

## **Identification of Two proteins Involved in Apoptosis in the Cattle Tick *Rhipicephalus microplus***

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**Introduction:** During development of multicellular organism, unwanted cells are eliminated. Apoptosis was the first process to demonstrate this event, and further researches have been characterized the pathways and enzymes involved. These enzymes (called caspases), were identified in organism models to participate in development, immunity, homeostasis. Currently, different studies have contributed to elucidate physiological roles in arthropods. However, their role in ticks is unclear.

**Objective:** The aim of this work is identify caspases and their function in the cattle tick *Rhipicephalus microplus*. **Materials and methods:** Two DNA sequences with a highly similarity for caspases were obtained in a transcriptome of *R. microplus*. Specific primers were used to amplify two fragments with the open reading frame of these sequences from cDNA of BME26 embryo cell line. The amplicons were cloned into pTZ57R/T vector and transformed in *Escherichia coli* (XL1 Blue strain). Recombinant plasmid DNA was extracted and DNA sequencing performed to confirm the identity of cloned sequences. Nucleotide and deduced amino acid sequence analyses were carried out using public databases, NCBI and ExPASy. **Results and discussion:** Two DNA sequences similar to Caspase-1 and Caspase-7 genes were identified in *R. microplus*. For Caspase-1, a fragment of 891 bp was recognized, which encode a protein with 297 amino acids. For the Caspase-7 a fragment of 1185 bp was identified, which encode a protein with 395 amino acids. Identity of the Caspase-1 and Caspase-7 was 48% and 47%, respectively, in comparison with the orthologues sequence of *Spodoptera frugiperda*. The analyses showed high identity with the caspase super-family C14, due to identification of two subunits, P20 and P10, and the active site in both sequences, characteristic of this enzyme family. **Conclusions:** Two gens coding to caspase-like proteins were identified in *R. microplus*. The identification of the function in different processes in the cattle tick, specifically in embryogenesis is in progress.

**Key Words:** Caspases, Apoptosis, *Rhipicephalus microplus*.

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