Enzymes and Antimicrobial Peptides from the Venom of Mygalomorph Spider *Avicularia juruensis*

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Introduction: Spiders are animals that live in several environments and one factor that contributes to their wide distribution is the production of toxic venom, used to capture prey and as protection against predators. These venoms are good sources of molecules with biotechnological potential because they contain many biologically active components. The spider *Avicularia juruensis* live on top of trees and usually eat puppies birds. Due to this type of alimentation, we believe its venom have many types of components and enzymes. **Objectives**: Analyze enzymes and antimicrobial peptides from the venom of *Avicularia juruensis*. **Material and Methods:** The venom glands were removed five days after venom milking and used for transcriptomic analysis. The venom was extracted by electric stimulation and analyzed by electrophoresis and zymography, using casein and gelatin like substrate. The purification of molecules with antimicrobial activity was performed using RP-HPLC, the samples obtained have been tested through bioassay against different microorganisms. The enzymes and antimicrobial peptides identified were analyzed by mass spectrometry and the results were compared with the data obtained in transcriptomic analysis. **Results and Discussion:** The electrophoretic profile of the venom showed that it is composed by molecules with mass between 105 and 10 kDa and the zymography has indicated the presence of enzymes that cleave casein and gelatin. Analysis by mass spectrometry, transcriptome and comparison on database revealed that enzymes showed similarity with metalloproteases and serine proteases. The presence of these enzymes is little known in venom of mygalomorph spiders. In bioassay were identified five fractions with antimicrobial activity against *Candida albicans* and *Aspergillus niger* and one against *Escherichia coli*. **Conclusions:** The results indicated that the venom of *Avicularia juruensis* is very complex and seems to be a good source of molecules with biotechnological potential.

KEYWORDS: Bioactive molecules, Spider, Venom

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