70	43.05	35.30	35.30	39.23
0.049	66.6	86.6	80	73.4	86.6	54.70	68.53	63.43	58.9	68.53
0.025	46.6	73.4	46.6	53.4	20	43.05	58.9	43.05	46.95	26.57

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	2935.345	4	733.8362	6.13562	0.003438	3.006917
Between exposures	32.6621	4	8.165526	0.068272	0.990626	3.006917
Error	1913.642	16	119.6026			
Total	4881.649	24				

Appendix Table DCCLXXVIII: Repellency of CH_3OH extracts of *Pz. zeylanica* (wp) against *A. gossypii*

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	30	R_1	10	10	9	8	9	9.67	10	9.67	9	9
		R_2	9	10	10	10	9					
		R_3	10	10	10	9	9					
0.197	30	R_1	10	10	10	9	8	9	9.67	9.33	8.67	8.67
		R_2	9	9	9	9	8					
		R_3	8	10	9	8	10					
0.098	30	R_1	8	9	9	9	9	8.67	8.33	9.33	9.33	9
		R_2	10	8	10	10	10					
		R_3	8	8	9	9	8					
0.049	30	R_1	6	7	8	7	6	5.67	7.67	7.67	7.33	6.33
		R_2	6	8	9	8	8					
		R_3	5	8	6	7	5					
0.025	30	R_1	9	10	10	7	9	8.67	8.33	9	7.67	8
		R_2	8	7	9	7	7					
		R_3	9	8	8	9	8					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	93.4	100	93.4	80	80	75.11	90	75.11	63.43	63.43
0.197	80	93.4	86.6	73.4	73.4	63.43	75.11	68.53	58.9	58.9
0.098	73.4	66.6	86.6	86.6	80	58.9	54.70	68.53	68.53	63.43
0.049	13.4	53.4	53.4	46.6	26.6	21.47	46.95	46.95	43.05	31.05
0.025	73.4	66.6	80	53.4	60	58.9	54.70	63.43	46.95	50.77

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	3598.864	4	899.7161	15.08167	2.73E-05	3.006917
Between exposures	540.3865	4	135.0966	2.264584	0.107524	3.006917
Error	954.5003	16	59.65627			
Total	**5093.751**	**24**				

Appendix Table DCCLXXIX: Repellency of PetE extracts of *S. nodiflora* (wp) against *A. gossypii*

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	30	R_1	8	7	8	7	8	8.67	8.33	8.33	8.33	8.67
		R_2	9	10	8	8	9					
		R_3	9	8	9	10	9					
0.197	30	R_1	9	7	9	10	10	9	8.33	9.67	9.67	10
		R_2	9	10	10	10	10					
		R_3	9	8	10	9	10					
0.098	30	R_1	8	7	8	7	9	9	8.33	9	8.67	9.67
		R_2	10	8	10	9	10					
		R_3	9	10	9	10	10					
0.049	30	R_1	8	7	9	9	9	8	8	9.33	9.67	9.67
		R_2	8	9	10	10	10					
		R_3	8	8	9	10	10					
0.025	30	R_1	10	10	9	10	10	8.33	9	8.33	8.67	9
		R_2	7	8	7	6	8					
		R_3	8	9	9	10	9					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	73.4	66.6	66.6	66.6	73.4	58.9	54.7	54.70	54.70	58.9
0.197	80	66.6	93.4	93.4	100	63.43	68.53	68.53	75.11	90
0.098	80	66.6	80	73.4	93.4	63.43	54.70	63.43	58.9	75.11
0.049	60	60	86.6	93.4	93.4	50.77	50.77	68.53	75.11	75.11
0.025	66.6	80	66.6	73.4	80	54.70	63.43	54.70	58.9	63.43

ANOVA result with the arcsine transformed data						
Source of Variation	SS	df	MS	F	P-value	F crit
Between doses	815.0853	4	203.7713	4.752937	0.010165	3.006917
Between exposures	686.4569	4	171.6142	4.002877	0.019481	3.006917
Error	685.9635	16	42.87272			
Total	2187.506	24				

Appendix Table DCCLXXX: Repellency of $CHCl_3$ extracts of *S. nodiflora* (wp) against *A. gossypii*

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	30	R_1	10	8	9	10	9	8.33	8	9	9.67	9.33
		R_2	8	7	8	9	10					
		R_3	7	9	10	10	9					
0.197	30	R_1	10	9	10	10	9	10	9.33	9.33	9.33	9.67
		R_2	10	9	8	9	10					
		R_3	10	10	10	9	10					
0.098	30	R_1	9	9	10	9	10	9.33	9.67	9	9	9.67
		R_2	9	10	10	9	10					
		R_3	10	10	10	9	9					
0.049	30	R_1	8	6	10	10	9	8.33	8.33	9	9	8.67
		R_2	7	9	8	7	8					
		R_3	10	10	9	10	9					
0.025	30	R_1	9	8	7	8	9	8.67	8.33	9	9	9.33
		R_2	9	8	9	10	9					
		R_3	8	9	8	9	10					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	66.6	60	80	93.4	86.6	54.70	50.77	63.43	75.11	68.53
0.197	100	86.6	86.6	86.6	93.4	90	68.53	68.53	68.53	75.11
0.098	86.6	93.4	100	80	93.4	68.53	75.11	90	63.43	75.11
0.049	66.6	66.6	80	80	73.4	54.70	54.70	63.43	63.43	58.9
0.025	73.4	66.6	60	80	86.6	58.9	54.70	50.77	63.43	68.53

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	1217.216	4	304.3039	4.019075	0.019199	3.006917
Between exposures	201.8477	4	50.46191	0.666473	0.624461	3.006917
Error	1211.439	16	75.71492			
Total	2630.502	24				

Appendix Table DCCLXXXI: Repellency of CH_3OH extracts of *S. nodiflora* (wp) against *A. gossypii*

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	30	R_1	9	10	9	8	9	8.67	8.67	8.67	9	9.33
		R_2	8	7	8	9	9					
		R_3	9	9	9	10	10					
0.197	30	R_1	8	9	9	10	10	9	9.33	9.67	9.67	10
		R_2	10	9	10	10	10					
		R_3	9	10	10	9	10					
0.098	30	R_1	8	6	8	8	7	8.33	7.67	8.67	8.67	8.33
		R_2	10	9	10	10	9					
		R_3	7	8	8	8	9					
0.049	30	R_1	8	10	9	9	8	9	9	8.67	9.33	9
		R_2	9	7	8	9	10					
		R_3	10	10	9	10	9					
0.025	30	R_1	8	7	9	8	10	9	9	9.33	8.33	9.67
		R_2	10	10	10	9	10					
		R_3	9	10	9	8	9					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	73.4	73.4	73.4	80	86.6	58.9	58.9	58.9	63.43	68.53
0.197	80	86.6	93.4	93.4	100	63.43	68.53	75.11	75.11	90
0.098	66.6	53.4	73.4	73.4	66.6	54.70	46.95	58.9	58.9	54.70
0.049	80	80	73.4	86.6	80	63.43	63.43	58.9	68.53	63.43
0.025	80	80	86.6	66.6	93.4	63.43	63.43	68.53	54.70	75.11

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	996.9871	4	249.2468	7.734184	0.001144	3.006917
Between exposures	324.0987	4	81.02467	2.514214	0.082615	3.006917
Error	515.6262	16	32.22664			
Total	1836.712	24				

Appendix Table DCCLXXXII: Repellency of PetE extracts of *Z. zerumbet* (ap) against *A. gossypii*

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	30	R_1	9	10	8	8	10	9.33	9.33	8	7.67	9
		R_2	9	8	7	7	7					
		R_3	10	10	9	8	10					
0.197	30	R_1	10	10	10	6	10	9.67	8	8.67	7.67	8.67
		R_2	10	8	9	9	7					
		R_3	9	6	7	8	9					
0.098	30	R_1	6	7	6	8	4	6.33	6.67	4.33	7.33	6.67
		R_2	5	6	4	6	7					
		R_3	8	7	3	8	9					
0.049	30	R_1	10	10	9	8	10	7.33	7	7.67	8	9.33
		R_2	5	3	5	6	8					
		R_3	7	8	9	10	10					
0.025	30	R_1	10	9	8	10	8	8	9	9.33	9.33	7.67
		R_2	6	8	10	9	8					
		R_3	8	10	10	9	7					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	86.6	86.6	60	53.4	80	68.53	68.53	50.77	46.95	63.43
0.197	93.4	60	73.4	53.4	73.4	75.11	50.77	58.90	46.95	58.90
0.098	26.6	33.4	-13.4	46.6	33.4	31.05	35.30	21.47	43.05	35.30
0.049	46.6	40	53.4	60	86.6	43.05	39.23	46.95	50.77	68.53
0.025	60	80	86.6	86.6	53.4	50.77	63.43	68.53	68.53	46.95

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	2558.644	4	639.6611	5.19715	0.007067	3.006917
Between exposures	88.85484	4	22.21371	0.180483	0.945179	3.006917
Error	1969.267	16	123.0792			
Total	4616.767	24				

Appendix Table DCCLXXXIII: Repellency of $CHCl_3$ extracts of *Z. zerumbet* (ap) against *A. gossypii*

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	30	R_1	6	9	8	7	9	8	9	8.67	7.67	8.33
		R_2	8	8	8	7	8					
		R_3	10	10	10	9	8					
0.197	30	R_1	4	8	7	9	9	7.67	9.33	8.67	9.33	9.67
		R_2	10	10	10	10	10					
		R_3	9	10	9	9	10					
0.098	30	R_1	8	9	9	10	9	8.67	9	9.33	9.67	8.67
		R_2	10	10	10	10	9					
		R_3	8	8	9	9	8					
0.049	30	R_1	7	7	8	7	8	8	9	9	8.67	9.33
		R_2	10	10	9	9	10					
		R_3	7	10	10	10	10					
0.025	30	R_1	5	7	6	7	8	7.67	8.33	8	8.33	8.67
		R_2	9	9	9	9	9					
		R_3	9	9	9	9	9					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	60	80	73.4	53.4	66.6	50.77	63.43	58.90	46.95	54.70
0.197	53.4	86.6	73.4	86.6	93.4	46.95	68.53	58.90	68.53	75.11
0.098	73.4	80	86.6	93.4	73.4	58.90	63.43	68.53	75.11	58.90
0.049	60	80	80	73.4	86.6	50.77	63.43	63.43	58.90	68.53
0.025	53.4	66.6	60	66.6	73.4	46.95	54.70	50.77	57.70	58.90

ANOVA result with the arcsine transformed data

Source of Variation	SS	df	MS	F	P-value	F crit
Between doses	510.4904	4	127.6226	3.38391	0.034606	3.006917
Between exposures	513.2782	4	128.3195	3.402389	0.034	3.006917
Error	603.4327	16	37.71454			
Total	1627.201	24				

Appendix Table DCCLXXXIV: Repellency of CH_3OH extracts of *Z. zerumbet* (ap) against *A. gossypii*

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	30	R_1	10	10	9	10	10	10	9.33	9.33	10	9.67
		R_2	10	8	9	10	9					
		R_3	10	10	10	10	10					
0.197	30	R_1	8	10	8	10	9	9.33	10	9	10	9.33
		R_2	10	10	9	10	9					
		R_3	10	10	10	10	10					
0.098	30	R_1	8	10	9	8	8	9	9.67	9.33	9	9.33
		R_2	9	9	9	9	10					
		R_3	10	10	10	10	10					
0.049	30	R_1	9	9	9	9	10	8.67	9	8.33	9	9
		R_2	9	9	8	9	8					
		R_3	8	9	8	9	9					
0.025	30	R_1	9	10	9	10	7	8	9.67	9	10	8.33
		R_2	6	9	8	10	9					
		R_3	9	10	10	10	9					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	100	86.6	86.6	100	93.4	90	68.53	68.53	90	75.11
0.197	86.6	100	80	100	86.6	68.53	90	63.43	90	68.53
0.098	80	93.4	86.6	80	86.6	63.43	75.11	68.53	63.43	68.53
0.049	73.4	80	66.6	80	80	58.90	63.43	54.70	63.43	63.43
0.025	60	93.4	80	100	66.6	50.77	75.11	63.43	90	54.70

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	1042.014	4	260.5034	2.908596	0.055164	3.006917
Between exposures	879.6059	4	219.9015	2.455264	0.087872	3.006917
Error	1433.013	16	89.56328			
Total	3354.632	24				

Appendix Table DCCLXXXV: Repellency of PetE extracts of *Z. zerumbet* (rh) against *A. gossypii*

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	30	R_1	10	10	8	8	9	8.33	7.33	7.33	6.67	6.67
		R_2	9	8	8	7	8					
		R_3	6	4	6	5	3					
0.197	30	R_1	9	8	6	7	9	7	7.33	8.33	9	9.67
		R_2	7	8	9	10	10					
		R_3	5	6	10	10	10					
0.098	30	R_1	10	9	10	10	9	9.67	8.67	9.67	9	9
		R_2	10	9	10	9	8					
		R_3	9	8	9	8	10					
0.049	30	R_1	8	9	7	9	9	7.67	8	8	9.33	9.33
		R_2	6	7	8	10	10					
		R_3	9	8	9	9	9					
0.025	30	R_1	10	10	9	10	8	9.67	9.33	8	8.33	9.33
		R_2	10	8	7	6	10					
		R_3	9	10	8	9	10					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	66.6	46.6	46.6	33.4	33.4	54.70	43.05	43.05	35.30	35.30
0.197	40	46.6	66.6	80	93.4	39.23	43.05	54.70	63.43	75.11
0.098	93.4	73.4	93.4	80	80	75.11	58.90	75.11	63.43	63.43
0.049	53.4	60	60	86.6	86.6	46.95	50.77	50.77	68.53	68.53
0.025	93.4	86.6	60	66.6	86.6	75.11	68.53	50.77	54.70	68.53

ANOVA result with the arcsine transformed data						
Source of Variation	SS	df	MS	F	P-value	F crit
Between doses	1834.245	4	458.5613	3.739696	0.024764	3.006917
Between exposures	249.7569	4	62.43922	0.509209	0.72981	3.006917
Error	1961.919	16	122.6199			
Total	4045.921	24				

Appendix Table DCCLXXXVI: Repellency of $CHCl_3$ extracts of *Z. zerumbet* (rh**)** against *A. gossypii*

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	30	R_1	10	10	10	10	9	10	8.33	9	9.67	9.33
		R_2	10	9	10	9	9					
		R_3	10	6	7	10	10					
0.197	30	R_1	10	10	9	10	10	9	8.33	8.33	8.67	9.33
		R_2	9	8	9	7	8					
		R_3	8	7	7	9	10					
0.098	30	R_1	9	9	10	10	7	8.33	8.33	8	8.33	7.67
		R_2	9	10	9	8	7					
		R_3	7	6	5	7	9					
0.049	30	R_1	9	9	8	9	9	8	7.33	7.33	7.33	8
		R_2	8	7	9	10	9					
		R_3	7	6	5	3	6					
0.025	30	R_1	9	8	9	8	9	9	8	7.67	6.67	8
		R_2	8	6	4	3	6					
		R_3	10	10	10	9	9					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	100	66.6	80	93.4	86.6	90	54.70	63.43	75.11	68.53
0.197	80	66.6	66.6	73.4	86.6	63.43	54.70	54.70	58.90	68.53
0.098	66.6	66.6	60	66.6	53.4	54.70	54.70	50.77	54.70	46.95
0.049	60	46.6	46.6	46.6	60	50.77	43.05	43.05	43.05	50.77
0.025	80	60	53.4	33.4	60	63.43	50.77	46.95	35.30	50.77

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	1876.868	4	469.2169	9.501975	0.000393	3.006917
Between exposures	581.8464	4	145.4616	2.945701	0.053149	3.006917
Error	790.0957	16	49.38098			
Total	3248.81	24				

Appendix Table DCCLXXXVII: Repellency of CH_3OH extracts of *Z. zerumbet* (rh) against *A. gossypii*

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	30	R_1	10	9	10	10	10	9.67	8.33	9.67	9.33	9.33
		R_2	10	8	10	10	10					
		R_3	9	8	9	8	8					
0.197	30	R_1	6	8	7	7	7	6.67	7	6	6.33	7.33
		R_2	8	8	7	6	8					
		R_3	6	5	4	6	7					
0.098	30	R_1	10	9	10	8	9	8.67	9	8.33	7.33	8.33
		R_2	8	9	8	8	9					
		R_3	8	9	7	6	7					
0.049	30	R_1	10	8	7	10	7	8.67	7.67	7	7.67	7
		R_2	10	9	8	8	8					
		R_3	6	6	6	5	6					
0.025	30	R_1	8	7	8	8	10	8	8	7	8.67	9.33
		R_2	8	8	7	9	10					
		R_3	8	9	6	9	8					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.393	93.4	66.6	93.4	86.6	86.6	75.11	54.70	75.11	68.53	68.53
0.197	33.4	40	20	26.6	46.6	35.30	39.23	26.57	31.05	43.05
0.098	73.4	80	66.6	46.6	66.6	58.90	63.43	54.70	43.05	54.70
0.049	73.4	53.4	40	53.4	40	58.90	46.95	39.23	46.95	39.23
0.025	60	60	40	73.4	86.6	50.77	50.77	39.23	58.90	68.53

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	3001.743	4	750.4357	10.50467	0.000227	3.006917
Between exposures	266.5162	4	66.62906	0.93268	0.469839	3.006917
Error	1143.013	16	71.43832			
Total	4411.272	24				

Appendix Table DCCLXXXVIII: Repellency of PetE extracts of *E. nummularius* (wp) against *T. castaneum* adults

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	30	R_1	10	10	10	10	10	9	9	9	9.67	9.67
		R_2	10	10	10	10	10					
		R_3	7	7	7	9	9					
0.157	30	R_1	10	9	10	10	10	9.33	9.33	9.67	9.67	9.67
		R_2	8	9	9	9	9					
		R_3	10	10	10	10	10					
0.079	30	R_1	9	9	9	8	10	9.33	9.33	9.33	9	9.67
		R_2	9	9	9	9	9					
		R_3	10	10	10	10	10					
0.039	30	R_1	3	4	5	5	6	7.33	8	8	8.33	8.67
		R_2	10	10	9	10	10					
		R_3	9	10	10	10	10					
0.019	30	R_1	10	10	10	10	10	10	9.67	10	10	10
		R_2	10	9	10	10	10					
		R_3	10	10	10	10	10					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	80	80	80	93.4	93.4	63.43	63.43	63.43	75.11	75.11
0.157	86.6	86.6	93.4	93.4	93.4	68.53	68.53	75.11	75.11	75.11
0.079	86.6	86.6	86.6	80	93.4	68.53	68.53	68.53	63.43	75.11
0.039	46.6	60	60	66.6	73.4	43.05	50.77	50.77	54.70	58.9
0.019	100	93.4	100	100	100	90	75.11	90	90	90

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	3186.423	4	796.6058	41.80888	2.81E-08	3.006917
Between exposures	294.4175	4	73.60439	3.863036	0.022112	3.006917
Error	304.8561	16	19.05351			
Total	3785.697	24				

Appendix Table DCCLXXXIX: Repellency of $CHCl_3$ extracts of *E. nummularius* (wp) against *T. castaneum* adults

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	30	R_1	6	8	8	10	10	8.67	9.33	9.33	10	10
		R_2	10	10	10	10	10					
		R_3	10	10	10	10	10					
0.157	30	R_1	9	10	10	10	10	8.33	8.67	8.67	9.67	10
		R_2	6	6	6	9	10					
		R_3	10	10	10	10	10					
0.079	30	R_1	8	9	10	10	10	8	9	9.67	9	10
		R_2	6	8	9	8	10					
		R_3	10	10	10	9	10					
0.039	30	R_1	10	10	10	9	9	9	8	8	9	9
		R_2	7	4	4	8	8					
		R_3	10	10	10	10	10					
0.019	30	R_1	2	4	4	5	4	5	6.33	6.33	6.67	5.67
		R_2	4	5	5	5	3					
		R_3	9	10	10	10	10					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	73.4	86.6	86.6	100	100	58.9	68.53	68.53	90	90
0.157	66.6	73.4	73.4	93.4	100	54.70	58.9	58.9	75.11	90
0.079	60	80	93.4	80	100	50.77	63.43	75.11	63.43	90
0.039	80	60	60	80	80	63.43	50.77	50.77	63.43	63.43
0.019	0	26.6	26.6	33.4	13.4	0	31.05	31.05	35.30	21.47

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	8333.66	4	2083.415	20.92352	3.4E-06	3.006917
Between exposures	1948.765	4	487.1913	4.892811	0.009051	3.006917
Error	1593.166	16	99.57289			
Total	11875.59	24				

Appendix Table DCCXC: Repellency of CH_3OH extracts of *E. nummularius* (wp) against *T. castaneum* adults

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	30	R_1	6	7	7	10	10	7.67	8.33	8.33	9.67	9.67
		R_2	7	8	8	9	9					
		R_3	10	10	10	10	10					
0.157	30	R_1	10	10	10	10	10	9.33	10	10	9.67	9.67
		R_2	8	10	10	9	9					
		R_3	10	10	10	10	10					
0.079	30	R_1	8	10	9	10	10	7.33	10	9.33	9.67	9.67
		R_2	5	10	10	10	10					
		R_3	9	10	9	9	9					
0.039	30	R_1	7	10	10	10	8	4.67	6.67	6.67	6.33	6.33
		R_2	0	0	0	0	1					
		R_3	7	10	10	9	10					
0.019	30	R_1	0	0	0	1	1	2.67	3.33	3.33	3.67	3.67
		R_2	0	0	0	0	0					
		R_3	8	10	10	10	10					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	53.4	66.6	66.6	93.4	93.4	46.95	54.70	54.70	75.11	75.11
0.157	86.6	100	100	93.4	93.4	68.53	90	90	75.11	75.11
0.079	46.6	100	86.6	93.4	93.4	43.05	90	68.53	75.11	75.11
0.039	-6.6	33.4	33.4	26.6	26.6	14.89	35.30	35.30	31.05	31.05
0.019	-46.6	-33.4	-33.4	-26.6	-26.6	43.05	35.30	35.30	31.05	31.05

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	9657.375	4	2414.344	23.12835	1.75E-06	3.006917
Between exposures	944.9735	4	236.2434	2.263107	0.107694	3.006917
Error	1670.223	16	104.3889			
Total	12272.57	24				

Appendix Table DCCXCI: Repellency of PetE extracts of *L. camara* (ap) against *T. castaneum* adults

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	30	R_1	7	9	10	10	7	8	9	9.67	9.33	8.67
		R_2	7	9	9	8	9					
		R_3	10	9	10	10	10					
0.157	30	R_1	5	10	9	9	10	7.33	9.33	`9	9.67	9.33
		R_2	9	8	9	10	8					
		R_3	8	10	9	10	10					
0.079	30	R_1	8	8	4	8	7	8	9.33	7.67	8.67	8
		R_2	9	10	10	9	9					
		R_3	7	10	9	9	8					
0.039	30	R_1	3	3	3	0	0	6.67	7.33	7.67	6.67	6
		R_2	9	9	10	10	9					
		R_3	8	10	10	10	9					
0.019	30	R_1	9	10	10	10	10	9.33	9	9.67	9.67	9.674
		R_2	9	8	9	9	10					
		R_3	10	9	10	10	9					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	60	80	93.4	86.6	73.4	50.77	63.43	75.11	68.43	58.90
0.157	46.6	86.6	80	93.4	86.6	43.05	68.53	63.43	75.11	68.53
0.079	46.6	86.6	80	93.4	86.6	43.05	68.53	63.43	75.11	68.53
0.039	33.4	46.6	53.4	33.4	20	35.30	43.05	46.95	35.30	26.57
0.019	86.6	80	93.4	93.4	93.4	68.53	63.43	75.11	75.11	75.11

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	3364.856	4	841.2141	13.22329	6.04E-05	3.006917
Between exposures	588.5974	4	147.1493	2.313083	0.10211	3.006917
Error	1017.858	16	63.6161			
Total	4971.311	24				

Appendix Table DCCXCII: Repellency of $CHCl_3$ extracts of *L. camara* (ap) against *T. castaneum* adults

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	30	R_1	10	8	9	10	10	10	9.33	9	10	10
		R_2	10	10	9	10	10					
		R_3	10	10	9	10	10					
0.157	30	R_1	9	9	8	10	6	9.33	9.67	8.67	10	8.33
		R_2	9	10	9	10	9					
		R_3	10	10	9	10	10					
0.079	30	R_1	0	5	4	8	4	5.67	8.33	7.67	9.33	7.67
		R_2	9	10	9	10	10					
		R_3	8	10	10	10	9					
0.039	30	R_1	10	10	10	10	9	8.67	9.33	10	9.33	8.67
		R_2	6	8	10	8	7					
		R_3	10	10	10	10	10					
0.019	30	R_1	7	6	10	10	8	7	8.33	10	10	9
		R_2	8	10	10	10	10					
		R_3	6	9	10	10	9					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	100	86.6	80	100	100	90	68.53	63.43	90	90
0.157	86.6	93.4	73.4	100	66.6	68.53	75.11	58.90	90	54.70
0.079	13.4	66.6	53.4	86.6	53.4	21.47	54.70	46.95	68.53	46.95
0.039	73.4	86.6	100	86.6	73.4	58.90	68.53	90	68.53	58.90
0.019	40	66.6	100	100	80	39.23	54.70	90	90	63.43

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	2804.85	4	701.2124	3.252582	0.039277	3.006917
Between exposures	1849.601	4	462.4002	2.144848	0.122265	3.006917
Error	3449.383	16	215.5864			
Total	8103.833	24				

Appendix Table DCCXCIII: Repellency of CH_3OH extracts of *L. camara* (ap) against *T. castaneum* adults

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	30	R_1	9	8	9	10	10	8.67	9	8.67	9.67	9.67
		R_2	8	10	7	9	10					
		R_3	9	9	10	10	9					
0.157	30	R_1	10	10	10	9	6	9.67	10	8.67	7	6.33
		R_2	10	10	7	7	5					
		R_3	9	10	9	5	8					
0.079	30	R_1	8	9	10	7	8	9.33	9.67	7.33	7	9
		R_2	10	10	8	5	9					
		R_3	10	10	4	9	10					
0.039	30	R_1	9	9	9	9	9	8.67	9	9	9	9.33
		R_2	9	9	9	8	9					
		R_3	8	9	9	8	10					
0.019	30	R_1	9	9	9	7	8	8.33	9	8.33	7	8.33
		R_2	9	9	9	7	9					
		R_3	7	9	7	7	8					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	73.4	80	73.4	93.4	93.4	58.90	63.43	58.90	75.11	75.11
0.157	93.4	100	73.4	40	26.6	75.11	90	58.90	39.23	31.05
0.079	86.6	93.4	46.6	40	80	68.53	75.11	43.05	39.23	63.43
0.039	73.4	80	80	80	86.6	58.90	63.43	63.43	63.43	68.53
0.019	66.6	80	66.6	40	66.6	54.70	63.43	54.70	39.23	54.70

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	510.5841	4	127.646	0.709332	0.597324	3.006917
Between exposures	1148.017	4	287.0043	1.59489	0.223917	3.006917
Error	2879.239	16	179.9524			
Total	4537.84	24				

Appendix Table DCCXCIV: Repellency of PetE extracts of *L. camara* (r) against *T. castaneum* adults

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	30	R_1	9	9	9	9	10	8.33	9.33	9.67	9.33	9.33
		R_2	8	9	10	10	9					
		R_3	8	10	10	9	9					
0.157	30	R_1	10	10	10	10	10	8.33	8.33	9	7.67	10
		R_2	6	6	7	6	10					
		R_3	9	9	10	7	10					
0.079	30	R_1	10	10	10	10	10	9.33	9.67	9.33	9.67	8.67
		R_2	9	9	8	10	10					
		R_3	9	10	10	9	6					
0.039	30	R_1	9	10	9	10	9	9.67	10	9.67	9.67	9.67
		R_2	10	10	10	9	10					
		R_3	10	10	10	10	10					
0.019	30	R_1	10	10	9	10	9	8	7.33	8	8.33	7.33
		R_2	5	4	5	6	4					
		R_3	9	8	10	9	9					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	66.6	86.6	93.4	86.6	86.6	54.70	68.53	75.11	68.53	68.53
0.157	66.6	66.6	80	53.4	100	54.70	54.70	63.43	46.95	90
0.079	86.6	93.4	86.6	93.4	73.4	68.53	75.11	68.53	75.11	58.90
0.039	93.4	100	93.4	93.4	93.4	75.11	90	75.11	75.11	75.11
0.019	60	46.6	60	66.6	46.6	50.77	43.05	50.77	54.70	43.05

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	2380.664	4	595.1661	5.708065	0.004738	3.006917
Between exposures	137.2422	4	34.31054	0.329062	0.854362	3.006917
Error	1668.281	16	104.2676			
Total	4186.188	24				

Appendix Table DCCXCV: Repellency of $CHCl_3$ extracts of *L. camara* (r) against *T. castaneum* adults

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	30	R_1	10	6	8	6	9	7	7.67	7.67	8.33	9.33
		R_2	9	10	10	10	10					
		R_3	2	7	5	9	9					
0.157	30	R_1	7	8	9	9	9	5.33	6	6.33	6.33	6.67
		R_2	0	0	0	0	1					
		R_3	9	10	10	10	10					
0.079	30	R_1	9	10	10	10	10	9.33	9.67	9.67	10	9.33
		R_2	10	9	10	10	10					
		R_3	9	10	9	10	8					
0.039	30	R_1	9	10	9	10	10	8.33	9	9	9.67	9.67
		R_2	7	9	8	10	9					
		R_3	9	8	10	9	10					
0.019	30	R_1	7	10	10	10	10	7	9.33	9	9.33	9.33
		R_2	4	8	10	10	9					
		R_3	10	10	7	8	9					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	40	53.4	53.4	66.6	86.6	39.23	46.95	46.95	54.70	68.53
0.157	6.6	20	26.6	26.6	33.4	14.89	26.47	31.05	31.05	35.30
0.079	86.6	93.4	93.4	100	86.6	68.53	75.11	75.11	90	68.53
0.039	66.6	80	80	93.4	93.4	54.70	63.43	63.43	75.11	75.11
0.019	40	86.6	80	86.6	86.6	39.23	68.53	63.43	68.53	68.53

ANOVA result with the arcsine transformed data

Source of Variation	SS	df	MS	F	P-value	F crit
Between doses	6683.863	4	1670.966	42.32019	2.57E-08	3.006917
Between exposures	1367.802	4	341.9504	8.660504	0.000643	3.006917
Error	631.7423	16	39.48389			
Total	8683.407	24				

Appendix Table DCCXCVI: Repellency of CH_3OH extracts of *L. camara* (r) against *T. castaneum* adults

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	30	R_1	10	9	10	9	8	8	9	8	8.67	7.33
		R_2	6	9	5	7	5					
		R_3	8	9	9	10	9					
0.157	30	R_1	7	8	7	7	4	6	7.67	6	5.67	`4
		R_2	7	10	10	9	8					
		R_3	4	5	1	1	0					
0.079	30	R_1	9	10	9	10	8	8	10	7.67	10	8.67
		R_2	8	10	9	10	10					
		R_3	7	10	5	10	8					
0.039	30	R_1	8	6	9	5	3	6	5	5	4	2.33
		R_2	3	1	0	0	0					
		R_3	7	8	6	7	4					
0.019	30	R_1	7	9	10	10	10	4	4.33	5	6.33	5.67
		R_2	4	2	2	0	0					
		R_3	1	2	3	9	7					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	60	80	60	73.4	46.6	50.77	63.43	50.77	58.90	43.05
0.157	20	53.4	20	13.4	-20	26.57	46.95	26.57	21.47	26.57
0.079	60	100	53.4	100	73.4	50.77	90	46.95	90	58.90
0.039	20	0	0	-20	-53.4	26.57	0	0	26.57	46.95
0.019	-20	-13.4	0	26.6	13.4	26.57	21.47	0	31.05	21.47

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	9049.891	4	2262.473	11.18203	0.00016	3.006917
Between exposures	1379.823	4	344.9558	1.704907	0.198058	3.006917
Error	3237.299	16	202.3312			
Total	13667.01	24				

Appendix Table DCCXCVII: Repellency of PetE extracts of *M. piperita* (wp) against *T. castaneum* adults

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	30	R_1	9	10	9	10	10	9	9	9.33	9	9.33
		R_2	9	9	9	10	10					
		R_3	9	8	10	7	8					
0.157	30	R_1	8	10	9	10	10	8	9	8.33	8.33	9
		R_2	8	9	9	8	10					
		R_3	8	8	7	7	7					
0.079	30	R_1	8	9	8	10	9	9.33	9.33	9	9.33	9.67
		R_2	10	10	10	10	10					
		R_3	10	9	9	8	10					
0.039	30	R_1	10	10	10	10	10	7	9.67	9.67	9.67	9
		R_2	2	9	10	9	10					
		R_3	9	10	9	10	7					
0.019	30	R_1	10	8	10	10	10	9.67	9	10	9	8
		R_2	9	9	10	9	9					
		R_3	10	10	10	8	5					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	80	80	86.6	80	86.6	63.43	63.43	68.53	63.43	68.53
0.157	60	80	66.6	66.6	80	50.77	63.43	54.7	54.7	63.43
0.079	86.6	86.6	80	86.6	93.4	68.53	68.53	63.43	68.53	75.11
0.039	40	93.4	93.4	93.4	80	39.23	75.11	75.11	75.11	63.43
0.019	93.4	80	100	80	60	75.11	63.43	90	63.43	50.77

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	426.6505	4	106.6626	0.971275	0.450287	3.006917
Between exposures	317.364	4	79.341	0.722483	0.589159	3.006917
Error	1757.074	16	109.8171			
Total	2501.089	24				

Appendix Table DCCXCVIII: Repellency of $CHCl_3$ extracts of *M. piperita* (wp) against *T. castaneum* adults

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	30	R_1	10	10	10	10	6	9.33	10	10	9.67	8.33
		R_2	9	10	10	9	9					
		R_3	9	10	10	10	10					
0.157	30	R_1	5	8	3	1	2	8.33	9.33	7.67	7	7
		R_2	10	10	10	10	10					
		R_3	10	10	10	10	9					
0.079	30	R_1	6	7	6	9	8	8.67	8	6.67	7.33	9
		R_2	10	8	5	3	9					
		R_3	10	9	9	10	10					
0.039	30	R_1	0	0	0	0	0	3.33	3	3.33	3.67	3
		R_2	10	9	10	10	9					
		R_3	0	0	0	1	0					
0.019	30	R_1	9	10	10	10	10	6.67	6.33	6.67	7	6.67
		R_2	1	0	1	1	0					
		R_3	10	9	9	10	10					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	86.6	100	100	93.4	66.6	68.53	90	90	75.11	54.70
0.157	66.6	86.6	53.4	40	40	54.70	68.53	46.95	39.23	39.23
0.079	73.4	60	33.4	46.6	80	58.90	50.77	35.30	43.05	63.43
0.039	-33.4	-40	-33.4	-26.6	-40	35.30	39.23	35.30	31.05	39.23
0.019	33.4	26.6	33.4	40	33.4	35.30	31.05	35.30	39.23	35.30

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	5352.483	4	1338.121	12.10023	0.000102	3.006917
Between exposures	342.6914	4	85.67286	0.774714	0.557515	3.006917
Error	1769.382	16	110.5864			
Total	7464.557	24				

Appendix Table DCCXCIX: Repellency of CH_3OH extracts of *M. piperita* (wp) against *T. castaneum* adults

Dose (mg/cm²)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	30	R_1	4	5	9	8	6	4.33	7	8	5.67	6.33
		R_2	5	8	9	4	7					
		R_3	4	8	6	5	6					
0.157	30	R_1	7	10	8	10	5	8.33	9.67	9.33	9.67	6.33
		R_2	8	9	10	10	6					
		R_3	10	10	10	9	8					
0.079	30	R_1	7	5	4	6	5	6.67	4.33	6	5.33	4
		R_2	8	4	7	6	4					
		R_3	5	4	7	4	3					
0.039	30	R_1	9	10	10	8	7	8.67	10	9	7.67	8
		R_2	8	10	7	9	9					
		R_3	9	10	10	6	8					
0.019	30	R_1	5	8	10	4	5	6	8	7.33	7	6
		R_2	6	9	4	8	7					
		R_3	7	7	8	9	6					

Dose (mg/cm²)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	-13.4	40	60	13.4	26.6	21.47	39.23	50.77	21.47	31.05
0.157	66.6	93.4	86.6	93.4	26.6	54.70	75.11	68.43	75.11	31.05
0.079	33.4	-13.4	20	6.6	-20	35.30	21.47	26.57	14.89	26.57
0.039	73.4	100	80	53.4	60	58.90	90	63.43	46.95	50.77
0.019	20	60	46.6	40	20	26.57	50.77	43.05	39.23	26.57

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	5714.384	4	1428.596	10.36849	0.000244	3.006917
Between exposures	1631.671	4	407.9178	2.960592	0.052363	3.006917
Error	2204.52	16	137.7825			
Total	9550.575	24				

Appendix Table DCCC: Repellency of PetE extracts of *Mi. pudica* (wp) against *T. castaneum* adults

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	30	R_1	10	10	10	10	10	10	9.33	10	9.67	10
		R_2	10	10	10	10	10					
		R_3	10	8	10	9	10					
0.157	30	R_1	9	9	8	7	8	9	8.67	8.33	8.33	9
		R_2	9	9	8	9	9					
		R_3	9	8	9	9	10					
0.079	30	R_1	10	10	9	10	10	9	9.67	9.67	9.33	10
		R_2	8	10	10	9	10					
		R_3	9	9	10	9	10					
0.039	30	R_1	8	10	10	10	10	8.67	9.33	9.67	9.33	9.67
		R_2	9	9	10	10	10					
		R_3	9	9	9	8	9					
0.019	30	R_1	9	10	10	10	10	7	10	9.33	9	9
		R_2	9	10	10	9	9					
		R_3	3	10	8	8	8					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	100	86.6	100	93.4	100	90	68.53	90	75.11	90
0.157	80	73.4	66.6	66.6	80	63.43	58.90	54.70	54.70	63.43
0.079	80	93.4	93.4	86.6	100	63.43	75.11	75.11	68.53	90
0.039	73.4	86.6	93.4	86.6	93.4	58.90	68.53	75.11	68.53	75.11
0.019	40	100	86.6	80	80	39.23	90	68.53	63.43	63.43

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	1641.506	4	410.3765	3.669784	0.026422	3.006917
Between exposures	587.7369	4	146.9342	1.313957	0.306958	3.006917
Error	1789.213	16	111.8258			
Total	4018.456	24				

Appendix Table DCCCI: Repellency of $CHCl_3$ extracts of *Mi. pudica* (wp) against *T. castaneum* adults

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	30	R_1	10	10	9	10	10	9.67	10	9	10	10
		R_2	10	10	10	10	10					
		R_3	9	10	8	10	10					
0.157	30	R_1	8	9	10	9	9	9	9.67	10	9.33	9.67
		R_2	10	10	10	10	10					
		R_3	9	10	10	9	10					
0.079	30	R_1	9	10	10	10	10	9.67	9.67	10	10	10
		R_2	10	9	10	10	10					
		R_3	10	10	10	10	10					
0.039	30	R_1	10	10	10	9	9	8	6.67	6.67	6.67	6
		R_2	10	10	10	10	9					
		R_3	4	0	0	1	0					
0.019	30	R_1	4	3	9	8	9	7	7.67	9.33	9.33	9.67
		R_2	9	10	9	10	10					
		R_3	8	10	10	10	10					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	93.4	100	80	100	100	75.11	90	63.43	90	90
0.157	80	93.4	100	86.6	93.4	63.43	75.11	90	68.53	75.11
0.079	93.4	93.4	100	100	100	75.11	75.11	90	90	90
0.039	60	33.4	33.4	33.4	20	50.77	35.30	35.30	35.30	26.57
0.019	40	53.4	86.6	86.6	93.4	39.23	46.95	68.53	68.53	75.11

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	7683.182	4	1920.796	14.49968	3.47E-05	3.006917
Between exposures	410.9929	4	102.7482	0.775625	0.556974	3.006917
Error	2119.545	16	132.4716			
Total	10213.72	24				

Appendix Table DCCCII: Repellency of CH_3OH extracts of *Mi. pudica* (wp) against *T. castaneum* adults

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	30	R_1	9	10	9	6	9	8	9.67	7.67	8	8.67
		R_2	7	9	7	8	8					
		R_3	8	10	7	10	9					
0.157	30	R_1	2	10	10	6	6	4	10	7.33	5	6
		R_2	4	10	6	3	5					
		R_3	6	10	6	6	5					
0.079	30	R_1	10	9	9	10	8	9.33	9.67	8.67	8.67	7.67
		R_2	8	10	8	6	7					
		R_3	10	10	9	10	8					
0.039	30	R_1	9	10	10	9	9	9	9.67	10	9.67	9.33
		R_2	8	9	10	10	9					
		R_3	10	10	10	10	10					
0.019	30	R_1	8	8	6	7	6	7	8	7	6	7
		R_2	6	9	8	6	7					
		R_3	7	7	7	5	8					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	60	93.4	53.4	60	73.4	50.77	75.11	46.95	50.77	58.90
0.157	-20	100	46.6	0	20	26.57	90	43.05	0	26.57
0.079	86.6	93.4	73.4	73.4	53.4	68.53	75.11	58.90	58.90	46.95
0.039	80	93.4	100	93.4	86.6	63.43	75.11	90	75.11	68.53
0.019	40	60	40	20	40	39.23	50.77	39.23	26.57	39.23

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	4941.778	4	1235.445	6.033987	0.003706	3.006917
Between exposures	2816.96	4	704.2401	3.439552	0.032816	3.006917
Error	3275.962	16	204.7476			
Total	11034.7	24				

Appendix Table DCCCIII: Repellency of PetE extracts of *P. hysterophorus* (wp) against *T. castaneum* adults

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	30	R_1	10	10	10	10	9	10	10	10	10	9.67
		R_2	10	10	10	10	10					
		R_3	10	10	10	10	10					
0.157	30	R_1	10	10	10	10	10	10	10	10	9.67	9.67
		R_2	10	10	10	10	10					
		R_3	10	10	10	9	9					
0.079	30	R_1	6	5	9	7	7	6.33	5.67	9.67	8.33	8.67
		R_2	10	10	10	10	10					
		R_3	3	2	10	8	9					
0.039	30	R_1	8	9	10	10	9	7	7	8.33	7.67	8
		R_2	10	9	10	10	9					
		R_3	3	3	5	3	6					
0.019	30	R_1	10	8	9	9	9	7.67	8	7.33	7.33	8.67
		R_2	8	7	5	4	8					
		R_3	5	9	8	9	9					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	100	100	100	100	93.4	90	90	90	90	75.11
0.157	100	100	100	93.4	93.4	90	90	90	75.11	75.11
0.079	26.6	13.4	93.4	66.6	73.4	31.05	21.47	75.11	54.70	58.90
0.039	40	40	66.6	53.4	60	39.23	39.23	54.70	46.95	50.77
0.019	53.4	60	46.6	46.6	73.4	46.95	50.77	43.05	43.05	58.90

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	8766.155	4	2191.539	16.20647	1.75E-05	3.006917
Between exposures	462.8329	4	115.7082	0.855664	0.511051	3.006917
Error	2163.619	16	135.2262			
Total	11392.61	24				

Appendix Table DCCCIV: Repellency of $CHCl_3$ extracts of *P. hysterophorus* (wp) against *T. castaneum* adults

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	30	R_1	10	10	10	10	10	9.33	9.67	9.67	9.67	8.33
		R_2	9	10	9	10	10					
		R_3	9	9	10	9	5					
0.157	30	R_1	8	10	10	10	10	9	9.33	9	9.67	9.67
		R_2	9	9	9	10	10					
		R_3	10	9	8	9	9					
0.079	30	R_1	10	10	9	10	10	10	9.67	9.33	10	9.67
		R_2	10	9	10	10	10					
		R_3	10	10	9	10	9					
0.039	30	R_1	1	0	0	0	0	5.67	6.67	6.33	6.67	6.67
		R_2	9	10	10	10	10					
		R_3	7	10	9	10	10					
0.019	30	R_1	5	7	6	5	6	7.67	7	8	8.33	8.67
		R_2	9	4	9	10	10					
		R_3	**9**	**10**	**9**	**10**	**10**					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	86.6	93.4	93.4	93.4	66.6	68.53	75.11	75.11	75.11	54.70
0.157	80	86.6	80	93.4	93.4	63.43	68.53	63.43	75.11	75.11
0.079	100	93.4	86.6	100	93.4	90	75.11	68.53	90	75.11
0.039	13.4	33.4	26.6	33.4	33.4	21.47	35.30	31.05	35.30	35.30
0.019	53.4	40	60	66.6	73.41	46.95	39.23	50.77	54.7	58.90

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	7335.879	4	1833.97	30.36691	2.72E-07	3.006917
Between exposures	234.8887	4	58.72216	0.972323	0.449766	3.006917
Error	966.2988	16	60.39368			
Total	8537.066	24				

Appendix Table DCCCV: Repellency of CH_3OH extracts of *P. hysterophorus* (wp) against *T. castaneum* adults

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	30	R_1	8	9	5	9	9	8.67	8	6.33	7.33	7
		R_2	9	6	5	3	2					
		R_3	9	9	9	10	10					
0.157	30	R_1	8	7	8	9	9	7	7.67	6.67	6	5.33
		R_2	4	6	6	5	3					
		R_3	9	10	6	4	4					
0.079	30	R_1	9	10	10	10	10	8	7	8	8.33	8.67
		R_2	6	1	6	7	8					
		R_3	9	10	8	8	8					
0.039	30	R_1	10	9	4	3	4	7	6.67	4.33	5	5.33
		R_2	9	10	9	9	8					
		R_3	2	1	0	3	4					
0.019	30	R_1	1	0	0	0	0	3.33	3	3	2.67	2
		R_2	8	8	9	8	6					
		R_3	1	1	0	0	0					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	73.4	60	26.6	46.6	40	58.90	50.77	31.05	43.05	39.23
0.157	40	53.4	33.4	20	6.6	39.23	46.95	35.30	26.57	14.89
0.079	60	40	60	66.6	73.4	50.77	39.23	50.77	54.70	58.90
0.039	40	33.4	-13.4	0	6.6	39.23	35.30	21.47	0	14.89
0.019	-33.4	-40.0	-40.0	-46.6	-60	35.30	39.23	39.23	43.05	50.77

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	2503.354	4	625.8386	5.123731	0.007497	3.006917
Between exposures	470.4299	4	117.6075	0.962851	0.454493	3.006917
Error	1954.321	16	122.1451			
Total	4928.105	24				

Appendix Table DCCCVI: Repellency of PetE extracts of *Ph. niruri* (wp) against *T. castaneum* adults

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	30	R_1	8	9	9	9	9	8	7.33	8.67	9.67	9.67
		R_2	7	5	8	10	10					
		R_3	9	8	9	10	10					
0.157	30	R_1	4	8	8	10	9	6	8	8.67	9.33	9.33
		R_2	6	7	9	8	9					
		R_3	8	9	9	10	10					
0.079	30	R_1	7	9	9	10	10	9	9	9	8.67	9.33
		R_2	10	10	10	8	9					
		R_3	10	8	8	8	9					
0.039	30	R_1	8	9	9	8	8	8.67	9.33	9	9	8.67
		R_2	10	10	10	10	10					
		R_3	8	9	8	9	8					
0.019	30	R_1	6	6	6	8	8	6.67	5.67	6.33	6	6.33
		R_2	7	6	6	5	8					
		R_3	7	5	7	5	8					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	60	46.6	73.4	93.4	93.4	50.77	43.05	58.90	74.11	75.11
0.157	20	60	73.4	86.6	86.6	26.57	50.77	58.90	68.53	68.53
0.079	80	80	80	73.4	86.6	63.43	63.43	63.43	58.90	68.53
0.039	73.4	86.6	80	80	73.4	58.90	68.53	63.43	63.43	58.89
0.019	33.4	13.4	26.6	20	26.6	35.24	21.39	31.05	26.57	31.05

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	4157.309	4	1039.327	10.4422	0.000235	3.006917
Between exposures	664.6068	4	166.1517	1.669338	0.206059	3.006917
Error	1592.504	16	99.53147			
Total	6414.419	24				

Appendix Table DCCCVII: Repellency of $CHCl_3$ extracts of *Ph. niruri* (wp) against *T. castaneum* adults

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	30	R_1	9	9	10	10	10	8.67	9.33	10	10	10
		R_2	9	10	10	10	10					
		R_3	8	9	10	10	10					
0.157	30	R_1	10	9	10	10	10	8.67	8.33	9	9	9.33
		R_2	10	10	10	10	10					
		R_3	6	6	7	7	8					
0.079	30	R_1	10	10	10	10	10	9.67	9	9	9	9
		R_2	10	10	10	10	10					
		R_3	9	7	7	7	7					
0.039	30	R_1	10	10	10	10	10	8.67	9.67	9.67	9.33	9.33
		R_2	10	10	10	10	10					
		R_3	6	9	9	8	8					
0.019	30	R_1	10	10	10	10	10	6	7.67	8.67	9	8.67
		R_2	5	5	7	8	8					
		R_3	3	8	9	9	8					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	73.4	86.6	100	100	100	58.90	68.53	90	90	90
0.157	73.4	66.6	80	80	86.6	58.90	54.70	63.43	63.43	68.53
0.079	93.4	80	80	80	80	75.11	63.43	63.43	63.43	63.43
0.039	73.4	93.4	93.4	86.6	86.6	58.90	75.11	75.11	68.53	68.53
0.019	20	53.4	73.4	80	73.4	26.57	46.95	58.90	63.43	58.90

ANOVA result with the arcsine transformed data

Source of Variation	SS	df	MS	F	P-value	F crit
Between doses	2175.15	4	543.7875	6.619473	0.002426	3.006917
Between exposures	848.9971	4	212.2493	2.58369	0.076855	3.006917
Error	1314.395	16	82.14967			
Total	4338.542	24				

Appendix Table DCCCVIII: Repellency of CH_3OH extracts of *Ph. niruri* (wp) against *T. castaneum* adults

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	30	R_1	10	10	10	10	10	7.67	8.67	9.67	9.67	10
		R_2	8	10	10	9	10					
		R_3	5	6	9	10	10					
0.157	30	R_1	7	10	10	10	9	7.33	9.33	9.33	9.67	8.67
		R_2	6	10	10	10	10					
		R_3	9	8	8	9	7					
0.079	30	R_1	9	5	10	6	9	8.33	7.33	9	7.67	8.33
		R_2	10	9	8	8	6					
		R_3	6	8	9	9	10					
0.039	30	R_1	4	9	10	9	10	6.67	9.33	10	9.33	10
		R_2	6	10	10	9	10					
		R_3	10	9	10	10	10					
0.019	30	R_1	3	10	9	10	10	7	10	9	9.33	8.33
		R_2	9	10	10	9	9					
		R_3	9	10	8	9	6					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	53.4	73.4	93.4	93.4	100	46.95	58.90	75.11	75.11	90
0.157	46.6	86.6	86.6	93.4	73.4	43.05	68.53	68.53	75.11	58.90
0.079	66.6	46.6	80	53.4	66.6	54.70	43.05	63.43	46.95	66.6
0.039	33.4	86.6	100	86.6	100	35.30	68.53	90	68.53	90
0.019	40	100	80	86.6	66.6	39.23	90	63.43	68.53	54.70

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	762.6832	4	190.6708	1.097904	0.391183	3.006917
Between exposures	2754.496	4	688.6239	3.965173	0.020154	3.006917
Error	2778.689	16	173.6681			
Total	6295.868	24				

Appendix Table DCCCIX: Repellency of PetE extracts of *Po. hydropiper* (wp) against *T. castaneum* adults

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	30	R_1	10	10	10	10	10	9	9	9	9.67	9.67
		R_2	10	10	10	10	10					
		R_3	7	7	7	9	9					
0.157	30	R_1	10	9	10	10	10	9.33	9.33	9.67	9.67	9.67
		R_2	8	9	9	9	9					
		R_3	10	10	10	10	10					
0.079	30	R_1	9	9	8	8	10	9.33	9.33	9.33	9	9.67
		R_2	9	9	9	9	9					
		R_3	10	10	10	10	10					
0.039	30	R_1	3	4	5	5	6	7.33	8	8	8.33	8.67
		R_2	10	10	10	10	10					
		R_3	9	10	10	10	10					
0.019	30	R_1	10	10	10	10	10	10	9.67	10	10	10
		R_2	10	9	10	10	10					
		R_3	10	10	10	10	10					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	80	80	80	93.4	93.4	63.43	63.43	63.43	75.11	75.11
0.157	86.6	86.6	93.4	93.4	93.4	68.53	68.53	75.11	75.11	75.11
0.079	86.6	86.6	86.6	80	93.4	68.53	68.53	68.53	63.43	75.11
0.039	46.6	60	60	66.6	73.4	43.05	50.77	50.77	54.70	58.9
0.019	100	93.4	100	100	100	90	75.11	90	90	90

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	3117.317	4	779.3291	48.03907	1.02E-08	3.006917
Between exposures	94.75334	4	23.68833	1.460186	0.260415	3.006917
Error	259.5651	16	16.22282			
Total	3471.635	24				

Appendix Table DCCCX: Repellency of $CHCl_3$ extracts of *Po. hydropiper* (wp) against *T. castaneum* adults

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	30	R_1	10	10	10	10	10	10	10	10	10	10
		R_2	10	10	10	10	10					
		R_3	10	10	10	10	10					
0.157	30	R_1	10	10	10	10	10	10	9.67	10	10	10
		R_2	10	10	10	10	10					
		R_3	10	9	10	10	10					
0.079	30	R_1	10	10	10	10	10	8	8.33	8.33	9	9.33
		R_2	10	10	10	10	10					
		R_3	4	5	5	7	8					
0.039	30	R_1	10	10	9	10	10	7	6.67	6.33	6.67	6.67
		R_2	9	10	10	10	10					
		R_3	2	0	0	0	0					
0.019	30	R_1	8	4	5	0	0	7.33	7	7.33	5	5
		R_2	9	10	10	10	10					
		R_3	5	7	7	5	5					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	100	100	100	100	100	90	90	90	90	90
0.157	100	93.4	100	100	100	90	75.11	90	90	90
0.079	60	66.6	66.6	80	86.6	50.77	54.70	54.70	63.43	68.53
0.039	40	33.4	26.6	33.4	33.4	39.23	35.30	31.05	35.30	35.30
0.019	46.6	40	46.6	0	0	43.05	39.23	43.05	0	0

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	17313.47	4	4328.367	29.49767	3.33E-07	3.006917
Between exposures	180.6695	4	45.16737	0.307814	0.868514	3.006917
Error	2347.775	16	146.7359			
Total	19841.91	24				

Appendix Table DCCCXI: Repellency of CH_3OH extracts of *Po. hydropiper* (wp) against *T. castaneum* adults

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	30	R_1	10	10	10	10	10	10	10	10	10	10
		R_2	10	10	10	10	10					
		R_3	10	10	10	10	10					
0.157	30	R_1	10	10	10	10	10	8.67	9	9	8.67	8
		R_2	9	10	10	10	9					
		R_3	7	7	7	6	5					
0.079	30	R_1	10	10	10	10	10	10	10	10	10	10
		R_2	10	10	10	10	10					
		R_3	10	10	10	10	10					
0.039	30	R_1	0	0	0	0	0	4	3.33	3.33	4	3.67
		R_2	2	0	0	2	1					
		R_3	10	10	10	10	10					
0.019	30	R_1	10	10	10	10	10	8.33	8.67	8.67	8.33	8.33
		R_2	10	10	10	10	10					
		R_3	5	6	6	5	5					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	100	100	100	100	100	90	90	90	90	90
0.157	73.4	80	80	73.4	60	58.95	63.43	63.43	58.95	50.77
0.079	100	100	100	100	100	90	90	90	90	90
0.039	-20	-33.4	-33.4	-20	-26.6	26.57	35.30	35.30	26.57	31.05
0.019	66.6	73.4	73.4	66.6	66.6	54.70	58.95	58.95	54.70	54.70

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	12585.64	4	3146.41	422.5536	5.34E-16	3.006917
Between exposures	85.6911	4	21.42278	2.877015	0.056944	3.006917
Error	119.1389	16	7.446181			
Total	12790.47	24				

Appendix Table DCCCXII: Repellency of PetE extracts of *Pz. zeylanica* (wp) against *T. castaneum* adults

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	30	R_1	7	8	10	10	10	8.33	9	9.67	10	10
		R_2	8	9	10	10	10					
		R_3	10	10	9	10	10					
0.157	30	R_1	10	9	9	9	9	9	9.67	9.33	9.33	9.67
		R_2	7	10	10	9	10					
		R_3	10	10	9	10	10					
0.079	30	R_1	9	9	8	8	9	7.33	9.33	9	8.67	9.67
		R_2	7	9	10	9	10					
		R_3	6	10	9	9	10					
0.039	30	R_1	2	0	3	8	6	3.67	4.33	5	7.33	6.67
		R_2	1	3	2	5	4					
		R_3	8	10	10	9	10					
0.019	30	R_1	5	5	5	5	4	5	5.67	5.33	6.67	6.33
		R_2	7	8	7	6	6					
		R_3	3	4	4	9	9					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	66.6	80	93.4	100	100	54.70	63.43	75.11	90	90
0.157	80	93.4	86.6	86.6	93.4	63.43	75.11	68.53	68.53	75.11
0.079	46.6	86.6	80	73.4	93.4	43.05	68.53	63.43	58.9	75.11
0.039	-26.6	-13.4	0	46.6	33.4	31.05	21.47	0	43.05	35.30
0.019	0	13.4	6.6	33.4	26.6	0	21.47	14.89	35.30	31.05

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	12929.1	4	3232.274	30.61707	2.57E-07	3.006917
Between exposures	1872.961	4	468.2404	4.435313	0.013311	3.006917
Error	1689.136	16	105.571			
Total	16491.19	24				

Appendix Table DCCCXIII: Repellency of $CHCl_3$ extracts of *Pz. zeylanica* (wp) against *T. castaneum* adults

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	30	R_1	10	9	10	10	10	8	8.33	9.67	10	10
		R_2	8	9	10	10	10					
		R_3	6	7	9	10	10					
0.157	30	R_1	9	10	10	10	10	8.33	8.67	8.33	9.67	10
		R_2	6	7	7	9	10					
		R_3	10	9	8	10	10					
0.079	30	R_1	6	8	8	10	9	6.67	8.33	7.33	9.33	9.33
		R_2	7	8	6	8	9					
		R_3	7	9	8	10	10					
0.039	30	R_1	6	8	10	10	10	7.67	8.33	9	9.67	9.67
		R_2	7	7	7	9	9					
		R_3	10	10	10	10	10					
0.019	30	R_1	7	8	9	9	9	8.67	9.33	9.67	9.67	9.67
		R_2	10	10	10	10	10					
		R_3	9	10	10	10	10					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	60	66.6	93.4	100	100	50.77	54.70	75.11	90	90
0.157	66.6	73.4	66.6	93.4	100	54.70	58.90	54.70	75.11	90
0.079	33.4	66.6	46.6	86.6	86.6	35.30	54.70	43.05	68.53	68.53
0.039	53.4	66.6	80	93.4	93.4	46.95	54.70	63.43	75.11	75.11
0.019	73.4	86.6	93.4	93.4	93.4	58.9	68.53	75.11	75.11	75.11

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	1040.806	4	260.2016	5.101075	0.007635	3.006917
Between exposures	3268.387	4	817.0967	16.01863	1.88E-05	3.006917
Error	816.1465	16	51.00916			
Total	5125.34	24				

Appendix Table DCCCXIV: Repellency of CH_3OH extracts of *Pz. zeylanica* (wp) against *T. castaneum* adults

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	30	R_1	10	10	10	10	10	9	9.33	9.67	10	9.97
		R_2	8	10	10	10	10					
		R_3	9	8	9	10	9					
0.157	30	R_1	9	10	10	10	10	9.33	10	10	10	10
		R_2	9	10	10	10	10					
		R_3	10	10	10	10	10					
0.079	30	R_1	8	10	10	10	10	8.33	9.33	9	9	9
		R_2	8	9	9	9	9					
		R_3	9	9	8	8	8					
0.039	30	R_1	6	5	4	4	4	8.33	7.33	7.33	7.33	7.33
		R_2	10	9	9	9	9					
		R_3	9	8	9	9	9					
0.019	30	R_1	9	10	10	10	9	8.67	9	9.33	9	8.33
		R_2	9	10	10	10	10					
		R_3	8	7	8	7	6					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	80	86.6	93.4	100	93.4	63.43	68.53	75.11	90	75.11
0.157	86.6	100	100	100	100	68.53	90	90	90	90
0.079	66.6	86.6	80	80	80	54.70	68.53	63.43	63.43	63.43
0.039	66.6	46.6	46.6	46.6	46.6	54.70	43.05	43.05	43.05	43.05
0.019	73.4	80	86.6	80	66.6	58.9	63.43	68.53	63.43	54.70

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	4565.986	4	1141.497	22.72755	1.96E-06	3.006917
Between exposures	281.9166	4	70.47915	1.403261	0.27762	3.006917
Error	803.6039	16	50.22524			
Total	5651.507	24				

Appendix Table DCCCXV: Repellency of PetE extracts of *S. nodiflora* (wp) against *T. castaneum* adults

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	30	R_1	10	10	10	10	10	9.33	10	10	10	10
		R_2	8	10	10	10	10					
		R_3	10	10	10	10	10					
0.157	30	R_1	10	10	10	10	10	10	10	10	10	9.67
		R_2	10	10	10	10	10					
		R_3	10	10	10	10	9					
0.079	30	R_1	8	10	10	10	10	9	10	10	9.67	10
		R_2	10	10	10	10	10					
		R_3	9	10	10	9	10					
0.039	30	R_1	9	10	10	10	10	7.67	9.33	9.33	9.67	10
		R_2	4	8	8	9	10					
		R_3	10	10	10	10	10					
0.019	30	R_1	8	9	8	9	6	6.67	8.67	6.67	9.33	8.67
		R_2	9	10	10	10	10					
		R_3	3	7	2	9	10					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	86.6	100	100	100	100	68.53	90	90	90	90
0.157	100	100	100	100	93.4	90	90	90	90	75.11
0.079	80	100	100	93.4	100	63.43	90	90	75.11	90
0.039	53.4	86.6	86.6	93.4	100	46.95	68.53	68.53	75.11	90
0.019	33.4	73.4	33.4	86.6	73.4	35.30	58.90	35.30	68.53	58.90

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	4442.363	4	1110.591	10.88737	0.000186	3.006917
Between exposures	1383.851	4	345.9627	3.391551	0.034354	3.006917
Error	1632.116	16	102.0072			
Total	7458.33	24				

Appendix Table DCCCXVI: Repellency of $CHCl_3$ extracts of *S. nodiflora* (wp) against *T. castaneum* adults

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	30	R_1	9	10	9	10	10	9.33	9.33	9.67	10	9.67
		R_2	9	9	10	10	10					
		R_3	10	9	10	10	9					
0.157	30	R_1	6	8	8	5	8	8	8.67	9.33	8.33	9.33
		R_2	10	10	10	10	10					
		R_3	8	8	10	10	10					
0.079	30	R_1	3	3	3	2	2	7	7.33	7.67	7.33	7.33
		R_2	10	10	10	10	10					
		R_3	8	9	10	10	10					
0.039	30	R_1	10	8	10	10	9	8.67	9	9.33	9.67	9
		R_2	9	9	9	9	9					
		R_3	7	10	9	10	9					
0.019	30	R_1	9	10	10	10	10	7.33	6.33	6.67	6.33	6
		R_2	3	2	2	1	0					
		R_3	10	7	8	8	8					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	86.6	86.6	93.4	100	93.4	68.53	68.53	75.11	90	75.11
0.157	60	73.4	86.6	66.6	86.6	50.77	58.9	68.53	54.70	68.53
0.079	40	46.6	53.4	46.6	46.6	39.23	43.05	46.95	43.05	43.05
0.039	73.4	80	86.6	93.4	80	58.9	63.43	68.53	75.11	63.43
0.019	46.6	26.6	33.4	46.6	20	43.05	30.98	35.30	43.05	26.57

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	5351.034	4	1337.759	32.22691	1.79E-07	3.006917
Between exposures	299.6841	4	74.92103	1.804865	0.177273	3.006917
Error	664.1696	16	41.5106			
Total	6314.888	24				

Appendix Table DCCCXVII: Repellency of CH_3OH extracts of *S. nodiflora* (wp) against *T. castaneum* adults

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	30	R_1	9	7	10	8	6	9.67	8.67	9	9.33	8
		R_2	10	10	9	10	9					
		R_3	10	9	8	10	9					
0.157	30	R_1	7	8	8	9	8	7.67	8.67	9	9.67	8.67
		R_2	7	9	9	10	8					
		R_3	9	9	10	10	10					
0.079	30	R_1	7	10	9	10	10	7.67	9.33	9.33	9.67	10
		R_2	7	8	9	9	10					
		R_3	9	10	10	10	10					
0.039	30	R_1	5	9	6	6	6	6.67	7	6.33	6.33	6.33
		R_2	8	6	7	7	7					
		R_3	7	6	6	6	6					
0.019	30	R_1	6	8	10	10	10	6.67	6.67	8	6.67	7.33
		R_2	6	6	9	9	10					
		R_3	8	6	5	1	2					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	93.4	73.4	80	86.6	60	75.11	58.90	63.43	68.53	50.77
0.157	53.4	73.4	80	93.4	73.4	46.95	58.90	63.43	75.11	58.90
0.079	53.4	86.6	86.6	93.4	100	46.95	68.53	68.53	75.11	90
0.039	33.4	40	26.6	26.6	26.6	35.30	39.23	31.05	31.05	31.05
0.019	33.4	33.4	60	33.4	46.6	35.30	35.30	50.77	53.30	43.05

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	4985.061	4	1246.265	11.67454	0.000125	3.006917
Between exposures	253.0236	4	63.25591	0.592557	0.672993	3.006917
Error	1708.011	16	106.7507			
Total	6946.096	24				

Appendix Table DCCCXVIII: Repellency of PetE extracts of *Z. zerumbet* (ap) against *T. castaneum* adults

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	30	R_1	9	9	10	10	10	6.67	5.33	7.33	7.67	9
		R_2	5	3	4	4	7					
		R_3	6	4	8	9	10					
0.157	30	R_1	8	8	9	10	9	8	9	9.33	9.67	8.67
		R_2	9	9	9	9	8					
		R_3	7	10	10	10	9					
0.079	30	R_1	10	10	10	10	10	9	9.67	9.67	9	9.67
		R_2	10	9	9	8	9					
		R_3	7	10	10	9	10					
0.039	30	R_1	9	9	8	8	10	9	9.67	8.67	9.33	9
		R_2	9	10	10	10	7					
		R_3	9	10	8	10	10					
0.019	30	R_1	8	10	10	10	10	6.67	8	8.67	9	9.33
		R_2	6	7	8	7	8					
		R_3	6	7	8	10	10					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	33.4	6.6	46.6	53.4	80	35.30	14.89	43.05	46.95	63.43
0.157	60	80	86.6	93.4	73.4	50.77	63.43	68.53	75.11	58.90
0.079	80	93.4	93.4	80	93.4	63.43	75.11	75.11	63.43	75.11
0.039	80	93.4	73.4	86.6	80	63.43	75.11	58.90	68.53	63.43
0.019	33.4	60	73.4	80	86.6	35.30	50.77	58.90	63.43	68.53

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	2720.1	4	680.0251	6.219634	0.003233	3.006917
Between exposures	841.6041	4	210.401	1.924366	0.155409	3.006917
Error	1749.364	16	109.3352			
Total	5311.068	24				

Appendix Table DCCCXIX: Repellency of $CHCl_3$ extracts of *Z. zerumbet* (ap) against *T. castaneum* adults

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	30	R_1	8	10	10	10	7	5.33	7.67	8	8.33	6
		R_2	4	5	5	7	6					
		R_3	4	8	9	8	5					
0.157	30	R_1	9	10	10	9	9	8	9.33	9.67	9.67	9
		R_2	10	10	10	10	9					
		R_3	5	8	9	10	9					
0.079	30	R_1	6	7	7	7	3	8	8.67	8.33	8.67	7.67
		R_2	9	9	9	10	10					
		R_3	9	10	9	9	10					
0.039	30	R_1	9	9	9	9	9	7.67	7.33	7.33	7.33	7.67
		R_2	6	5	5	6	7					
		R_3	8	8	8	7	7					
0.019	30	R_1	7	4	6	6	4	9	7.67	7	8.33	6.67
		R_2	10	10	10	9	6					
		R_3	10	9	5	10	10					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	6.6	53.4	60	66.6	20	14.89	46.95	50.77	54.70	26.57
0.157	60	86.6	93.4	93.4	80	50.77	68.53	75.11	75.11	63.43
0.079	60	73.4	66.6	73.4	53.4	50.77	58.90	54.70	58.90	46.95
0.039	53.4	46.6	46.6	46.6	53.4	46.95	43.05	43.05	43.05	46.95
0.019	80	53.4	40	66.6	33.4	63.43	46.95	39.23	54.70	35.30

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	2250.881	4	562.7202	5.598159	0.005155	3.006917
Between exposures	633.811	4	158.4527	1.57635	0.22861	3.006917
Error	1608.301	16	100.5188			
Total	4492.992	24				

Appendix Table DCCCXX: Repellency of CH_3OH extracts of *Z. zerumbet* (ap) against *T. castaneum* adults

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	30	R_1	10	4	4	1	3	9.67	7.33	7	6	6.67
		R_2	9	10	9	8	9					
		R_3	10	8	8	9	8					
0.157	30	R_1	7	5	6	8	9	7.33	6.33	6	8.67	7.67
		R_2	10	5	5	9	5					
		R_3	5	9	7	9	9					
0.079	30	R_1	7	8	4	0	1	7.33	8	4.33	2.67	3
		R_2	9	9	6	6	8					
		R_3	6	7	3	2	0					
0.039	30	R_1	7	7	7	8	7	7	7.33	7.67	9	7
		R_2	6	5	6	9	4					
		R_3	8	10	10	10	10					
0.019	30	R_1	8	7	4	2	1	8	7.67	8	7	5.33
		R_2	10	10	10	10	10					
		R_3	6	6	10	9	5					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	93.4	46.6	40	20	33.4	75.11	43.05	39.23	26.57	35.30
0.157	46.6	26.6	20	73.4	53.4	43.05	31.05	26.57	58.90	46.95
0.079	46.6	60	-13.4	-46.6	-40	43.05	50.77	21.47	43.05	39.23
0.039	40	46.6	53.4	80	40	39.23	43.05	46.95	63.43	39.23
0.019	60	53.4	60	40	6.6	50.77	46.95	50.77	39.23	14.89

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	154.7645	4	38.69113	0.203906	0.932514	3.006917
Between exposures	793.4218	4	198.3555	1.045353	0.414787	3.006917
Error	3035.994	16	189.7496			
Total	3984.181	24				

Appendix Table DCCCXXI: Repellency of PetE extracts of *Z. zerumbet* (rh**)** against *T. castaneum* adults

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	30	R_1	10	10	10	10	10	10	10	10	10	10
		R_2	10	10	10	10	10					
		R_3	10	10	10	10	10					
0.157	30	R_1	8	10	10	10	10	9	10	10	10	10
		R_2	10	10	10	10	10					
		R_3	9	10	10	10	10					
0.079	30	R_1	10	10	10	10	10	9.33	9	10	10	10
		R_2	9	9	10	10	10					
		R_3	9	8	10	10	10					
0.039	30	R_1	10	10	10	10	9	9.33	9.67	10	10	9.67
		R_2	8	9	10	10	10					
		R_3	10	10	10	10	10					
0.019	30	R_1	9	10	10	10	10	9.67	10	9.67	9.67	10
		R_2	10	10	9	10	10					
		R_3	10	10	10	9	10					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	100	100	100	100	100	90	90	90	90	90
0.157	80	100	100	100	100	63.43	90	90	90	90
0.079	86.6	80	100	100	100	68.53	63.43	90	90	90
0.039	86.6	93.4	100	100	93.4	68.53	75.11	90	90	75.11
0.019	93.4	100	93.4	93.4	100	75.11	90	75.11	75.11	90

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	363.9363	4	90.98409	1.236837	0.334766	3.006917
Between exposures	738.2663	4	184.5666	2.508997	0.083066	3.006917
Error	1176.99	16	73.56189			
Total	2279.193	24				

Appendix Table DCCCXXII: Repellency of $CHCl_3$ extracts of *Z. zerumbet* (rh) against *T. castaneum* adults

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	30	R_1	7	6	7	9	10	8.67	8.67	9	9.33	9.67
		R_2	9	10	10	9	9					
		R_3	10	10	10	10	10					
0.157	30	R_1	10	10	9	10	10	8	8.67	8.67	9.33	9.67
		R_2	7	8	8	9	9					
		R_3	7	8	9	9	10					
0.079	30	R_1	10	8	9	9	7	7.67	7.67	9.33	7.67	7.67
		R_2	6	6	9	5	7					
		R_3	7	9	10	8	9					
0.039	30	R_1	9	10	9	9	9	8.67	9	9.67	9	9.67
		R_2	10	7	10	8	10					
		R_3	7	10	10	10	10					
0.019	30	R_1	9	9	10	9	8	9.33	9.33	9.67	9.67	9.33
		R_2	9	10	9	10	10					
		R_3	10	9	10	10	10					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	73.4	73.4	80	86.6	93.4	58.90	58.90	63.43	68.53	75.111
0.157	60	73.4	73.4	86.6	93.4	50.77	58.90	58.90	68.53	75.11
0.079	53.4	53.4	86.63	53.4	53.4	46.95	46.95	68.53	46.95	46.95
0.039	73.4	80	93.4	80	93.4	58.90	63.43	75.11	63.43	75.11
0.019	86.6	86.6	93.4	93.4	86.6	68.53	68.53	75.11	75.11	68.53

ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	1126.436	4	281.6089	6.802152	0.002134	3.006917
Between exposures	534.9887	4	133.7472	3.23061	0.040125	3.006917
Error	662.3996	16	41.39998			
Total	2323.824	24				

Appendix Table DCCCXXIII: Repellency of CH_3OH extracts of *Z. zerumbet* (rh) against *T. castaneum* adults

Dose (mg/cm^2)	Insect used	Replications	Hourly observation					Average of hourly observation (Nc)				
			1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	30	R_1	8	5	9	5	9	5	5.67	7.33	6	7.67
		R_2	4	7	7	4	8					
		R_3	3	5	5	9	6					
0.157	30	R_1	6	8	7	6	8	5.67	7	7.33	7	9
		R_2	3	5	7	6	10					
		R_3	8	8	8	9	9					
0.079	30	R_1	9	8	9	8	7	9.67	9.33	8.33	8	8
		R_2	10	10	7	8	8					
		R_3	10	10	9	8	9					
0.039	30	R_1	9	8	3	5	4	8.33	6	4.33	5	5
		R_2	8	5	5	4	6					
		R_3	8	5	5	6	5					
0.019	30	R_1	8	8	8	8	10	8	8.67	8.33	9	10
		R_2	9	10	9	9	10					
		R_3	7	8	8	10	10					

Dose (mg/cm^2)	Percent repulsion (PR) PR = (Nc - 5) x 20					Arcsine transformation data of PR				
	1h	2h	3h	4h	5h	1h	2h	3h	4h	5h
0.314	0	13.4	46.6	20	53.4	0	21.47	43.05	26.57	46.95
0.157	13.4	40	46.6	40	80	21.47	39.23	43.05	39.23	63.43
0.079	93.4	86.6	66.6	60	60	75.11	68.53	54.70	50.77	50.77
0.039	66.6	20	-13.4	0	0	54.70	26.57	21.47	0	0
0.019	60	73.4	66.6	80	`100	50.77	58.90	54.70	63.43	90

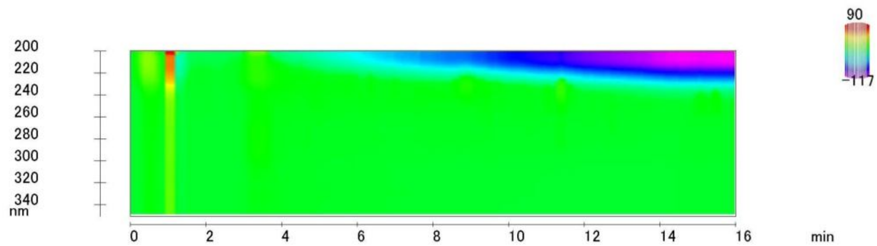
ANOVA result with the arcsine transformed data						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between doses	7270.174	4	1817.543	5.505753	0.005538	3.006917
Between exposures	536.5945	4	134.1486	0.406367	0.801364	3.006917
Error	5281.874	16	330.1172			
Total	13088.64	24				

Appendix Table DCCCXXIV: Supporting spectra for the compound 1 (ENP) [Page 1]

==== Shimadzu LabSolutions Analysis Report ====

Sample Name: 1
Method: 0-16min 5%-100% 乙腈

Contour



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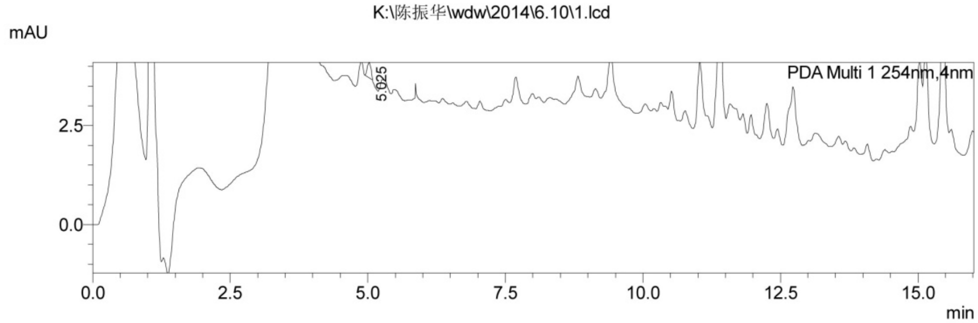
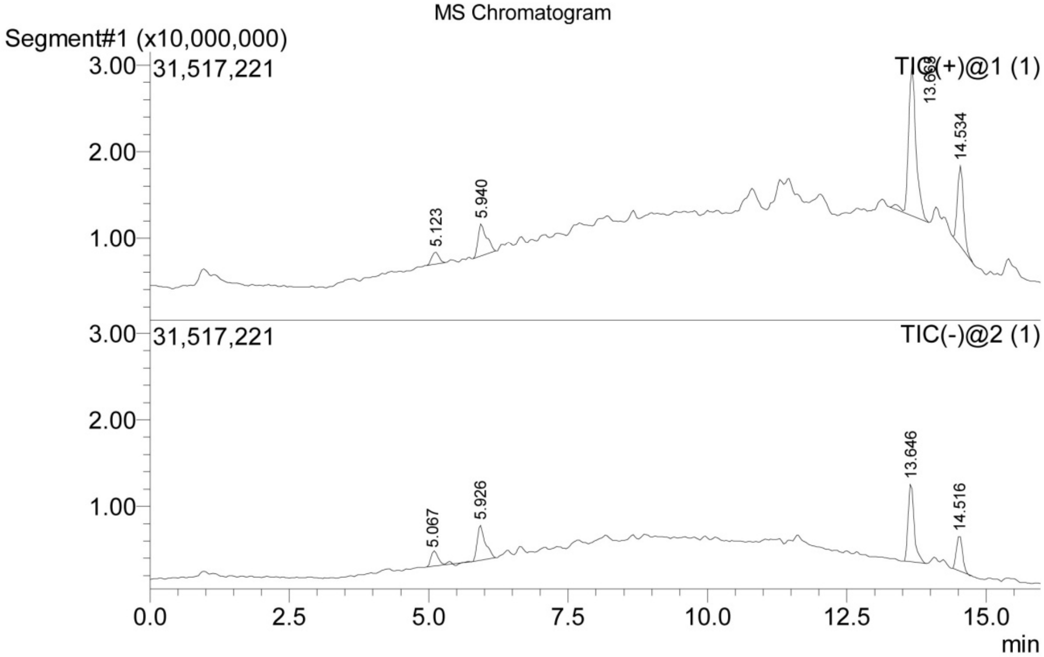


MS Chromatogram



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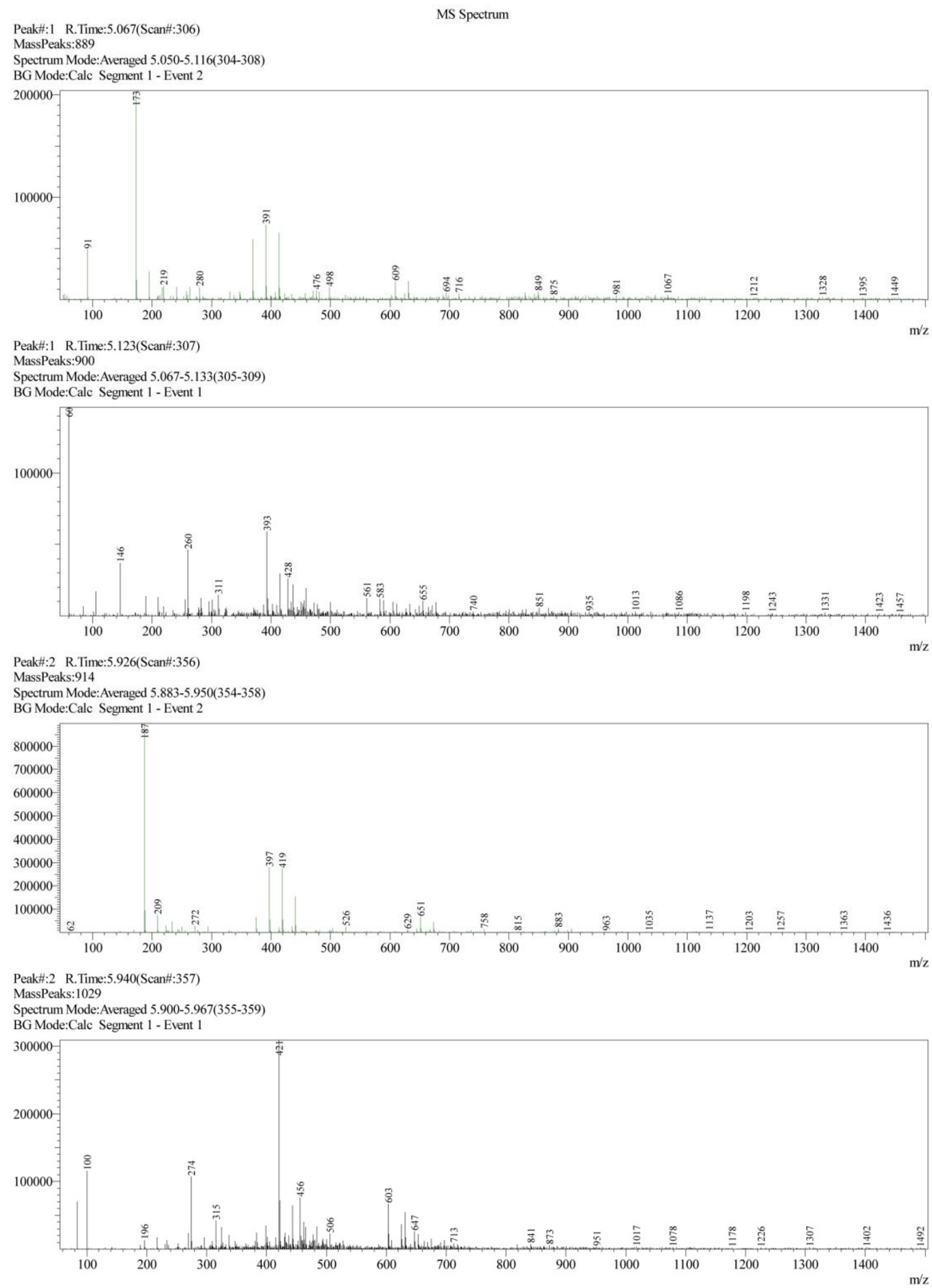
Appendix Table DCCCXXIV: Supporting spectra for the compound 1 (ENP) [Page 2]



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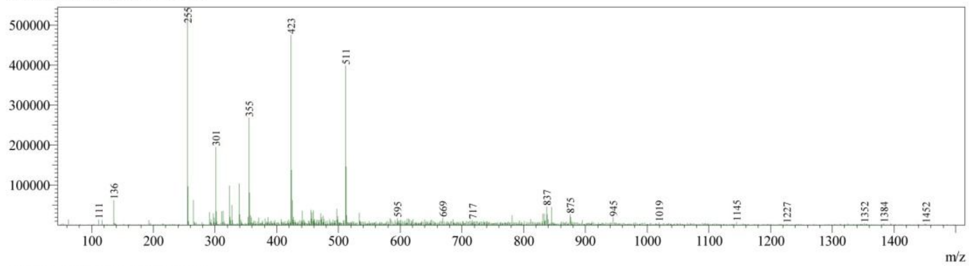
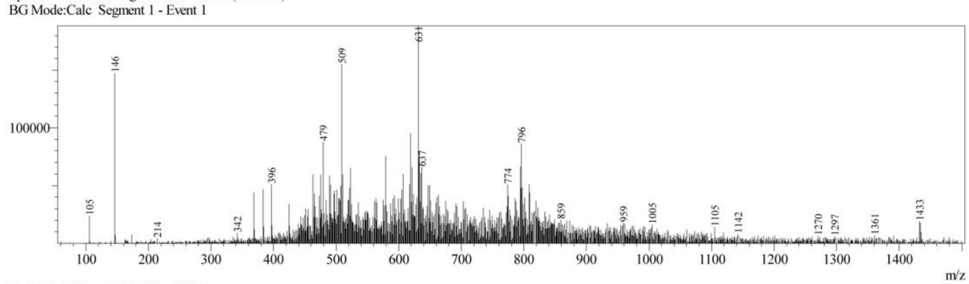
Appendix Table DCCCXXIV: Supporting spectra for the compound 1 (ENP) [Page 3]

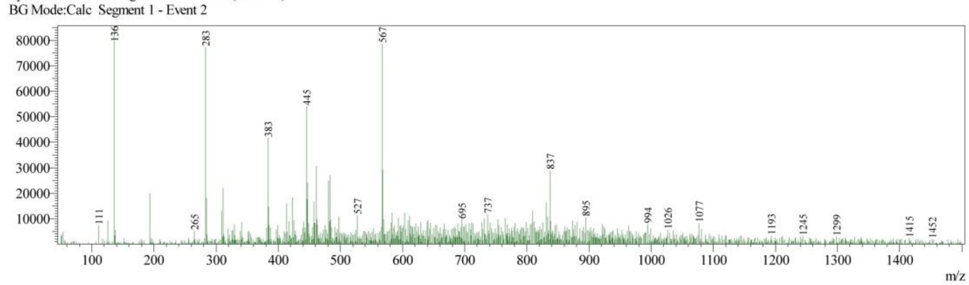
Peak#:3 R.Time:13.646(Scan#:820)
MassPeaks:1207
Spectrum Mode:Averaged 13.616-13.683(818-822)
BG Mode:Calc Segment 1 - Event 2



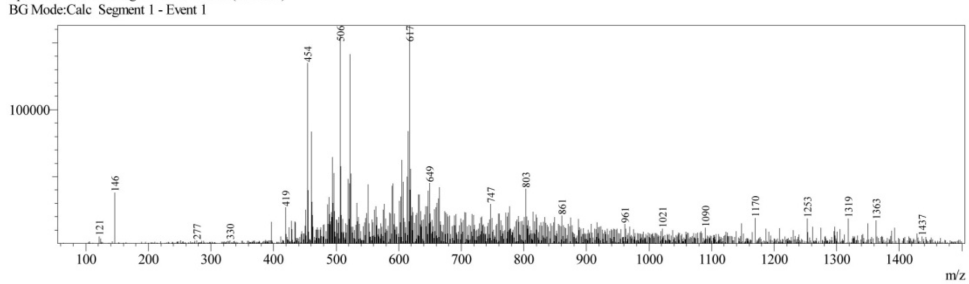
Peak#:3 R.Time:13.665(Scan#:819)
MassPeaks:1288
Spectrum Mode:Averaged 13.600-13.667(817-821)
BG Mode:Calc Segment 1 - Event 1



Peak#:4 R.Time:14.516(Scan#:872)
MassPeaks:1143
Spectrum Mode:Averaged 14.483-14.550(870-874)
BG Mode:Calc Segment 1 - Event 2



Peak#:4 R.Time:14.534(Scan#:873)
MassPeaks:1123
Spectrum Mode:Averaged 14.500-14.567(871-875)
BG Mode:Calc Segment 1 - Event 1



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Appendix Table DCCCXXIV: Supporting spectra for the compound 1 (ENP) [Page 4]

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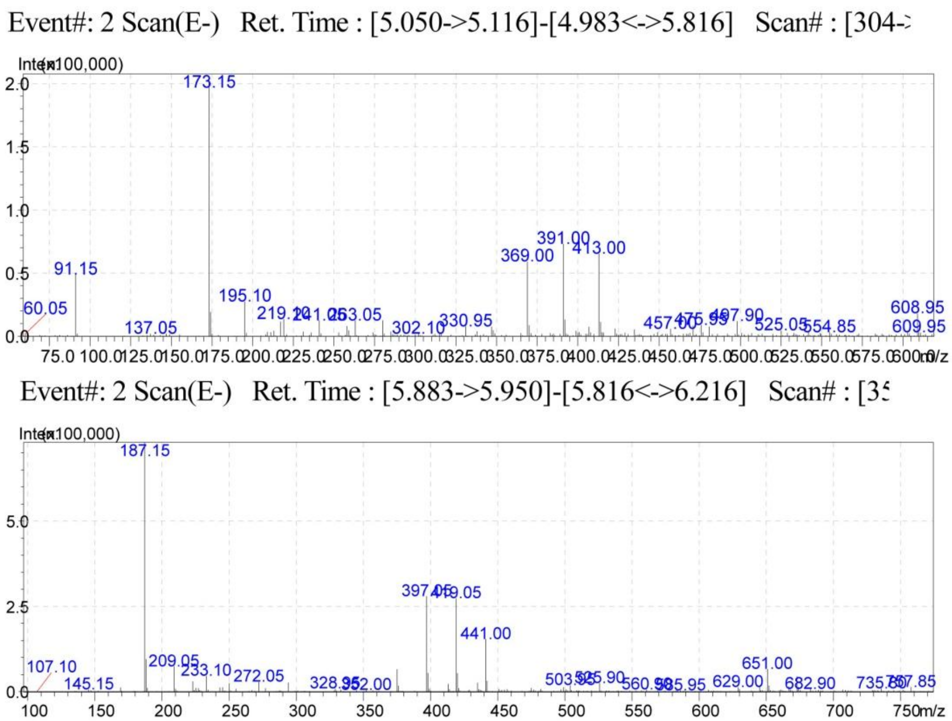

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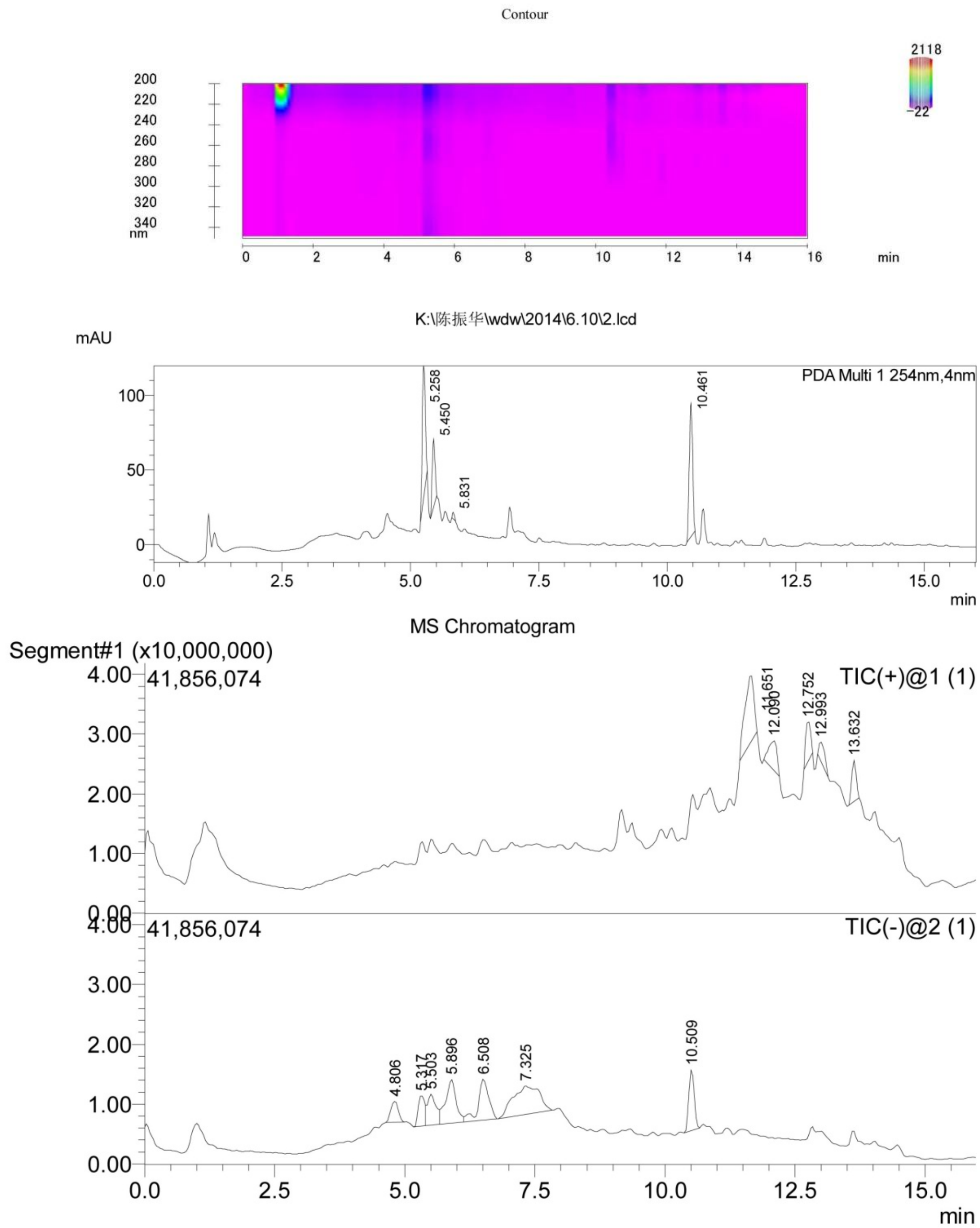
Appendix Table DCCCXXV: Supporting spectra for the compound 2 (POM) [Page 1]

==== Shimadzu LabSolutions Analysis Report ====

Sample Name: 2
Method: 0-16min 5%-100% 乙腈



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Appendix Table DCCCXXV: Supporting spectra for the compound 2 (POM) [Page 2]

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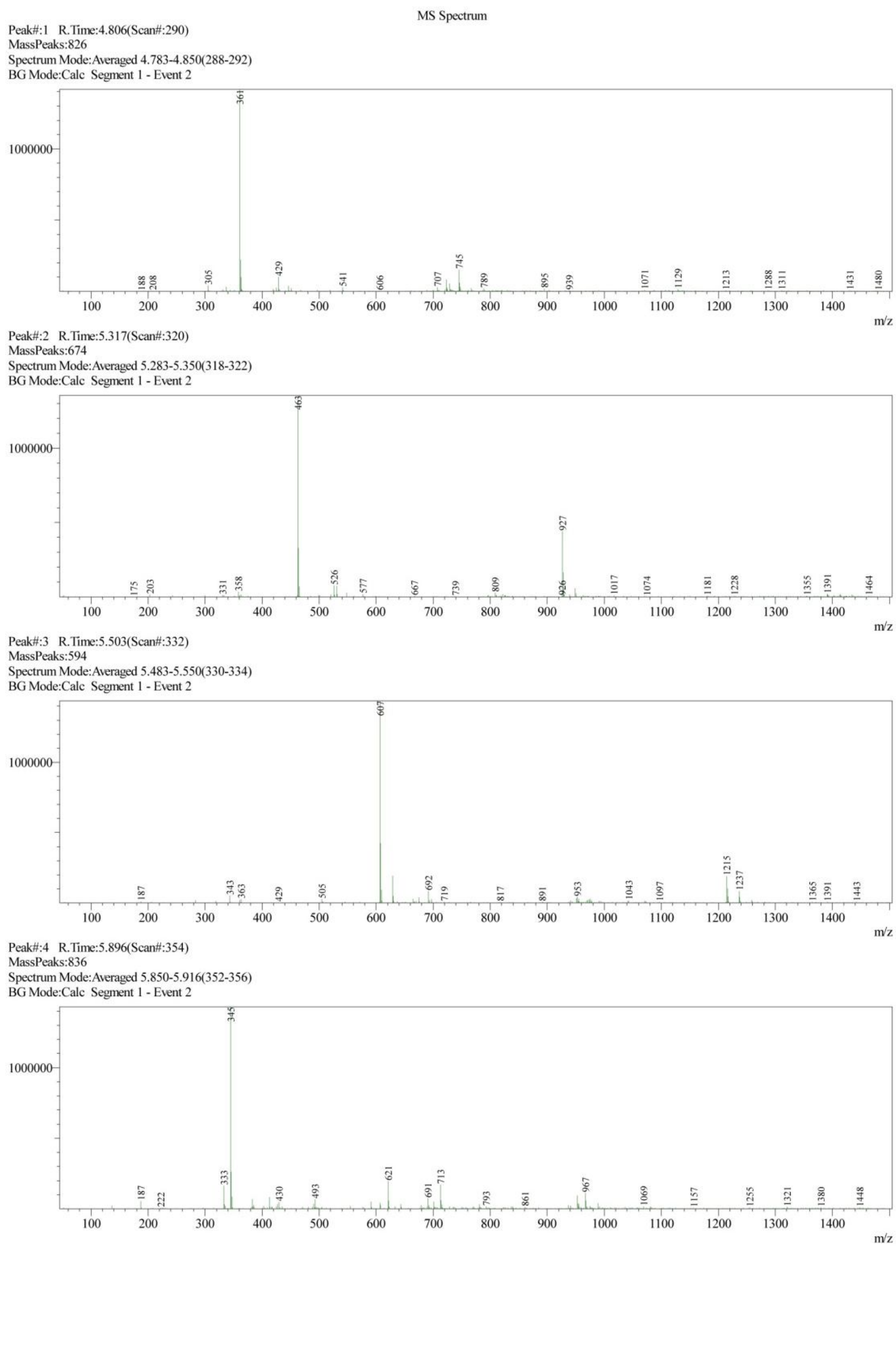

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Appendix Table DCCCXXV: Supporting spectra for the compound 2 (POM) [Page 3]

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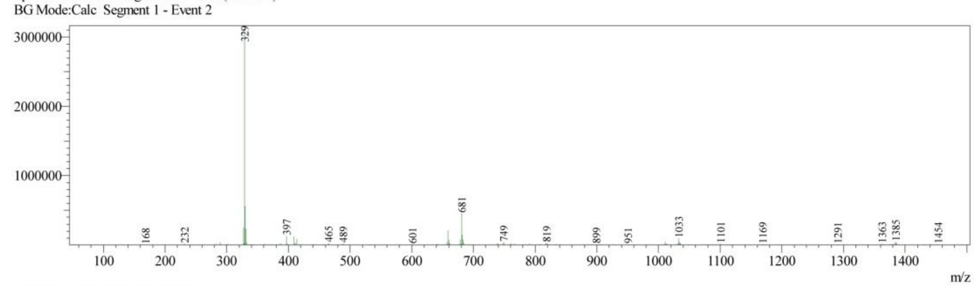
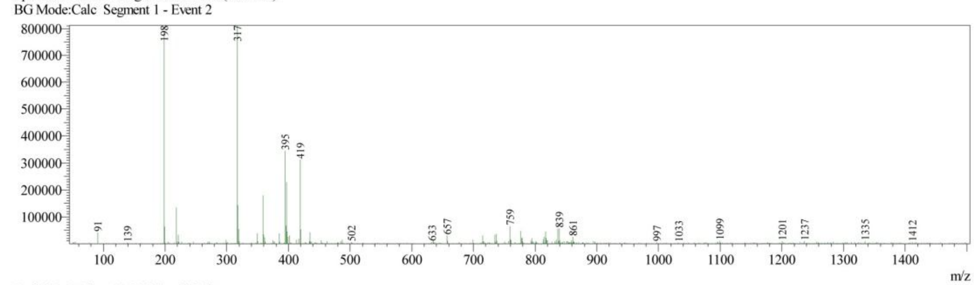
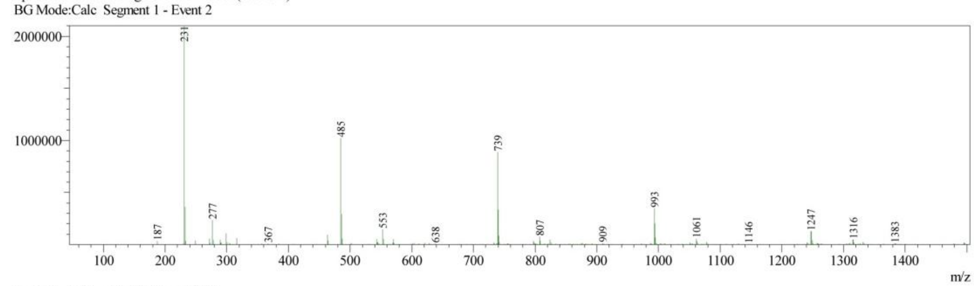
Peak#:5 R.Time:6.508(Scan#:392)
MassPeaks:616
Spectrum Mode:Averaged 6.483-6.550(390-394)
BG Mode:Calc Segment 1 - Event 2



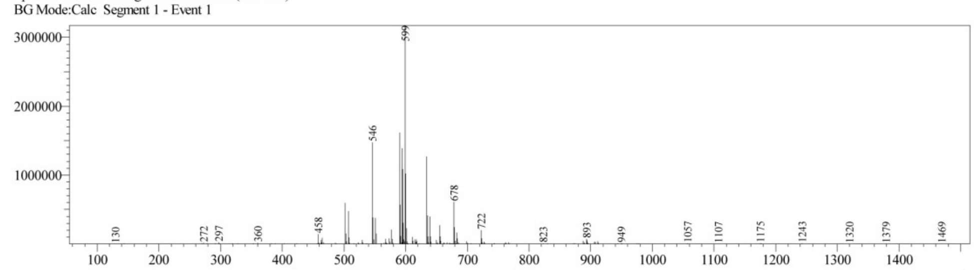
Peak#:6 R.Time:7.325(Scan#:440)
MassPeaks:794
Spectrum Mode:Averaged 7.283-7.350(438-442)
BG Mode:Calc Segment 1 - Event 2



Peak#:7 R.Time:10.509(Scan#:632)
MassPeaks:801
Spectrum Mode:Averaged 10.483-10.550(630-634)
BG Mode:Calc Segment 1 - Event 2



Peak#:1 R.Time:11.651(Scan#:699)
MassPeaks:537
Spectrum Mode:Averaged 11.600-11.667(697-701)
BG Mode:Calc Segment 1 - Event 1



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Appendix Table DCCCXXV: Supporting spectra for the compound 2 (POM) [Page 4]

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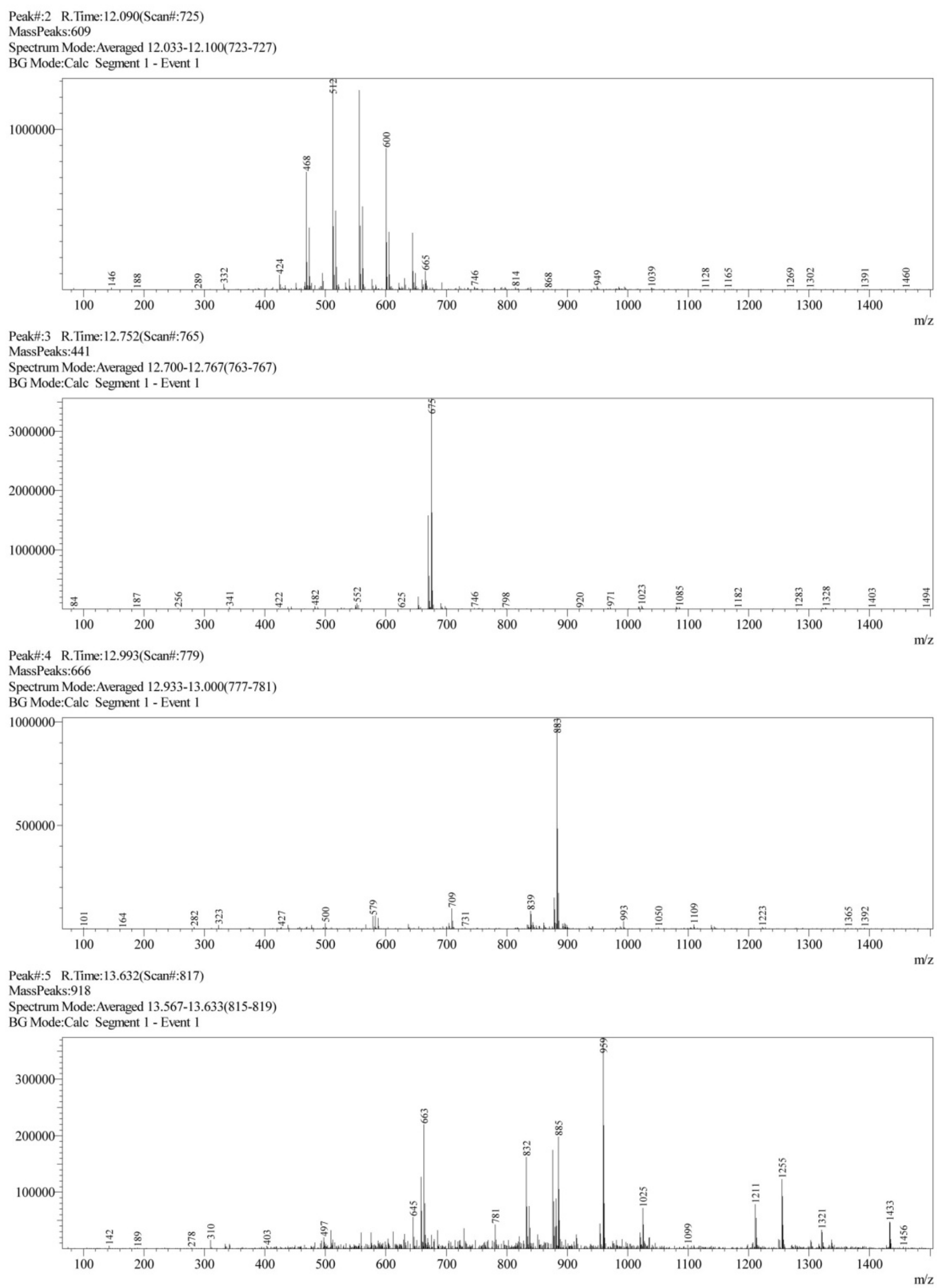

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Appendix Table DCCCXXV: Supporting spectra for the compound 2 (POM) [Page 5]

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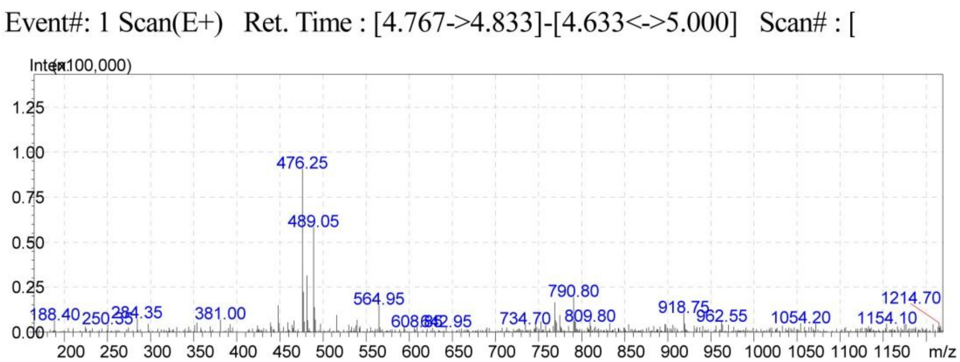

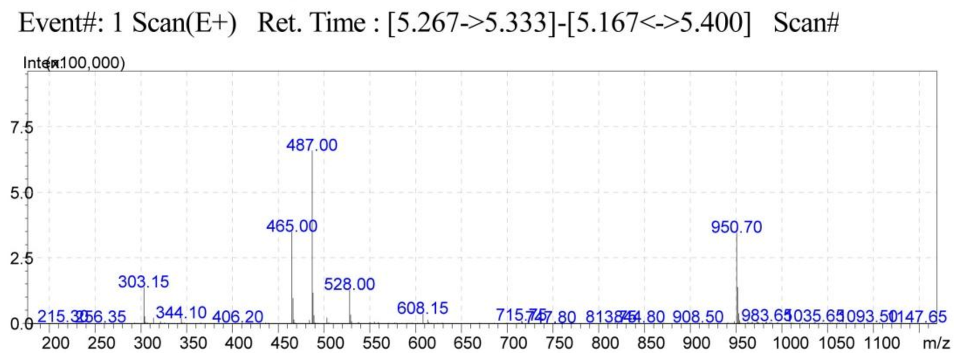

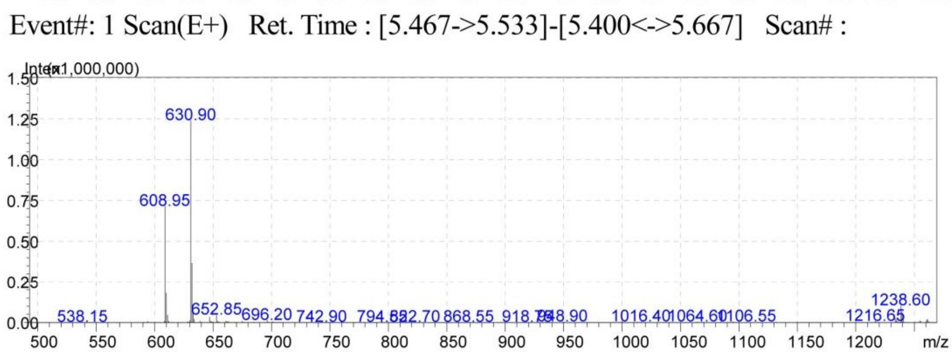

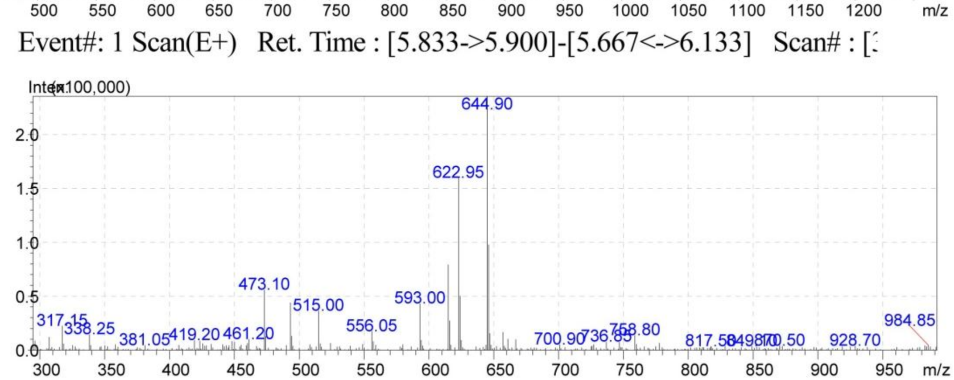

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Appendix Table DCCCXXV: Supporting spectra for the compound 2 (POM) [Page 6]

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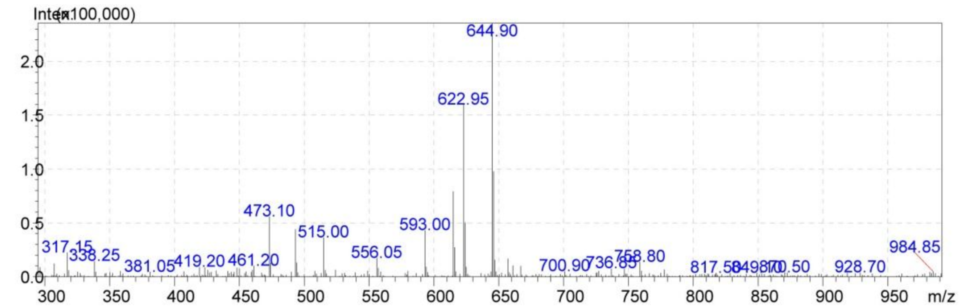

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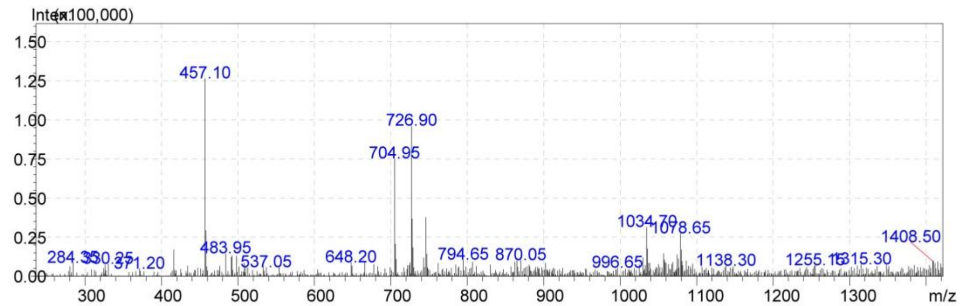
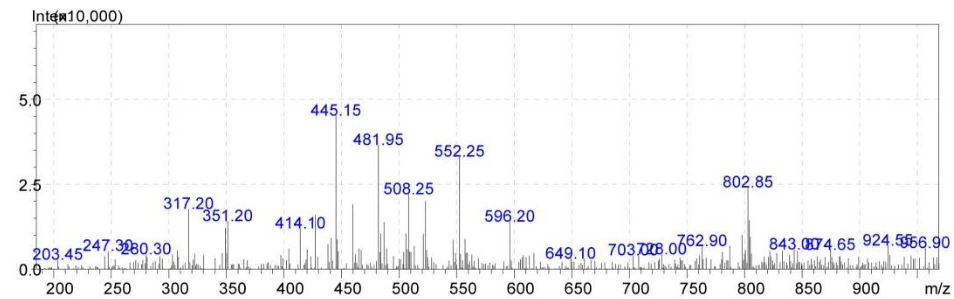
Appendix Table DCCCXXV: Supporting spectra for the compound 2 (POM) [Page 7]

2014/6/12 13:59:21 7 / 8

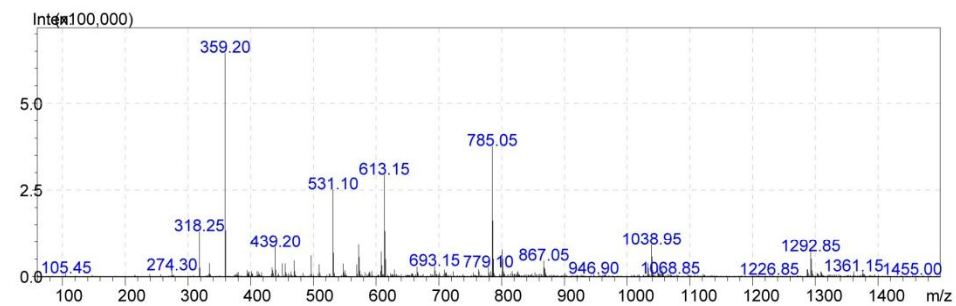
Event#: 1 Scan(E+) Ret. Time : [6.467->6.533]-[6.133<->6.767] Scan# : [389->



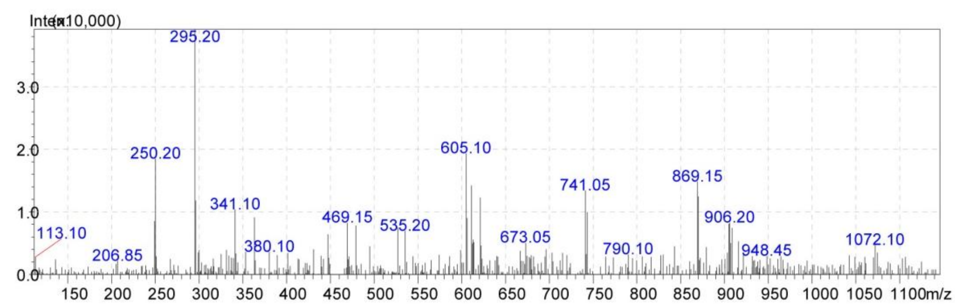
Event#: 1 Scan(E+) Ret. Time : [7.267->7.333]-[6.800<->7.833] Scan# : [4



Event#: 1 Scan(E+) Ret. Time : [10.467->10.533]-[10.367<->10.667] S



Event#: 2 Scan(E-) Ret. Time : [11.616->11.683]-[11.450<->11.783] Sc



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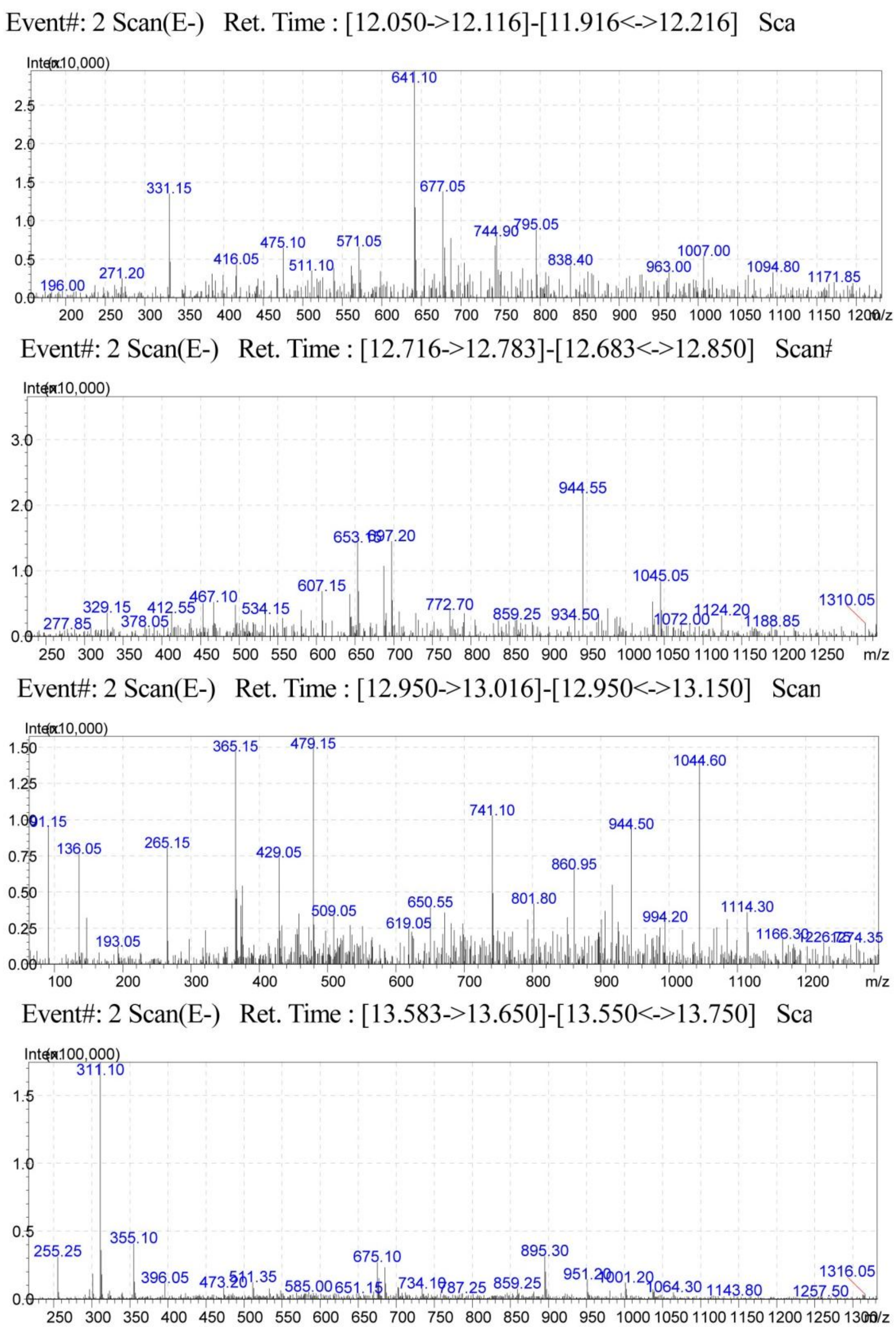
Appendix Table DCCCXXV: Supporting spectra for the compound 2 (POM) [Page 8]

2014/6/12 13:59:21 8 / 8



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