

Insecticidal Effects of Plant Extract-Based Formulations on the Cotton Bollworm, *Helicoverpa armigera* (Hübner) (Lepidoptera: Noctuidae)

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Abstract : Considering the effectiveness of botanical pesticides in pest management, these compounds have garnered attention as a sustainable approach to reducing pest-induced damage in agriculture while preserving the environment. Botanical pesticides enable farmers to cultivate higher-quality crops by minimizing the use of chemical pesticides. In this study, plant extracts obtained using n-hexane as a solvent from two botanical sources, thyme and eucalyptus, were evaluated under laboratory conditions for their effectiveness in controlling the cotton bollworm (*Helicoverpa armigera*). The mortality rate of bollworm larvae was assessed across various concentrations of the hexane-based formulations. The results revealed that the hexane-based formulations of thyme and eucalyptus extracts significantly reduced the population of bollworm larvae after 24 hours of exposure. Thyme extract, in particular, demonstrated high effectiveness as a botanical pesticide, suggesting its potential as an efficient alternative to chemical pesticides in pest management. These findings underscore that botanical pesticides can mitigate the environmental consequences of chemical pesticides and provide innovative solutions for sustainable agriculture by leveraging the active compounds present in plant extracts.

Keywords : cotton bollworm, thyme, eucalyptus, extract formulation, , toxicity

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