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Profile of the body surface proteolytic systém in *Apis mellifera* quee

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[fulltext]

The proteolytic system on the body surface of the honey bee has been insufficiently researched. In this study the body surface proteolytic activity was examined in queens at various developmental stages (eggs, larvae,

pupae and imagines) in different seasons (spring, summer, autumn, winter). Extracts of the body surface material with water and detergent were used for an *in vitro* analysis of the proteolytic activity and protease inhibitor level assaying, as well as for an electrophoretic separation of the extracts in polyacrylamide gels. The following methods were used: protein content testing by the Lowry method (modified by Schacterle-Pollack), protease activity testing by the Anson method and protease inhibitor activity testing by the Lee and Lin method. Our studies revealed a high protease activity in an acidic environment (pH = 2.4; the material rinsed with detergent), as well as in neutral (pH = 7) and alkaline (pH = 11.2) environments (the material rinsed with water in both cases). The highest protein concentration values were observed in the imagines from summer. The lowest activities of the proteases and protease inhibitors were determined in the eggs from summer. The highest activities of the acidic, neutral and alkaline proteases were observed in the pupae from spring. The highest number of protease activity bands in PAGE

and alkaline activities in the queens for all the seasons. In the queens all the catalytic protease types were present: asparagine and cysteine proteases at pH = 2.4; cysteine proteases and metalloproteases at pH = 7 and serine proteases at pH = 11.2. These results were crucial for the analysis of immunity mechanisms on the body surface of the honey bee.

Keywords:

Keywords: proteolytic system; *Apis mellifera*; queens

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