



*13th Multi-disciplinary Iranian Researchers
Conference in Europe*

**EFFECT OF PRECOCENE I - JUVENILE HORMONE INHIBITOR ON CHEMORECEPTOR
ORGANS OF COLORADO POTATO BEETLE LARVAE, *LEPTINOTARSA DECEMLINEATA* SAY.
(COLEOPTERA: CHRYSOMELIDAE)**

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The Colorado potato beetle (CPB), *Leptinotarsa decemlineata* Say (Coleoptera: Chrysomelidae), is the most harmful insect pest of potato cultures and major pest worldwide. For control of the CPB, growers reply exclusively on chemicals. The increasing incidence of resistance to almost very insecticide used against it may lead to serious control problems. Precocene, juvenile hormone inhibitor, exerts cytotoxic effects on corpora allata of sensitive insects species, which leads to the necrosis of parenchymal cells, the source of juvenile hormone. Recently it has been observed that, precocenes significantly reduce the life of the last instar larvae, induce ecdysis of larval cuticle and formation of abnormal puparia and these effects can be reversed by juvenile hormone administration. Juvenile hormone inhibitors with biological activity have been tested against pest insects.

The purpose of this study was analysis of effect precocene I (7-methoxy-2, 2-dimethylchromene) on chemoreceptor organs of CPB larvae. Chemoreceptor organ of holometabola insects' larvae is good model for analysis of effect biological compound, as far as the number of sensilla permanently for all larvae instars. The experiments were conducted in the laboratory conditions at the temperature of 25 °C and under either a long-day (LD 16:8) photo regime. The precocene I used in this test was emulsifiable concentrate that was prepared in acetone for topical application. Topical application occurred on the dorsal part of larval abdomen by applying 1 µl (10 ng) solution of precocene I in acetone with a micropipette. After molting, larvae fixed in 75% alcohol and 2.5% glutaraldehyde and then studied in scanning and transmission electron microscope.

On the antennae of control larvae are placed 3 trichoid, 2 basiconic and 1 styloconic sensillae on the apex of the third segment and 2 basiconic, 2 trichoid and 1 conical sensillae on the distal part of the second segment. Based on the laboratory studies, with the second instar larval, which were treated 1% precocene I, after the first molting the considerable changes of antenna cuticle structure were observed. The second and third segments of antenna in many larvae were merged, on second segment two sensilla are reduced; on top third segment some larvae have only 3-4 sensilla. For some larvae other anomalies were observed also: full reduction conical sensilla, preservation of a cuticle of the previous instar, reduction of some sensilla on the apex of the third segment.

On the maxillary palp of control larvae have 16 basiconica, 4 trichoid and 1 digitiform sensilla. All basiconica sensilla are placed on the distal apex of third segment. Results of experiments on treated larvae showed, that boundary between two terminal segments of palp often fades, and so the number of sensilla is reduced.

On the labial palp of control larvae have 11 basiconica sensilla. All this sensilla are placed on the distal apex of second segment. Based on experiments, with treated larvae 1% precocene I, on labial palp often have remainder of cuticle of the previous instar, the number of sensilla is reduced up to 6-9, and in some cases all sensilla are reduced.

Study of section through antenna and palps in treated larvae showed reduction of receptor cells and their dendrites. The structure of cuticle of sense organs differs from the control. In many cases the absence epicuticle, and in a number of cases and exocuticle was observed.

Thus, precocene I for CPB larvae cause considerable changes in chemoreceptor organs that expressed in a reduction number of sensilla, and neurons. Most considerable changes in chemoreceptor organs in antenna and labio-maxillar palps are observed after larvae treatment on several series instars. The work was supported by RFBR (grant № 04-04-48779).

Keywords: plant pests, potato, Colorado potato beetle, chemoreceptor organs, sensillae, juvenile hormone inhibitor, precocene