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**Mansoura University
Faculty of Science
Zoology Department**

**Molecular and cytological studies on the effect of some bioreagents on
cotton leaf worm *Spodoptera littoralis* (Lepidoptera: Noctuidae)**

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ABSTRACT

The cotton leafworm, *Spodoptera littoralis* (Biosd) (Lepidoptera: Noctuidae), is one of the most serious cotton pests in Egypt. In this study, the most important microbial bioreagents, protecto (*Bacillus thuringiensis kurestaki*), viruset (nuclear polyhedrosis virus) and profect (a mixture of *Bacillus thuringiensis* and nuclear polyhedrosis virus) were used against the third larval instar of the cotton leaf worm *Spodoptera littoralis*. The enzyme activity of three carbohydrate enzymes was affected after treatment of larva with the three bioreagents. SDS-PAGE of total soluble proteins showed a great change in banding profile due to the treatment. These changes ranged between appearance or disappearance of some bands due to the treatment as compared with the control. Moreover, RAPD-PCR assay detected notable change in banding patterns (number and/or size) following treatment by the three bioreagents as compared to the untreated control group. Many histopathological changes were observed in the midgut of larva when treated with protecto, viruset, and profect. These changes include vacuolation of the cytoplasm, degeneration of epithelial cells, degeneration of microvilli and cytoplasmic organelles. Intercellular spaces are well observed. Also, the nucleus is hypertrophied and chromatin is condensed. The midgut wall of larva treated with viruset becomes multilayered due to the uncontrolled division of both epithelial and goblet cells.

Keywords: The cotton leafworm, *Spodoptera littoralis*, bioinsecticides, biochemical effect, histopathological effect.

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