

SHORT COMMUNICATION

Control of stored grain pest, *Callosobruchus maculatus* (F.) (Coleoptera: Bruchidae) using the essential oil isolated from *Plectranthus zeylanicus*

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The bruchid, *Callosobruchus maculatus* (F.) causes major losses during the storage of cowpea seeds [*Vigna unguiculata* (L.)Walp.] in Sri Lanka. Essential oil isolated from *Plectranthus zeylanicus* plant was tested for potential insecticidal activity against *C. maculatus*. The gas chromatography studies of the essential oil of *P. zeylanicus* showed that ρ -cymene (3.5%), β -caryophyllene (0.2%), geranyl acetate (9.3%) and geraniol (7.2%) were the major constituents. The adults of *C. maculatus* were susceptible to both fumigant and contact toxicity of *P. zeylanicus* plant oil. LC₅₀ values of 0.927 and 0.010 g L⁻¹ were obtained for fumigant toxicity and contact toxicity assays, respectively. Oviposition and F₁ adult emergence were significantly inhibited by *P. zeylanicus* plant oil at a concentration higher than 0.001 g L⁻¹ in both fumigant and contact toxicities. The analysis of olfactometer and choice camber bioassays revealed the repellent effects of the oil of *P. zeylanicus* plant.

Keywords: *Plectranthus zeylanicus*; *Callosobruchus maculatus* (F.); essential oil; cowpea

1. Introduction

Cowpea [*Vigna unguiculata* (L.)Walp.] is one of the most important food legume crops in the semi-arid tropics covering Asia, Africa, southern Europe and Central and South America. It is an alternative source of dietary proteins and other essential nutrients. The insect infestation of the seeds during storage of cowpea causes weight and quality losses that lead to a reduction of commercial values and seed germination. The major pest encountered in cowpea grain stacks and storage premises is the cowpea bruchid, *Callosobruchus maculatus* (F.).

These insects are currently controlled in warehouses by fumigating with synthetic chemicals such as pirimiphos methyl and phosphine (Singh, 1990). Phosphine (PH₃) is the most widely used fumigant for disinfesting stored grain in warehouses. The use of synthetic pesticides has significant drawbacks including insecticide residues on grains, threat to human health and the environment, increased costs and handling hazards.

The use of plant materials by mixing several parts such as leaf, bark, seed and vegetable oil is an ancient measure in many parts of the world. Recently, as an alternative pest control technology, essential oils and their constituents have attracted attention because of their low toxicity to warm-blooded mammals and their high volatility.

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