BIOACTIVITY OF VOLATILE CONSTITUENTS OF SRI LANKAN PLANTS AGAINST COWPEA BRUCHID, *CALLOSOBRUCHUS MACULATUS*

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The effect of the leaf volatiles of *Cymbopogon citratus, Murraya koenigii, Cinnamomum zeylanicum* and *Azadirachta indica* were evaluated for their contact and fumigant toxicities against adult *Callosobruchus maculatus*. The volatile oil of *C. citratus*, showed the highest effect when used as contact toxicant as well as fumigant toxicant on adult *C. maculatus* indicating lowest LC_{50} values of 0.066 g/m^2 and 0.202 g/l respectively. *Cinnamomum zeylanicum* and *M. koenigii* volatiles were moderately toxic whereas volatiles of *A. indica* showed the lowest toxicity on adult insects (LC_{50} values for contact 3.119 g/m^2 and fumigant 8.401 g/l toxicity). The toxicity effects of the volatiles of *C. citratus, M. koenigii* and *C. zeylanicum* on eggs and larvae were parallel to the effect of these volatiles on adult *C. maculatus*.

The olfactory response of adult *C. maculatus* against the test oils were evaluated using Electroantennogram (EAG) and GC-EAG responses and it was followed by two behavioral bioassays to confirm the repellent effect. The highest olfactory responses of adult male and female *C. maculatus* were observed for 0.3 mg of *C. zeylanicum* leaf volatiles. The lowest olfactory responses were indicated for *M. koenigii* and *A. indica* leaf volatiles. *Cymbopogon citratus* and *C. zeylanicum* volatiles indicated significantly higher ($p < 0.05$) repellent activity.

In field trials Kaolin pellets the percentage seed damage and 100-seed weight loss were high in *C. zeylanicum* oil treatment after 168 days of storage period in woven polypropylene bags. Stored seeds were highly protected from *C. maculatus* infestation throughout the test period when treated with *C. citratus* volatiles. The oil treatments did not have a major effect on the seed viability. The consumer acceptability of *C. citratus* treated cowpea seeds was higher than that of the other treatments.