Cross Antigenicity and Immunogenicity Analysis of *Haemaphysalis longicornis* and *Rhipicephalus sanguineus* Glutathione S-Transferases

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INTRODUCTION: The control of *Rhipicephalus sanguineus,* important as vector of pathogens to humans and domestic animals, relies in the use of acaricides. Nowadays, anti-*R. sanguineus* vaccines are under development as an alternative control method; however, the identification of effective antigens remains a challenge. Specifically, some vaccination experiments using Glutathione S-transferases (GST) have demonstrated the development of a partially protective immunity against tick infestations. **OBJECTIVES:** The evaluation of the cross-antigenicity between GSTs of *Haemaphysalis longicornis* (GST-Hl) and *R. sanguineus* (GST-Ra) as well as the protective capacity of rGST-Hl vaccination against *R. sanguineus* infestation. **MATHERIALS AND METHODS:** For *in silico* analysis of cross-antigenicity between rGST-Hl and GST-Ra, the amino acid sequences of GSTs were aligned using the ClustalW algorithm. The antigenic GSTs regions were predicted by Jameson Wolf algorithm. The *in vitro* cross-immunogenicity of recombinant GST-Hl and native *R. sanguineus* GSTs was evaluated by western blot with purified GST from *R. sanguineus* tissues using anti-rGST-Hl serum. The immunogenicity of rGST-Hl was evaluated by ELISA. In an experimental vaccination, four rabbits were immunized with rGST-HI and four with PBS (control group). Next, rabbits were challenged with *R. sanguineus* larvae, nymphs and adults. **RESULTS AND DISCUSSION**: The identity between GST-Hl and GST-Ra sequences is 86.9%. The predicted cross-antigenicity showed that most conserved regions are also antigenic. Through western blot, was possible to analyze the cross-reactivity between the native *R. sanguineus* GST and rGST-Hl, since immune sera of rabbits against rGST-Hl reacted with all tested tissues. The vaccination test showed no significant differences between immunized and control groups. **CONCLUSIONS:** Although the cross-reactivity between tick GSTs and the immunogenicity of the rGST-Hl, the use of rGST-HI as antigen against *R. sanguineus* was not effective.

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Keywords: Tick, Glutathione S-transferase, *Rhipicephalus sanguineus,* vaccine.