

Effect of insect growth regulators on digestive system of Colorado potato beetle larvae, *Leptinotarsa decemlineata* (Say) (Col., Chrysomelidae)

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Abstract

Colorado potato beetle, *Leptinotarsa decemlineata* (Say) (Col., Chrysomelidae) is one of the most important pests of potato in potato-producing countries. Considering the evolution of insecticide resistance in this insect, the effects of three insect growth regulators (IGRs), including Diflobenzeron, Precocene I and Precocene II, on the alimentary canal of *L. decemlineata* larvae were examined. For this purpose, the effect of the mentioned IGRs on the larvae of *L. decemlineata* was tested using oral and topical methods. The results showed abnormalities in cuticular structure of foregut and hindgut of Diflobenzeron-treated larvae, such as formation of gaps between endocuticular layers. Most of the abnormalities happened in epithelium cells of midgut, which caused malfunction and degeneration of such cells. Precocene-treated larvae showed abnormalities in midgut, such as epithelial deformations, formation of gaps between epithelium and basement membrane, and degeneration of microvilli. In addition, Precocenes caused abnormalities in cuticular structure of foregut and hindgut. Finally, IGR-treated larvae appeared smaller and slower in growth compared to control larvae. This is most probably due to the abnormalities of epithelial cells of alimentary canal and the resulted disabilities in digestive and absorptive functions.

Key words: Colorado potato beetle, *Leptinotarsa decemlineata*, Insect growth regulator, Diflobenzeron, Precocene, Digestive system

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