IMMUNE RESPONSE TO ENTOMOPATHOGENIC FUNGUS *Metarhizium anisopliae* INFECTION IN *Rhodnius prolixus* (Hemiptera: Reduviidae)

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INTRODUCTION: The *Rhodnius prolixus* is a hematophagous insect and vector of *Trypanosoma cruzi*, a protozoan parasite that causes Chagas disease. Insects are exposed to a wide range of microorganisms and have interconnected powerful immune reactions. Innate immunity is the first line of defense being divided into humoral response that is related to antimicrobial peptides (AMP), lectins and the prophenoloxidase cascade and the cellular response which includes phagocytosis, hemocytes aggregation and encapsulation of pathogens. The *Metarhizium anisopliae* is an entomopathogenic fungus used as biological control agents and start the infection process mainly by penetration through the insect cuticle. OBJECTIVES: Here we have investigated the effect of *M. anisopliae* infection on the modulation immune response and to linking with embryogenesis process in *Rhodnius*. MATERIALS AND METHODS: For this adults females of *R. prolixus*, in starvation or rabbit blood feeding, were challenged by conidial suspensions of *M. anisopliae* (1×10^7 conidia/mL) using a Potter tower and in both conditions after 24 and 72h, midguts and fat body were dissected. The modulation of immune responses was studied by analysis of the abundance of mRNAs encoding Dorsal and Cactus (Toll pathway), Relish (IMD pathway), Eiger (TNF ortholog), STAT and SOCS (Jack-STAT pathway) and Defensin and Lysozymes (LysA, LysB) (AMPs) by qPCR. DISCUSSION AND RESULTS: The Toll pathway was activated in fat body of the blood meal insects 72h after infection. However, the transcripts level of LysA and LysB were up-regulated in midgut of fasting insects. Up-regulation of the Relish was also observed in the midgut blood-feeding, 72h after infection. Furthermore, we demonstrate that fungus infection did not interfere with insect survival, but DAPI staining analysis exhibited specific morphological defects. CONCLUSIONS: In this current study, we have implicated that the Toll and IMD pathways are involved in immunity against *M. anisopliae*. We did not observe Eiger and STAT/SOCS expression significant at any time. Key Words: *Rhodnius prolixus*, immune response, *Metarhizium anisopliae* Supported by: CNPq, INCT-EM.