

New antimicrobial peptides from the extracts of garden snail *Helix lucorum*

Pavlina Dolashka^{1&}, Bart Devreese¹ and Jozef Van Beeumen¹

¹ *Institute of Organic Chemistry with Centre of Phytochemistry, Bulgarian Academy of Sciences, G. Bonchev 9, Sofia 1113, Bulgaria*

² *Laboratory of Protein Biochemistry and Biomolecular Engineering, Department of Biochemistry and Microbiology, Ledeganckstraat 35, 9000 Gent, Belgium*

§ Corresponding author: Assoc. Prof. Dr. P. Dolashka, Institute of Organic Chemistry, Bulgarian Academy of Sciences, G. Bonchev 9, 1113 Sofia.

Tel.: 35929606163, Fax: 3598700225, E-mail: pda54@abv.bg

Abstract

Several biochemically and pharmacologically active components such as peptides and proteins are dissolved in the hemolymph and slime of garden snail *H. lucorum*. Antimicrobial peptides are gaining attention as antimicrobial alternatives of chemical food preservatives and commonly used as antibiotics. We have isolated and characterised 4 novel peptides produced by the hemolymph and 6 novel peptides from the slime of *H. lucorum* snails. The isolated peptides from the hemolymph and slime applying ultrafiltration and reverse-phase high-performance liquid chromatography (RP-HPLC) have molecular weights between 5000 and 8000 Da, determined by mass spectrometric analysis. Two different species of bacteria, a Gram-positive (*Staphylococcus aureus*) and a Gram-negative (*Escherichia coli*), were used as reference to analyse the antimicrobial activity of the peptides. In the test with the Gram+ bacteria the grow was affected only by peptide 3 from the hemolymph and by peptides 3 and 4 from the slime of HI (~50%), whereas the grow of *E. coli* was inhibited by peptides 5 and 6 from the slime of HI.

These antimicrobial peptides were found to serve as effector molecules of the snail's defense system and are the most promising and effective compounds to inhibit Gram+ as well and Gram- bacteria.

Key words: Antimicrobial peptides, Hemolymph and slime of *Helix lucorum*, Gram-positive (*Staphylococcus aureus*) and a Gram-negative (*Escherichia coli*) bacteria