

EFFECT OF SPINOSAD AND TEBUFENOZIDE ON SOME BIOLOGICAL, BIOCHEMICAL AND IMMUNOLOGICAL PARAMETERS OF COTTON LEAFWORM, *SPODOPTERA LITTORALIS* (BOISD.)

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Abstract

The insecticidal activity, biological, biochemical and some immunological parameters effects of a bacterial bioagent spinosad (Spinosad is a product from the naturally occurring soil action mycete bacterium, *Saccharopolyspora spinosa*.) and an insect growth regulator tebufenozide were evaluated on 2nd instar larvae of *Spodoptera littoralis* (Boisd.) (Lepidoptera: Noctuidae). Tebufenozide exhibited a stronger larvicidal effect on 2nd instar larvae than that of the bioagent. The Tebufenozide and Spinosad recorded that the LC₅₀ were 0.35 and 7.83 ppm, respectively. Spinosad and Tebufenozide significantly (P<0.05) increased the larval duration of *S. littoralis*, significantly decreased pupation percent, pupal duration, adult longevity and adult emergence percent. Several aberrations were induced as a result of treatment with the tested compounds. There was a significant difference in the mean total and differential haemocyte counts among the tested compounds. Furthermore, different levels of significant changes in the protease, phenol oxidase, acetyl choline-esterase (AChE) and phosphatases activity were recorded.

INTRODUCTION

The Egyptian cotton leafworm, *Spodoptera littoralis* (Boisd.), (Lepidoptera: Noctuidae) is a major polyphagous pest in Egypt and is considered as one of the most dangerous pest attack the cotton plants. This pest has at least 7-8 generations as well as it infesting more than 172 other crops and vegetables of economic importance Abdel- Wahab (2002).

Insecticidal control became undesirable due to the development of resistance, environmental pollution and health hazards, as well as causing high toxicity for non-target animals. Perry *et al.* (1998) reported a detailed description on the hazards of the use of chemicals for the control of insect pests.

Bio-agents are good alternative of insecticides for the control of many insect pests. Spinosad is a product from the naturally occurring soil action mycete bacterium, *Saccharopolyspora spinosa*. Spinosad acts primarily on the insect's nervous system at the nicotinic acetylcholine receptor and also causes alternation in the activity on the gamma-amino butyric and receptor GABA (Salgado, 1998). Spinosad shows a low toxicity to mammals and beneficial insects and is non phytotoxic (Dutton *et al.*, 2003).