

“An approach of the mechanisms from the immune system of the scorpion *T. serrulatus* and its biotechnological application”

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Introduction: The scorpions are present on the planet about 400 million of years, many elements contributed to the survival of these animals, like an immune system able of acting against several microorganisms. In arthropods the innate immune system is characterized like clotting and phenoloxidase cascade activation, and the antimicrobial peptides (AMPs) synthesis. In Brazil, the specie *Tityus serrulatus* is the most studied due to the components present in its venom. However until date no study was conducted to identify elements present in the innate immune system of this species that in some regions of Brazil are cases of public health. The aim of this study is identify molecules present in the innate immune system of the scorpion *T. serrulatus*, like proteins involved in phenoloxidase cascade and clotting, and the characterization of PAM's against different microorganisms. **Material and Methods:** The hemocytes fractions were applied to a reversed phase chromatography. The elution was performed for different linear gradients of ACN in TFA 0.05%. The antimicrobial activity was determined by liquid growth inhibition assay against Gram-negative, *Gram-positive bacteria and yeast*. Fractions were reduced, alkylated and trypsinized, and subjected to mass spectrometry analysis. The results were analyzed by tools such as Mascot® and Peaks® to identify possible sequences similarity and respectively **Results:** We have detected antimicrobial activity against *M. luteus* A270 and *E. coli* SBS36. The mass spectrometry shows one molecule has 8871 Da. We found in data bases researches one other molecule that presents similarity with human platelet protein, a basic protein involved in clotting cascade. In transcriptome database research, we found proteins involved in clotting and phenoloxidase cascade. **Conclusions:** We found in the Scorpion blood *T. serrulatus*, proteins involved in innate immune system that help us to understand its function and that presents antimicrobial activity, which can be antibiotics or pharmacological tools.

Key-words: Antimicrobial Peptides, Clotting Cascade, Scorpions.

Support by: Fapesp, Capes and CNPq.