

## ABSTRACT

The present study was carried out in an attempt to disclose to the effect of three IGR<sub>s</sub> (Chlorfluazuron, Tebufenozide, Pyriproxyfen) and three plant extracts (Bran of *Oryza sativa* "extracted by different solvents hexane, pet.ether, acetone and ethanol", Oil of *Citrus aurantium* and Oil of *Cymbapogon citratus*) on 4<sup>th</sup> larval instar of *Spodoptera littoralis*. Some biological aspects, the joint action and the synergistic properties of minimized dose of IGR<sub>s</sub> with botanical extracts were recorded. Also, the phytochemical scanning were carried out to promising plant extract. In addition, the deteriorative potentialities on the total and fraction protein pattern, and some enzymatic activities (Esterases,  $\alpha$ -GPDH, and AO) in different stages of *S. littoralis* were screened

The present findings, clear that, the most efficient IGR<sub>s</sub> in inducing positive influence on larval mortality was chlorfluzuron while tebufenozide was the most efficient IGR<sub>s</sub> in inducing reduction in the fecundity and fertility. On the other hand, *C. citratus* was the most effective plant extract followed by acetone, pet.ether, alcohol, *C. aurantium* and hexane extract of *O. sativa*. Only the combination of chlorfluzuron with pet. ether and hexane extract of rice bran revealed a potential action with Co-toxicity factor +24 and +32, respectively. Results showed that, sterols/terpenoid and flavonoids were the most constitute of rice bran. In addition, the present findings showed inhibition effect on total protein content in all stages except hexane and lemon grass extracts which clarify non significant effect on haemolymph and 6<sup>th</sup> instar larval tissues respectively. Also, in protein pattern some proteins were missed or expressed at different stages. Esterases,  $\alpha$ -GPDH, and AO were differed than the normal pattern.

### Key words:

*Spodoptera littoralis* - IGR<sub>s</sub> - Plant extracts-  
Toxicological & Biological activities, Joint action,

physiochemical scanning, Total and fraction protein pattern, Esterases,  $\alpha$ -GPDH, and AO electrophoresis.

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