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Evaluation of fumigant toxicity of essential oils from three medicinal plants against *Callosobruchus maculatus* adults (Coleoptera: Bruchidae)

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Fumigant toxicity of essential oils from Satureja hortensis (Lamiaceae), Teucrium polium (Lamiaceae) and Foeniculum vulgare (Apiaceae) were evaluated against adults of cowpea seed beetle, Callosobruchus maculatus exposed for 24h. Essential oils were obtained by hydro-distillation using a Clevenger-type apparatus. Experiments were conducted at 28±2°C and 60±5% R.H. in dark condition. Gas chromatography coupled with mass spectrometry was used to identify the main components of the essential oils. The principal constituents of F. vulgare oil were E-anethole (60.61%) and fenchone (12.14%) and those of S. hortensis oil were carvacrol methyl ether (50.13%) and thymol (26.77%). Teucrium polium oil mainly consisted of piperitenon oxide (21.72%), α-pinene (11.33%) and carvon (11.29%). All essential oils showed high fumigant activity against C. maculatus adults. The results indicated that mortality of 1-day-old adults increased with oil concentration. Males were more susceptible to oils than females. The essential oil of F. vulgare proved to be the most potent toxicant with the LC50 values of 21.43 and 29.6 µlL-1 air against males and females, respectively. The LC50 values of S. hortensis oil were 74.17 and 156.73 µlL-1 air and the counterpart values of T. polium oil were 60.1 and 80.93 µlL-1 air against males and females, respectively. The results demonstrated that the essential oils of these plants can be considered as the potential protectants against cowpea seed beetle.

Keywords:*Essential oils, Satureja hortensis, Teucrium polium, Foeniculum vulgare, fumigant toxicity*