

Abstract

To assess the effects of herbal extract for reducing pest damage in the stores, fruit extract of *Withania coegulans* and *Capparis spinosa* on flour beetle adults *Tribolium confusum* and rice weevil *Sitophilus oryzae* were studied in $27\pm 1^\circ\text{C}$, $65\pm 5\%$ of humidity and in dark. Extraction of fresh fruit was done with methanol and acetone solvents. Contact toxicity tests were done on one to seven days old of insects. The results showed that the percentage of mortality of the tested insects was in the line with increasing concentrations of fruit extract. The results of contact toxicity tests demonstrated that for *W. coegulans*, the LC_{50} values with methanol and acetone solvents on *T. confusum* and *S. oryzae* were 11.78, 8.42, and 2.38, 1.75 Mg/cm^2 , respectively. Furthermore for *C. spinosa*, the LC_{50} values with methanol and acetone solvents on *T. confusum* and *S. oryzae* were 14.7, 10.5 and 7.23, 4.46 Mg/cm^2 , respectively. A significant differentiation was found between the percentage of repellency of the tested concentration of fruit extract. The highest percentage of repellency was detected with acetone extract of *W. coegulans*. To identify of the components of herbal extract, GC-Mass techniques was used. The components including Phenol-3-pentadecyl (22.13%), Ethyl linoleate (7.66%), Butanoic acid (14%), Diethyl phthalate (3.61%), Linoleic acid (10%), Curcuphenol (0.32%), M-tolylmthylcarbamate (8.38%) and Cyclobutylamine (0.51%) were detected as the most ones in *W. coegulans* extract. Whereas in *C. spinosa* extract, the high percentage of components were found as Thymol (22.5%), γ -Terpinene (6.22%), Methyl sulfonyl heptyl isothiocyanate (13.3%), β - pinene (1.1%), Hexadecanoic acid (2.5%), Butyl isothiocyanate (8.1%) and Iso propyl isothiocyanate (5.8%). Our finding, demonstrated the efficiency of herbal extract on the studied pests in vitro condition, which it is recommendable to researchers for future studies.

Keyword: Herbal extract, Insecticidal, Repellency, *Tribolium confusum*, *Sitophilus oryzae*, *Withania coegulans*, *Capparis spinosa*



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**Insecticidal and repellency effects of
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extract on *Tribulium confusum* and
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