Characterization of *Rhodnius prolixus* Immune System

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Innate immunity in insects is the first defense line against several microorganisms. The humoral immune response, object of this research, consists basically on the production of antimicrobial peptides, as a result of the activation of three pathways (Toll, IMD and Jak/STAT). This study aims to contribute to the understanding of *Rhodnius prolixus* immune response against infection with bacteria, fungi and trypanosomatids. Fasting adults females were injected with Gram-negative, Gram-positive bacteria, sticked with zymosan or blood-fed. Other insects were infected with *Trypanosoma cruzi* by artificial feeding or injected with *Trypanosoma rangeli*. Another set of insects was injected with double-stranded RNA for genes of the IMD pathway. After all this treatments, expression of several putative immune-related genes was analyzed by qPCR. The obtained results indicate that the Toll pathway is activated in the fat body in response to fungal infections and in the midgut after a blood meal. 24 hours after feeding, IMD pathway is activated in both tissues. IMD pathway was also activated in the fat body in response to Gram-negative bacteria. Interestingly, infection with both *Trypanosoma cruzi* or *Trypanosoma rangeli* inhibited the expression of several immune genes, suggesting that the parasite might induce a state of “immunosuppression” in the vector. Silencing of genes from the IMD pathway showed that defensin seems to be under control of this pathway, while lisozyme-A, lisozyme-B and cecropin-2 do not. Additional studies are still needed to confirm these data.

Word Keys: genes expression, immune system, *Rhodnius prolixus*

Supported by: CNPq/Faperj