Electroantennograme and behavioural responses of male and female *Callosobruchus maculatus* (F.) to essential oil of lemongrass *Cymbopogon citratus* (Stapf).

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ABSTRACT

Pulses are a good source of dietary proteins and other essential nutrients. However, post harvest insect infestations severely affect quality and storability of pulses. Cowpea weevil *Callosobruchus maculatus* (F.) is one of the economically important storage pests and mainly attacks stored cowpea and mung bean. Toxicity of essential oils of lemongrass to *C. maculatus* has already been studied. The present study was undertaken to investigate antennal responses (using EAG assay) and behavioural responses (using an Olfactometer) of *C. maculatus* to essential oils of lemongrass. Since flavours of cowpea attract *C. maculatus*, dichloromethane extract (cold extraction) of cowpea seed was used as a standard stimulant. In the EAG assay for the cowpea seed extract, the highest responses of 0.992 ± 0.124 mV and 0.595 ± 0.045 mV were observed at the dose of 3.0 mg for female and male bruchids respectively. Behavioural assay was carried out using a Y shaped Olfactometer for the seed extract The results revealed that the dose of 5 mg showed a response of 65.5 % and the highest response of 89.6 % was observed at 25 mg of seed extract. The essential oil of lemongrass showed the highest EAG amplitude of 1.186 ± 0.074 mV and 0.631± 0.071 mV for male and female bruchid respectively at a dose of 0.20 mg. The EAG amplitude of male bruchids was significantly higher than that of the female responses in a dose range from 0.05 – 0.30 mg of essential oil ($p<0.05$). The results of the Olfactometer bioassay with the essential oils clearly indicated that the number of bruchids that respond decreased with increasing doses of essential oils. Since the present study indicates repellent activity of the essential oils of lemongrass, future studies will be continued to identify active components of lemongrass oil using GC-EAG.

Key words; Lemongrass, cowpea seed, *Callosobruchus maculatus*, EAG

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