

RESUMO - PROTOZOÁRIOS E AGENTES TRANSMITIDOS POR VETORES  
DE IMPORTÂNCIA EM SAÚDE

**DIFFERENTIAL EXPRESSION OF IMMUNE GENES IN LARVAE, NYMPHS  
AND ADULTS OF RHIPICEPHALUS MICROPLUS IN RESPONSE TO  
THEILERIA EQUI INFECTION.**

*Carla Alves Rabello (carlaalves.rabello@gmail.com)*

*Karina Cristina Paes Galdino (karinapaes2@gmail.com)*

*Nelson Meireles Da Silva (nelson\_mrl@hotmail.com)*

*Pamella Pryscila De Alvarenga Bissoli Maciel De Lima  
(pambissoli@hotmail.com)*

*Patrícia Gonzaga Paulino (patgpaulino@gmail.com)*

*Cristiane De Medeiros Campanha (cismedeiros@yahoo.com.br)*

*Laís Feliciano De Souza (lais.fesouza@hotmail.com)*

*Huarrisson Azevedo Santos (huarrisson@yahoo.com.br)*

Equine piroplasmiasis is a disease that affects horses in general and one of its causative agents is the protozoan *Theileria equi*. The pathogen is transmitted through the blood of infected ticks on susceptible hosts. In Brazil, *Rhipicephalus (Boophilus) microplus* is the only tick species with experimentally proven

vectorial capacity; however, information on the *T. equi*-*R. microplus* interaction is still scarce. It is known that the vectorial competence of ticks is closely related to the ability of pathogens to escape the tick's defense mechanisms. As a result, the acquired pathogen needs to overcome various tissue barriers present in the tick's body in order to complete its cycle, such as the midgut, salivary gland and ovary. The innate immune response present in these tissues corresponds to the tick's main form of defense against infection, including the metabolism of reduced oxide, the complement system and the activity of phagocytic cells, which are mechanisms that need to be circumvented for the pathogen to survive in the vector's organism. Thus, knowledge about the molecular and cellular interaction at the tick-pathogen interface can provide new targets for blocking metabolic pathways that are fundamental for the infection, multiplication and persistence of *T. equi* in the tick, thus making it possible to block the transmission of this pathogen. Thus, The aim of this study is to use gene expression assays to evaluate the differential expression of genes involved in the main immune signaling pathways and in the oxidoreduction metabolism of *R. microplus* in response to infection by *T. equi*. To this end, pathogen-free ticks will be fed to a chronically infected horse and another uninfected horse, forming the infected and control groups. The larvae, nymphs and engorged females of each group will be collected directly from the animals' bodies and then sanitized in an alcohol and hypochlorite solution. The larvae and nymphs will be stored whole in RNAlater solution, while the females will be dissected in order to collect the intestine, salivary gland and ovary, which will also be stored individually in RNAlater and stored at -80°. RNA will then be extracted from each sample individually using a commercial kit, followed by the differential gene expression assay, which will analyze 14 genes related to redox metabolism and 8 related to immune signaling pathways, with subsequent statistical analysis to assess relevance. As piroplasmosis is a disease responsible for causing major damage to the health and economy of the equestrian sector in Brazil, and current treatment has proved ineffective in eliminating the parasite, understanding the interaction between *T. equi*-*R. microplus* provides support for the development of alternative measures to combat the disease and promote the health of brazilian's equine herd.

Palavras-chave: piroplasmose; *Theileria equi*; *Rhipicephalus microplus*; metabolismo; vias imunes inatas.