

ABSTRACT

The growing resistance of bacteria to traditional antibiotics promotes the interest in finding new substances for their production. Antimicrobial peptides have comparable effect to conventional antibiotics, but a different mechanism of action and they do not provoke bacterial resistance. These peptides were characterized in all forms of multicellular organisms.

Hymenoptera venom contains many biologically active substances including antimicrobial peptides. For this reason, this thesis focuses on the acquisition of antimicrobial peptide sequences from selected species of bumblebees (*Bombus terrestris*, *B. hortorum*, *B. hypnorum*, *B. pratorum*, *B. lucorum*, *B. lapidarius*, *B. humilis* and *B. bohemicus*).

The isolation from the venom glands was performed by high performance liquid chromatography with reversed phases. Subsequent analysis was performed using the methods of mass spectrometry, matrix-assisted laser desorption/ionization with time of flight analyzer and electrospray ionization connected with hybrid linear ion trap analyzer with orbitrap. The sequences for the found peptides were determined by tandem mass spectrometry methods "*de novo*" and Edman degradation.

In this work we characterized 17 sequences of peptides extracted from bumblebee venom glands for which antimicrobial activity was determined by on agar diffusion test.