VI- SUMMARY

The present thesis deals with the study of the effect of water and alcoholic extracts of four plants; *Hyoscyamus muticus, Datura stramonium, Calotropis procera* and *Zygophillum album* on some developmental stages of *Musca domestica.* Biological, morphological and biochemical changes were detected.

The four used plants were collected and extracted by two different solvents; water and ethanol. These extracts were topically applied with different doses (20, 40, 60, 80 and 100 µg/insect) to different immature stages of *M. domestica* (early and late 3rd larval instar) and also to the adult stage.

The obtaind results were summarized as follow :

1- Toxicological studies :

A- Treatment of immature stages of *M. domestica* :

Treatment of early and late 3rd larval instars of *M. domestica* with the water and alcoholic extracts of the four used plants; *H. muticus, D. stramonium, C. procera* and *Z. album* gave the following results :

In case of early 3rd larval instar, almost all the water and alcoholic extracts of the four used plants caused considerably high percentage of larval mortality and relatively lower percentage of pupal mortality, i.e., the bulk of the mortality is during the larval stage. Larval mortality percent reached its maximum value of 81.33% in case of water extract of *H. muticus*. In contrast, the bulk of mortality was during the pupal stage in case of late 3rd larval instar and the maximum pupal mortality percent of 40% was achieved in case of water extract of *C. procera*. Generally, both larval and pupal mortality percentages were found to be dosage-dependant.

The development of treated early and late 3rd larval instars of *M.domestica* was accelerated by shortning their larval duration than the check, while no significant effect on the pupal duration was detected after treatment with all the used extracts. Topical application of all the used botanical extracts on both early and late 3rd larval instars of *M. domestica* had no effect on mating behaviour of adults that survive treatment as larvae but had a very highly significant effect in reducing the number of eggs laid per female (Fecundity), the highest percent of reducing fecundity was in case of water extract of *Z. album* which reduces fecundity by about 86% than control. No effect on the hatchability of the deposited eggs laid by female (Fertility) that survive as treated immature larvae was detected. Reduction in fecundity was dosage - dependant.

Early 3rd larval instar was found to be more susceptible to all the used extracts than late 3rd instar of *M. domestica* . Water extracts of the four used plants were generally more effective than alcoholic extracts in causing larval mortality, pupal mortality and reducing the fecundity of females that survived treatment as larvae.

On comparing the effect of water and alcoholic extracts of the four used plants, the water extract of *H. muticus* was found to cause the highest percentage of total mortaltiy (% larval mortality + % pupal mortality) with LD_{50} of 22.6 µg/larvae followed by water extract of *D.stramonium* with LD_{50} of 34.4 µg/larvae , *C. procera* with LD_{50} of 40.1 µg/larvae and finally *Z. album* with LD_{50} of 78.4 µg / larvae, i.e., *H. muticus* > *D. stramonium* > *C. procera* > *Z. album.*

B- Treatment of adult stage of *M. domestica* :

Topical application of the water extracts of the four used plants; *H. muticus, D. stramonium, C. procera* and *Z. album* to the adult stage of *M. domestica* gave the following results :

Adult mortality ranged between 20% in case of water extract of of *H. muticus* to 50% in case of water extracts of *Z. album* and *D. stramonium* at the highest dose (100 µg/insect) . Female longevity of treated adults was shortened than male longenvity and both were shorter than their respective control. The highest reduction in female longevity (80.24%) was achieved in case of water extract of *D.*

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stramonium. Significant prolongation in the pre - oviposition period and significant shortage of oviposition period was achieved as a result of adults treatment and the maximum reduction in oviposition period was 94.15% in case of water extracts of *C.procera* and *Z. album.* Highly significant effect in reducing the number of eggs laid per treated female (Fecundity) was achieved, while, no marked effected on the hatchability of these eggs was noticed. Reducing fecundity was dosage - dependant.

On comparing the effect of water extracts of the four used plants on reducing the fecundity of treated females of *M. domestica,* water extract of *Z. album* was the most effective in reducing fecundity (83.84%) followed by *C. procera* (79.80%), *H. muticus* (66.69%) and finally *D. stramonium* (52.42%), i.e., *Z. album* > *C. procera* > *H. muticus* > *D. stramonium.*

2- Morphogenetic abnormalities :

Various morphological abnormalities were observed as a result of treatment of early and late 3rd larval instars and adult stage of *M. domestica* with all the used botanical extracts. These morphological abnormalities were grouped into five major categories as follow ; deformed larvae, larval-pupal intermediate, deformed pupae, pupal - adult intermediate and deformed adults.

3- Biochemical studies :

Biochemcial studies showed that treatment of both early and late 3rd larval instars of *M. domestica* with the highest dose of water extract of the four used plants; *C. procera, H. muticus, D. stramonium* and *Z. album* gave the following results :

The mean total carbohydrate content was significantly increased and the most effective extract was *H. muticus* extract which increases the mean total carbohydrate content of treated early 3rd larvae than controls by 198% after 24 hours of treatment. The mean total lipid content was also significantly increased and the most effective extract was *C. procera* extract which increases the mean total lipids content of treated early 3rd larvae than controls by 68.68% after 48 hours of treatment. Significant decrease in the mean total protein content was achieved and the most effective extract was *C. procera* extract which decreases the mean total protein content of treated early 3rd larvae than controls by 31.35% after 48 hours of treatment.

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