Title Fumigant toxicity of essential oil from *Artemisia sieberi* Besser against three stored-product insects

Author Maryam Negahban, Saeid Moharramipour and Fatemeh Sefidkon

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Abstract

Artemisia sieberi is a widely distributed plant in Iran. Because some species of *Artemisia* are insecticidal, experiments were conducted to investigate fumigant toxicity of the essential oil. Dry ground leaves were subjected to hydrodistillation using a modified Clevenger-type apparatus and the resulting oil contained camphor (54.7%), camphene (11.7%), 1,8-cineol (9.9%), β-thujone (5.6%) and α- pinene (2.5%).

The mortality of 7 days old adults of *Callosobruchus maculatus, Sitophilus oryzae*, and *Tribolium castaneum* increased with concentration from 37 to 926 μL/L and with exposure time from 3 to 24 h. A concentration of 37 μL/L and an exposure time of 24 h was sufficient to obtain 100% kill of the insects. *Callosobruchus maculatus* was significantly more susceptible than *S. oryzae* and *T. castaneum*; a second more detailed bioassay gave estimates for the LC_{50} of *C. maculatus* as 1.45 μL/L, *S. oryzae* 3.86 μL/L and *T. castaneum* 16.76 μL/L. These results suggested that *A. sieberi* oil may have potential as a control agent against *C. maculatus, S. oryzae* and *T. castaneum*.