Reactive species production in the midgut of the Chagas' disease vector *Rhodnius prolixus*

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The Chagas' disease vector *Rhodnius prolixus* ingests large amounts of blood in a single meal, which is digested in the midgut and releasing heme, a toxic and pro-oxidant molecule. Reports have shown that regulation of reactive species (RS) production might be involved in insect immune response. Here, we investigated RS production in the digestive tract of *R. prolixus* along the blood digestion process. We observed that RS production was increased in starved insects, by using the fluorescent probe dihydroethidine. Lipid peroxide levels, nitrite and a NADPH oxidase-like activity were all increased in starved animals. Genes coding for nitric oxide synthase and for a putative NADPH oxidase (Duox type) were identified in the trace archives at NCBI (http://www.ncbi.nlm.nih.gov) of the genome of *R. prolixus* and their expression assessed by real time PCR analyses were also increased in starved insects. Finally, digestive tract-derived bacteria counts were higher in blood-fed than in starved insects, suggesting that RS production may regulate insect's gut microbiota. We hypothetise that blood meal reduces RS production in the midgut of *R. prolixus*. Conceivably, decreasing RS production may be a mechanism used by hematophagous insects to counteract the effects of a pro-oxidant diet. Keywords: oxidative stress, reactive species, microbiota, *Rhodnius*. Supported by FAPERJ, CNPq, CAPES, PRONEX, Howard Hughes Medical Institute, WHO-TDR-SSI, ICGEB.