

عنوان مقاله:

Anti-nutritional, antifeedant, growth-disrupting and insecticidal effects of four plant essential oils on *Spodoptera littoralis* (Lepidoptera: Noctuidae)

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خلاصه مقاله:

Essential oils of four aromatic plants, *Artemisia monosperma* Del., *Callistemon viminalis* (Sol.ex Gaertn.) G. Don, *Citrus aurantifolia* (Christm.) Swingle and *Cupressus macrocarpa* Hartw. ex Gordon, were evaluated for their anti-nutritional, antifeedant, growth inhibitory and insecticidal activities against *Spodoptera littoralis* (Boisduval) (Lepidoptera: Noctuidae). The essential oils of *A. monosperma* and *C. aurantifolia* caused the highest reduction in relative growth rate (RGR) at the tested concentrations (۱۲۵, ۲۵۰, ۵۰۰, ۱۰۰۰ and ۲۰۰۰mg/l). The RGR values ranged between ۸.۶۳ and ۳.۰۵ mg/day for *A. monosperma*, and between ۱۰.۷۴ and ۲.۸۹ mg/day for *C. aurantifolia* compared with ۱۴.۸۹ mg/day for control after ۷۲ h of treatment. In general, the results showed that the values of relative growth rate (RGR) decreased with increasing the concentration of the tested oils. In addition, the tested oils significantly reduced efficiency of conversion of ingested food (ECI) and efficiency of conversion of digested food (ECD) values, particularly at the higher concentrations of ۵۰۰, ۱۰۰۰ and ۲۰۰۰mg/l. On the other hand, the tested oils showed antifeedant activity against the larvae of *S. littoralis* with *A. monosperma* and *C. aurantifolia* oils being more active than *C. viminalis* and *C. macrocarpa* oils. The tested oils showed remarkable growth inhibition effect as the growth inhibition index values were increased from ۳۷.۶۳ to ۷۹.۸۰% for *A. monosperma*, from ۲۱.۶۹ to ۵۲.۱۲% for *C. viminalis*, from ۱۶.۵۵ to ۲۸.۵۹% for *C. aurantifolia* and from ۳۷.۶۴ to ۵۲.۳۲% for *C. macrocarpa* when the concentration increased from ۱۲۵ to ۲۰۰۰mg/l. Based on chitin formation ratio values, the tested essential oils induced reduction in chitin formation. *A. monosperma* and *C. macrocarpa* essential oils revealed the highest insecticidal activity on ۴th instar larvae of *S. littoralis*. Examination of reproductive tracts of adult females emerged from treated larvae indicated that the tested oils caused undifferentiated ovarioles.

کلمات کلیدی:

Essential oils, *Spodoptera littoralis*, nutritional indices, feeding deterrence, chitin formation, growth inhibition, اسانس های گیاهی، کرم برگخوار مصری چغندر قند، شاخص های غذایی، بازدارنده تغذیه، تشکیل کیتین، ممانعت کننده رشد

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