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SOME BIOLOGICAL ASPECTS AND RECENT TRENDS FOR CONTROLLING WAX WORMS IN EGYPTION APIARIES

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B.Sc. Sc. (Special Chemistry), Fac. of Sci., El-Azhar University (2005).

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ABSTRACT

Ekbal Gamal Elden Helaly: Some biological aspects and recent trends for controlling wax worms in Egyptian apiaries. Unpublished M.SC. Thesis, Department of plant protection, Faculty of Agriculture, Ain Shams University, 2022.

The current study was carried to study some biological aspects and recent trends for controlling wax worms in Egyptian apiaries. The current results summarized that, the questionnaire showed that 100% of beekeepers have knowledge about wax moth, and it belong insects, the harmful phase of the insect wax moth is larvae (worm) and wax moth is an insect that infects wax combs. The 100% of beekeepers know manifestations of wax worm infestation are the presence of wax worm butterflies in the beehives and on the combs in the store. 100% of beekeepers to prevent wax worms, they keep honeybee colonies strong, clean and not throw wax residues in the land of apiary. To control wax worms on the combs stored inside the store100% of beekeepers using Micronized sulfur, Paradex. For evaluation the efficiency of some feeding materials for mass rearing greater wax moths (*Galleria mellonella* L.), four food regimes (media) were evaluated and results concluded that, the highest larval stage was recorded in case of artificial diet and the lowest was found with wax foundation. For larval weight (gm), the same trend was obtained. For percentage of pupation (%) it recorded 100% with all materials used, but no adult emergences were observed in case of wax foundation. An evaluation was carried out in this study to evaluate methanolic extract of some plants against greater wax moth (*G. mellonella* L.) and to evaluate the efficiency of aqueous extract of same plants on greater wax moth larvae and adult honey bee workers, results indicated that, methanolic extract of dumb cane, bestachia and thyme gave promising results against greater wax moth larvae in the same time aqueous extract of bestachia, dumb cane, thyme and santonica provided moderate results against greater wax moth and they were save for adult workers of honeybees. The efficiency of some

essential oil (cinnamon, garlic, clove, camphor, and menthol oils) against greater wax moth (*Galleria mellonella* L.) and adult honey bee workers was also evaluated, and results indicated that, cinnamon, garlic**,** menthol, clove, and camphor oil were highly effective against greater wax moth larvae, moreover, all the essential oils evaluated were highly safe for adult honeybee workers. Ttoxicity evaluation of nanoparticle compounds (Raval and Chitozan) against greater wax moth larvae (*Galleria mellonella* L.) was also conducted on 2nd instar larvae and obtained data revealed that, the number of dead larvae increased by increasing the concentration of tested compounds. It also summarized that Chetozan compound was more toxic against greater wax moth larvae more than Raval compound with 40 and 30% concentration, the tow nanoparticles compounds were highly save for adult honey bees workers. Finally, the results of histological studies clearly showed that, certain histological changes through cross section of mid gut of six instar greater wax mouth larvae. The cytoplasmic extrusion appeared as the apical margin of cells as confluent mass and muscular layers were broken in some parts, large amount of secretions released in the lumen of the mid gut while a few amount was attached to the apical margin cell. Much destruction of the mid gut took place and large number of epithelial cells becomes vacuolated and the cytoplasm appeared as confluent masses because of the hydropic analysis of the epithelium. Sever vacuolar degeneration with elongation and necrosis of the epithelial cell lining

Key words: Honey bees, *Apis mellifer*, wax moth, greater wax moth (*Galleria mellonela* L.), leather wax moth (*Achoria grissela*), plant extract, essential oils, nanoparticles compound and Raval, chitozan.

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