

## RESEARCH ARTICLE

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INSECTICIDAL ACTIVITY OF CERTAIN PLANT EXTRACTS AGAINST POTATO TUBER MOTH LARVAE OF *PHTHORIMAEA OPERCULELLA* (ZELLER)

## ABSTRACT:

Laboratory experiments were conducted under hydrothermic conditions i.e.  $27 \pm 1.10^\circ\text{C}$ ,  $65 \pm 5\% \text{RH}$  and photoperiod of (12 hrs light and 12 hrs dark) to evaluate efficiency and persistence effect of plant extracts of black pepper (*Piper nigrum*) and hungarium chamomile (*Matricaria chamomile*) on the larval stage of *Phthorimaea operculella* (Zeller) dissolved in four solvents with different polarities, Petroleum ether, Chloroform, acetone and water. The present work is preformed to study the effect of one application at 3 concentrations ( 5, 10 and 15% ) of the tested plant extracts on 4<sup>th</sup> and 5<sup>th</sup> larval instars of potato tuber moth *Ph. operculella* after different indicated times post treatment (0, 24, 48, 72, 96, and 120 hrs). Results revealed that the percent mortality increased significantly with an increasing in the applied concentrations. Also, the reduction in the larval body weight was increased significantly after 24 hrs, when treatment carried out with the tested plant extracts. Antifeeding or repellent effects were also observed and the decreasing in the larval body weight continues through the following 120 hrs, at the two concentrations (10 and 15%). Chloroform extract has a high effect in reducing in the body weight than other solvents.

## KEY WORDS:

Plant extracts, Potato tuber moth (*Phthorimaea operculella*), Insecticidal activity

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## INTRODUCTION:

Entomologists have achieved some success in using certain plant constituents as pest control agents. However, the field of botanical biocides is still virgin attractive and promising. From this stand point, similarly to the conventional chemical insecticides, certain plant constituents could act as potent killers, repellents, attractants, antifeedants, synergistic, sterilants and insect growth regulators (IGRs). Moreover, the application of plants with insecticidal properties appears to be simple inexpensive and can be applied effectively by using techniques more suitable for developing countries.

Successful research studies on indigenous plant extracts and their active compounds that show ledge and traditional practice can make valuable contributions to domestic food production in countries where strict enforcement of pesticide regulations is impractical. Higher plants are rich source of novel insecticides Dev and Koul, (1997). Plant materials with insecticidal properties have been used traditionally for generations throughout the world. Botanical insecticides compared to synthetic ones may be safer for the environment, and generally less expensive, easily processed and used by farmers and small industries Belmain *et al.* (2001).

Also, the efficacy of botanical insecticides from *Piper species* (Piperaceae) extracts for control of many destructive pests was achieved by Scott *et al.* (2005). Many authors demonstrated that active compounds extracted from plants act as toxicants Gayer and Shazi, (1968), repellents and antifeedent Krisnarajah *et al.*, (1985), growth regulator El-brashy, (1974), and fecundity reducing effects Barakat, *et al.*, (1984). The plant compounds interfere with the normal growth and developmental IGRs treatment Chiu (1989). In this connection, plant components with insecticidal effect may play a major role in control the potato tuber moth *Phthorimaea operculella* (Zeller). Using botanical insecticides as deterrents and repellents in modern agriculture and an increasingly regulated world was evaluated by Isman (2006). As well as, botanical insecticides were used in controlling large group of medical