

Effect of eighteen plant essential oils on nutritional indices of larvae *Plodia interpunctella* Hubner (Lep., Pyralidae)

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Abstract

Essential oils are suitable components as alternate for chemical pesticides. Indian meal moth *Plodia interpunctella* Hubner is one of the most important stored product pests. In this research, effects of essential oils of 18 medicinal plants were studied on nutritional indices of 15 days-old larvae of this pest. Nutritional indices determined in this study were Relative Growth Rate (RGR), Relative Consumption Rate (RCR), Efficacy of Conversion of Ingested Food (ECI) and Feeding Deterrence Index (FDI). In this study, 20 µl from 3, 12 and 24 ppm of the oil solution was mixed with one gram of the food. The experiment was conducted using a completely randomized design in a factorial experiment with three replications. The results showed that essential oils had not any significant effect compare with control on RGR and ECI. The index of RCR was significantly decreased except in *Ziziphora clinopodioides* Lam. Decreasing RCR in treatments might be due to feeding deterreny of the essential oils. FDI was positive in all treatment except in *Z. clinopodioides* with the least FDI. Nutritional indices were significantly not affected by increasing concentration. The highest deterreny was observed by *Mentha piperata* L., *Cinnamomum zelanicum* Bl., *Salvia multicaulis* Vahl., *Melissa officinalis* L., *Achillea millefolium* L. As these essential oils at low concentration of 0.06, 0.24 and 0.5 µg/kg caused the high deterreny, therefore these essential oils could be applicable on the management of Indian meal moth in storage.

Key words: *Plodia interpunctella*, nutritional indices, essential oil

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