SUMMARY

The objective of this study was to evaluate the toxic effects of two plant extracts , namely acetone and petroleum ether extracts of *Lantana camara* and *Nerium oleander* alone and in mixtures with the LC_{50} of pirimiphos methyl and /or fenvalerate (sumicidin), on mortality and reduction in F1 progeny of the rice weevil (*Sitophilus oryzae* L.) and the red flour beetle (*Tribolium castaneum* Herbst) . Besides, the repellency effects of the two plant extracts against the two insect species were investigated.

Experiments were performed at the stored product pests laboratory of the plant protection Department, Faculty of Agriculture, Moshtohor, Zagazig University.

The obtained results could be summarized as follows :-

1- Toxicity and effect of plant acetone extracts:

Results of *S. oryzae* showed that very low adult mortality values were observed after 2 days from the treatment . Mortality increased with increasing concentration and exposure period. After 21 days from the treatment, mortality percentages ranged from 13.2-44.2% and 27.8-100% at the various concentrations (1,2,4,8 and 16%) of *Lantana camara* and *Nerium oleander* acetone extract, respectively.

Reduction in F1 progeny was between 19.4 - 63.2% and 75.3 - 93.9% for the two plant extracts, respectively .

Nerium oleander acetone extract was more toxic against the adults of *S. oryzae* than the acetone extract of *Lantana camara.*

Results of *T. castaneum* revealed very low mortality values at all concentrations of the two plant extracts even after 21 days from the treatment.

Reduction in F1 progeny was obviously higher than mortalily at various concentrations .

Results indicated clearly that the acetone extracts of the two plants were more effective against the adults of the two insect species under study . The bio-activity of *Lantana camara* acetone extract was slightly greater against *T.castaneum* than *Nerium oleander* acetone extract.

2- Toxicity and effect of petroleum ether extracts :

Data revealed that petroleum ether extracts of the two plants was more effective against *S.oryzae* and *T.castaneum* than the acetone extracts.

Also, petroleum ether extract of *Nerium oleander* was less effective against *T.castaneum* than *Lantana camara.*

Reduction in F1 progeny was much higher than mortalities at all tested concentrations with *S.oryzae* and only at higher concentrations in case of *T.castaneum.*

3- Repellency effect of the two plant extracts :

3.1- acetone extracts :-

Repellency results for *S.oryzae* adults showed that , at all tested concentrations, average repellency of *Lantana camara* extract was slightly greater than control during the observation period of 21 days .

Nerium oleander acetone extract exhibited only at 8 and 16 % concentrations slightly higher repellency values than control.

In case of *T. castaneum* adults , no significant differences were found between the average repellency of *Lantana camara* acetone extract and the control at all tested concentrations . But *Nerium oleander* acetone extract produced relatively higher repellency values at all concentrations than control.

3.2- Petroleum ether extracts :-

Average repellency values of *Lantana camara* petroleum ether extract with *S.oryzae* adults were significantly greater at the higher concentrations of 8 and 16 % only, than control.

Similar result was achieved with the petroleum ether extract of *Nerium oleander* for the adults of *S.oryzae.*

Repellency results for *T.castaneum* adults indicated that petroleum ether extract of *Nerium oleander* did not show clearly repellency effects at all tested concentrations in comparison with control. But, in case of *Lantana camara* petroleum ether extract, slight to moderate repellency values were achieved at various concentrations.

4- Joint action of mixtures:

4.1- Joint action of the mixtures of plant acetone extract plus LC_{50} of pirimiphos methyl :-

Results of joint action of the various mixtures were expressed numerically as co-toxicity factor values after 7 days from the initial treatment.

Results of pirimiphos methyl plus plant acetone extract mixtures showed a pronounced antagonism with *S. oryzae,* and potentiating action with *T.castaneum* at all tested concentrations , of *Lantana camara* and *Nerium oleander* extracts.

4.2- Joint action of the mixtures of petroleum ether extract of the plant plus LC_{50} of pirimiphos methyl:

Results of co-toxicity factor values for *S.oryzae* indicated that mixtures of pirimiphos methyl plus petroleum ether extract of *Lantana camara* produced additive effects at all concentrations. Combinations of *Nerium oleander* petroleum ether extracts plus the same insecticide resulted in a pronounced antagonism.

Results of co-toxicity factor values for *T. castaneum* indicated an additive effect at 8 and 16% concentrations, and a pronounced antagonism at 1,2 and 4% concentrations of *Lantana camara* petroleum ether extracts plus pirimiphos methyl.

Mixtures of *Nerium oleander* extracts plus the insecticide produced additive effect at all concentrations with exception of the mixture at 1% which resulted in an antagonistic effect.

4.3- Joint action of mixtures of plant acetone extract plus LC_{50} of fenvalerate (sumicidin) :-

Results of co-toxicity factor values for *S.oryzae* showed that all fenvalerate acetone plant extract mixtures resulted in a pronounced antagonism.

Results of *T. castaneum* indicated also that all fenvalerate plus plant extract mixtures of the two plants resulted in a pronounced antagonism.

4.4- Joint action of mixtures of petroleum ether extracts of the plants plus LC_{50} of fenvalerate (sumicidin) :-

Results of co-toxicity factor values with *S.oryzae* indicated clearly that all fenvalerate plus *Nerium oleander* extract combinations resulted in a pronounced antagonism .

Mixtures of fenvalerate plus *Lantana camara* extracts produced an additive effect at 8 and 16% concentrations and an antagonistic effect at the other concentratios (1,2 and 4%) .

Results for *T.castaneum* indicated antoganistic effects at all concentrations of petroleum ether extracts of the two plants plus fenvalerate .