

Abstract:

In regard to the invasion of various food commodities by insects and destructive affect of chemical pesticides, Essential oils are among the best known substances tested against stored products pest. Insecticidal effects of essential oils from *Acroptilon repens*, *Ferula asafetida*, *Achillea wilhelmsii*, *Artemisia* sp., *Mentha longifolia*, *Pulicaria gnaphalodes* that were collected from south khorasan province, tested on two stored product insects, *Callosobruchus maculatus* F. (Col: Bruchidae) and *Tribolium Castaneum* Herbst (Col: Tenebrionidae). For extracting essential oils from these plants, dry ground leaves were subjected to hydrodistillation using a modified Clevenger-type apparatus. The mortality of 1- 7 days old adults of *C. maculatus* and *T. castaneum* increased with concentration from 71.43 to 428.57 mL/L air and with exposure time from 3 to 24 h. A concentration of 71.43 mL/L and an exposure time of 24 h were sufficient to obtain more than 90% kill of the insects in all states.

Callosobruchus maculatus was significantly more susceptible *T. castaneum*. The estimated LC₅₀ values for *C. maculatus* after exposing to essential oil from *M. longifolia* were 2.05 mL/L, *A. wilhelmsii* were 2.24 mL/L and *P. gnaphalodes* were 1.6 mL/L, and for *T. castaneum* after exposing to essential oil from *M. longifolia* were 13.05 mL/L, *A. wilhelmsii* were 10.02 mL/L, *P. gnaphalodes* were 257.96 mL/L. The essential oils have significantly repelled insects. *Mentha* Essential oils were more repellent to *C. maculatus* than other Essential oils. The most constituent identified in the *M. longifolia* oil contained Piperitenon (43.92%), Triptal (14.3%), Oxathiane (9.27%), and Di lilmone (4.28%), *A. wilhelmsii* oil contained Cineole (13.03%), Caranol (8.26%), Alpha pipene (6.50%), and p-cymene (6.01%) and *P. gnaphalodes* oil contained Chrysanthyl Acetat (22.38%), 2L -4L-Dihydroxy Eicosane (18.5%), Verbenol (16.59%), Dehydroaromadendrene (12.54%) and Beta pinen (6.43%). These results suggested that this Essential oil may have potential as a control agent against *C. maculatus* and *T. castaneum*.

Key words: *Acroptilon repens*, *Ferula asafetida*, *Achillea wilhelmsii*, *Artemisia* sp., *Mentha longifolia*, *Pulicaria gnaphalode*, Botanical insecticides, Essential oils, Bioassay, Reppellency, Toxicity, probit



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**Insecticidal activities of essential oils of
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