SUMMARY

Electrophysiological studies were conducted in the laboratory of biophysics in the Faculty of Science, Ain Shams University.

The ultrastructure of the tarsus of the cotton leaf worm were examined in the central laboratory in Faculty of Agriculture, Alexandria University and also in Faculty of Science in Tanta University.

Cotton leaf mass reared under laboratory condition for mass production of moths. The tarsus of the for-leg of the female moths were used to study the ultrastructure of sensilla which can be found on each segment of the tarsus, by using scanning electron microscope. Each sensillum was examined to identify its characters.

For electrophysiological studies, experiments were conducted to build up a circle which contain a silver-silver chloride electrode and glass microelectrode and by the help of a Bioscience cepto unit, which consists of Oscilloscope, oscillograph, preamplifier and chart recorder.

Three salts KCl, NaCl and $CaCl_2$ were treated at different concentration to evaluate their stimulation effect on sensillum chaeticum on the tarsus of female S. littoralis.

In the same time two types of sugars sucrose and glocuse were tested.

SUMMARY

Three insecticides from three different groups (permithrin) pyrethroids, Lannate (Methomyl) Carbamate and (Actellic (Pirimphos methyl)) orgnaophosphorous compound were tested at different concentrations to study the mode of action of the tested insecticides.

Results indicated that the tarsus of the female moth for leg is covered with four types of sensilla. The four sensilla were identified to be sensillum chaeticum in larg number followed in number by sensillum trichodeum, styloconica, and squamiform structures. The first two sensilla were chemoreceptors, while the last three sensilla were identified as mechanoreceptors.

Electrophysiological investigation showed that chemosensitive hairs tested on tarsal setae of the cotton leafworm moth were sensitive to all the three tested salts. It is clear that the response of sensillum was very high at concentration Ø.1M, Ø.25 M and 1.5 M of $CaCl_2$ KCl and NaCl respectively.

Results also indicated that the frequency of impulses of the tested sensillum increased successively by the increase of concentration. Generally $CaCl_2$ appeared to have less stimulating activity at the tested concentration followed by NaCl and KCl.

The response increased by the increase of concentration of both sugar tested. While the number of spikes were 13.7 at zero concentration of sucrose the number of spikes were 14.2,

15.6 and 19.3 spikes at concentrations 0.01, 0.1 and 0.25 respectively, The amplitude followed the same manner as did the effect on the frequency.

Nearly same results were obtained when glucose was used as stimulator.

All the tested insecticides tested induced hyper sensitivity of the neurous system.

In most treatment, high concentration of insecticides resulted in marked increases in spontaneous firing, bursts of action potentials.

Actellic (Pirimphos methyl) headed all the tested insecticide in its stimulation effect on the nervous systems. The treatment of both low and high doses resulted in worked increases in the spontaneous firing, bursts of action potential in the first 5-20 minutes after treatment. Followed by Lannate (Methomyl) where the stimulations appeared as a repetitive firing waves. This phenomena appeared when concentrations of 1000, 2000 PPM were used.

Permethrin effect showed an continuous and regular hyper activity, nearly at all the tested concentrations exept the highlest concentration, where a repetitive firing waves were clear.