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SILENCING THE *Rhipicephalus microplus* PARAMYOSIN GENE DECREASES EGG LAYING AND HATCHING

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Paramyosin (PRM) was primarily described as a muscular protein of invertebrates but, in parasites, it has been associated with evasion of the host immune system. In addition, it is considered an important allergen of mites and a vaccine antigen against helminthes and mites. The paramyosin of *Rhipicephalus microplus* (RmPRM) is present in different tissues and developmental stages of the tick and presents the same properties that make other PRMs as potential vaccine antigens. Thus, the goals of this work were to identify possible additional roles of RmPRM and evaluate its importance in tick development, what was addressed by RmPRM gene silencing of adult females. Partially engorged females were collected directly from an infested bovine, immediately weighted, and artificially fed by glass capillaries with bovine blood. Double-stranded RNA (dsRNA) corresponding to the RmPRM gene (dsRmPRM) and to MSP-1 gene of *Plasmodium falciparum* (dsMSP1; non-related gene used as negative control) were synthesized and injected in the ticks distributed in two groups of 14 individuals. After dsRNA administration, they were artificially fed until the next day. Three females of each group were dissected and ovaries were removed to RNA extraction. The remaining females were placed in Petri dishes under controlled humidity and temperature to oviposition. After seven days, eggs were weight and placed in microtubes under controlled conditions until hatching and, after 40 days, the larvae were weighed. RNAs of ovaries were extracted using TRIzol (Invitrogen) and cDNA synthesis were performed using SuperScript III (Invitrogen). RmPRM gene silencing was verify by qPCR using 40S ribosomal protein gene as control. Relative Expression Software Tool was used for data analyses. The qPCR data indicated that mRNA levels corresponding to RmPRM were reduced in the three ticks treated with dsRmPRM (82.9%, 96.1% e 99.8%). The RmPRM gene silencing resulted in egg laying and larvae hatching reduction of 79.4% and 95.1%, respectively, although did not influence mortality rates. Therefore, these data indicate that RmPRM presents an important role during embryo development and/or egg laying.

Keywords: cattle tick, salivary antigen, tick-host relationship, RNAi, qPCR.
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