



University of Zabol
Graduate school
Faculty of Agriculture
Department of Plant Protection

**The Thesis Submitted for The Degree of Master of Science
(in The field of Agricultural Entomology)**

**Insecticidal and repellency effects of
Lonicera caprifolicum and *Rhazya stricta*
extracts on *Tribolium castaneum* and
*Sitophylos oryza***

Supervisors
Dr. A. Khani

Advisors
Dr. S. Ravan

By
M. Roshanbar

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Abstract

Application of herbal compounds could be one of the best methods for environment's protection from pesticide injuries. To assess the effect of herbal compounds as natural insecticide and repellents on red flour weevil *Tribolium castaneum* and rice weevil *Sitophylus oryzae* leaf extract of *Lonicera caprifolicum* and *Rhazya stricta* were studied under $27\pm 1^\circ\text{C}$ and the humidity $65\pm 5\%$. Herbal extraction was done using ethanol and acetone solvents. Contact toxicity tests were done on 1 to 7 days old of adult insects. The results showed a significant and positive relation between concentration of herbal extracts and mortality of adults after 24h of application. The LC_{50} values of contact toxicity tests with ethanol and acetone solvents of *R.stricta* extract on *T.castaneum* and *S.oryzae* were found to be 147.87, 75.90 and 136.88, 82.19 mg/cm^2 , respectively. Furthermore the LC_{50} values of the contact toxicity tests with ethanol and acetone solvents of *L.caprifolicum* on *T.castaneum* and *S.oryzae* were demonstrated 349.78, 108.05 and 106.2, 34 $\mu\text{g}/\text{cm}^2$, respectively. Leaf extract of *L.caprifolicum* with acetone had highest repellency percentage on *T.castaneum* and *S.oryzae*. GC-Mass technique was used for identification of the components of the extract. The most abundant compounds of *R.stricta* extract were detected as Eburnamenin, Ibogamine, Quebrachamine, 17-Methoxyquebrachamin, Hydroxylamin, Aminoxybutiric acid, Phenol, (2-Ethylhexyl) phthalate, Dimethylpropyl with a percentage of 62.56, 0.47, 9.25, 3.17, 1.08, 1.67, 4.17, 1.47 and 1.72, respectively. In *L.caprifolicum* extract, trans-Nerolidol, Linalool, p-Cymene, Eugenol, Hexadecanoic acid, Geraniol, Acetophenone, Cis-Jasmone and Globulol were found with maximum percentage of amount 17.1, 9.8, 7.5, 6.6, 6.4, 5.3, 3.2, 2.4 and 2.9, respectively. Our results suggested that herbal extract have high repellency and toxicity effects on *T.castaneum* and *S.oryzae*. Therefore, it is recommended to use such extract compounds for application on the pests.

Keywords: Insecticide, repellency, herbal extract, *Tribolium castaneum*, *Sitophylus oryzae*, bioassay, *Lonicera caprifolicum*, *Rhazya stricta*.