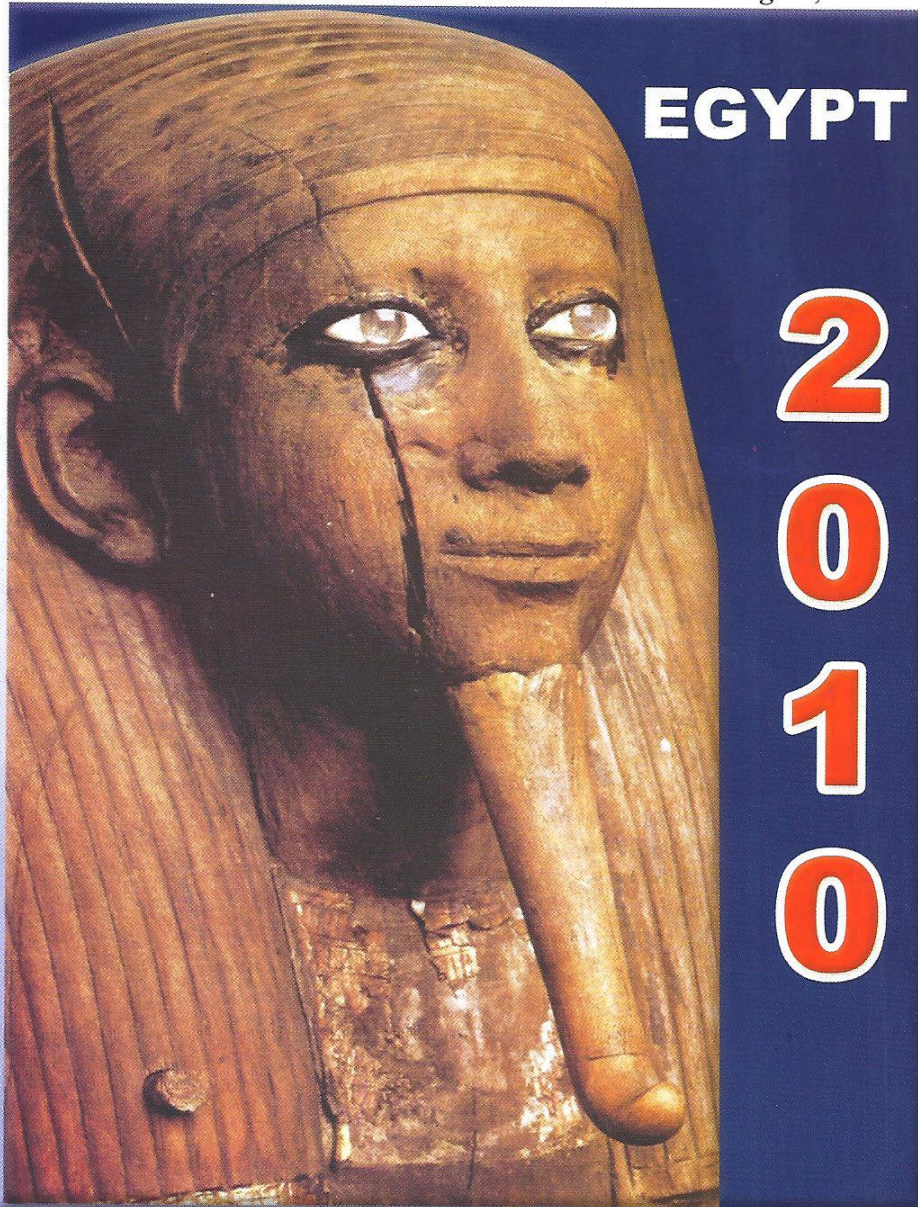


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**EFFECTS OF SOME BOTANICAL EXTRACTS ON THE MIDGUT,  
INTEGUMENT AND FAT BODY OF THE COTTON LEAF WORM,  
*SPODOPTERA LITTORALIS* (LEPIDOPTERA: NOCTUIDAE)**

By

**NAJAT A. KHATTER**

Department of Biology, Faculty of Science, Girls Colleges Branch,  
King Abdul-aziz University, Jeddah, Saudi Arabia

**Abstract**

Botanical extracts (8%) of four plants (*Artemisia monosperma*, *Zygophyllum coccineum*, *Lupinus termis* and *Brassica tournifortii*) fed to the 4<sup>th</sup> larval instars of *Spodoptera littoralis* induced histopathological changes in the structure of the midgut, integument and fat body of the 5<sup>th</sup> instars. *Zygophyllum coccineum* and *Lupinus termis* induced severe damages in the midgut. The integument of treated larvae showed degeneration in the cuticle and epidermal cells which were also detached from each other. Water extracts of *A. monosperma*, *Z. coccineum* and *L. termis* were the most promising in inducing shrinkage in the fat body cells and detachment of midgut muscle layers. Also, the degeneration of the midgut membrane and epithelial layer occurs in different degrees with the tested plants. This study supports the use of botanical extracts in pest control programs of lepidopterous insects.

Key words: Saudi Arabia, *Spodoptera littoralis*, control, *Artemisia monosperma*, *Zygophyllum coccineum*, *Lupinus termis*, *Brassica tournifortii*.

**Introduction**

Many field crops and different kinds of vegetables are the main hosts of *Spodoptera littoralis* (Boisd) in many parts of the world. In recent years, the usage of manufactured insecticides was cut down and alternate by insecticidal components naturally found in several plants such as pyrethrum, coumarin and nicotine. Oils and rotenone are less toxic to man and mammals,

inexpensive and don't pollute the environment.

The role of plant chemistry in mediating host selection behaviour of phytophagous insects has long been recognized (Thorsteinson, 1960). The production of secondary chemicals (allelochemicals) in plants is thought to have evolved as a defense mechanism against invading insects (Frankel, 1959; Al Dakhil and Morsy, 1999; Abdel Halim and Morsy, 2006). However, many