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Efficiency of Lavandula angustifolia Mill and Zataria multiflora Boiss essential oils on nutritional indices of Tribolium confusum Jacquelin du Val (Col.: Tenebrionidae)

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Abstract : One of the most important pests in the warehouses is the flour beetle, Tribolium confusum Jacquelin du Val (Col.: Tenebrionidae). Regarding the high degree of damage of stored product pests and dangerous effects of the chemical control using plant extracts and their components are some of the best approaches to control these pests. Antifeedant activity of plant extracts from Lavandula angustifolia Mill and Zataria multiflora Boiss using hydro-distillation were tested against the flour beetle, Tribolium confusum Jacquelin du Val. The nutritional indices: relative growth rate (RGR), relative consumption rate (RCR), the efficiency of conversion of ingested food (ECI), and feeding deterrence index (FDI) were measured for adult insects. Treatments were evaluated using a flour disk bioassay in the dark; at 25±1°C and 60±5% R. H. Concentrations of 0, 0.1, 0.5, 0.75, 1, 1.5, and 2 µl/disk were prepared from each essential oil. After 72 h, nutritional indices were calculated. L. angustifolia oils were more effective than Z. multiflora oils by significantly decreasing the RGR, RCR, and ECI. Feeding deterrence index (FDI) of L. angustifolia essential oil was increased significantly as essential oil concentration increased. The essential oil of L. angustifolia was more effective on FDI than Z. multiflora in some concentration.

Keywords : essential oil, nutritional indices, Tribolium confusum
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