TOR Signaling Pathway in the Embryogenesis of the Cattle Tick *Rhipicephalus microplus*

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Introduction: Target of Rapamycin (TOR) is a protein kinase highly conserved in the eukaryotic evolution from yeast to humans, and is involved in multiple processes such as metabolism, cell growth, proliferation, transcription, protein synthesis, and essential for arthropod embryogenesis. Tick embryogenesis has been considered a metabolically intensive and tightly controlled event; however, the role of the TOR signaling pathway during this process remains unclear. **Objective:** This work aims to functionally study the TOR signaling pathway in the embryogenesis of the cattle tick *Rhipicephalus microplus.* **Materials and methods:** Eggs collected at different points of embryo development were analyzed for the relative expression of genes related to this signaling pathway: TOR, and two downstream target proteins (S6K, and 4E-BP). Additionally, partially engorged females were treated with TOR interference RNA, in order to analyze the effects on oviposition and egg hatching. **Results and discussion:** Regarding to embryogenesis, the TOR gene exhibited a constant relative expression during the process, suggesting that its transcription might be regulated via maternal/zygotic transition. On the other hand, S6K and 4E-BP transcripts were increased only on the first day after oviposition, if compared throughout embryogenesis, which suggests that these transcripts may be of maternal origin. Moreover, female ticks treated with interference RNA did not show significant differences in oviposition rate, but egg hatching was decreased eggs from females treated with TOR interference RNA, as compared with control group, and suggests TOR signaling is important for embryo development. **Conclusions:** These data suggest that TOR signaling pathway is important during tick embryo development, and further studies are on the way to establish the role of this pathway during such process.

KEYWORDS: TOR signaling pathway, tick embryo, *Rhipicephalus microplus.*

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