ISCE 2000 - Poços de Caldas

Poster PO62

INDUCTION OF LADYBIRD GLUTATHIONE S-TRANSFERASES AS A RESPONSE TO ALLELOCHEMICAL PRESENCE IN THE APHID PREY

Francis Frédéric, Haubruge Eric, Arnaud Ludovic & Gaspar Charles

Insects developed adaptations to protect themselves against toxic compounds. Glutathione S-transferases (GST) play an important role in the detoxification of many substances including plant allelochemicals. Brassicacae plants contain glucosinolates (GLS) and emit volatile isothiocyanates (ITC) which affect the GST system and act as infochemicals for both phytophagous and entomophagous insects. While generalist pests are deterred by GLS or volatile ITC, Brassicacae specialist as *Brevicoryne brassicae* use them as feeding stimulants. Suitability of many aphid species including *B. brassicae* was already studied for some aphidophagous predators. Even if polyphagous insects as *Adalia bipunctata* are considered, some aphid species provide only low quality food which could be due to the presence of secondary compounds from plant. Identification of GLS related degradation products was investigated in aphids by gas chromatography – mass spectrometry.

High amount of benzyl-ITC were identified in *B. brassicae* reared on *Sinapis alba* and the ladybird GST activity increased with the allelochemical presence in prey. Experiments using artificial diets including different amounts of sinigrin, allyl- and benzyl-ITC showed changes in the ladybird GST activities from a 0.1% concentration in diet, also with an increase of the mortality rates of the predators mainly with the ITC compounds from a 0.3% concentration in diet.

Food quality is known to influence the biological performances of aphidophagous ladybirds. Impact of plant allelochemicals on predators throughout aphid prey constitutes an important environmental change of the beneficial insect and was discussed to underline the role of the plant in integrated pest management in terms of biological control efficacy.

Unit of pure and applied Zoology - Gembloux Agricultural University
PASSAGE DES DÉPORTÉS 2, 5030 GEMBLOUX, BELGIUM
e-mail : francis.f@fsagx.ac.be