

Sea Urchin *Lytechinus variegatus* as a Source of New Antimicrobial Peptides.

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INTRODUCTION: The search for molecules having antimicrobial activity is an important research area of natural products, moreover, due to the growing problem of the emergence of resistant bacteria or super bacteria, new pharmaceutical compounds as antimicrobial peptides (AMP's), are constantly being sought. Sea urchins are great models for the study and discovery of AMP's, not only because they have an innate immune system extremely efficient, but also for its phylogenetic position, sharing many characteristics with the vertebrates group.

OBJECTIVES: Characterize and describe the antimicrobial peptides, existing in the coelomic fluid of sea urchins *Lytechinus variegatus*, beyond the understanding of action of the innate immune mechanisms that can help to elucidate the phylogeny of the group.

METHODS: The coelomic fluid of four sea urchins were submitted to acid extraction, pre purification in C18 columns (SepPak), and after to HPLC. The fractions obtained in HPLC were used to perform the hemolytic test, with human erythrocytes, and the antimicrobial activity test. Fractions that presented antimicrobial activity were then submitted to mass spectrometry to purification and further characterization of the peptides.

RESULTS AND DISCUSSION: Nineteen fractions showed antimicrobial activity; thirteen against *Micrococcus luteus*, four against *Pseudomonas aeruginosa*, and three against both bacteria and the fungus *Cladosporium herbarum*. These fractions were used to perform the hemolytic test and none of them presented hemolytic activity.

CONCLUSION: The coelomic fluid of *Lytechinus variegatus* has a wide variety of peptides with antimicrobial activity. The characterization of these molecules will contribute to a better understanding of the fascinating immune system of these animals. Furthermore the peptides founded showed not to have hemolytic activity which is a very positive result since the discovery and characterization of these peptides can help in the development of new drugs with antibacterial activity as well as with other potential pharmaceuticals.

Key words: antimicrobial peptides, *Lytechinus variegatus*, bioactive molecules.

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