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Trypanossoma cruzi epimastigotes (EPI) proliferate inside of the hematophagous insects that usually ingest in a single meal about 10mM heme bound to hemoglobin. Heme is a tetrapyrrole containing a central iron ion and a powerful generator of reactive oxygen species (ROS). Recently we showed that EPI acquires extracellular heme from their invertebrate vectors and the addition of heme increases drastically the parasite proliferation. In order to investigate whether their nutritional needs is heme or iron, we tested the free iron addition to the medium and we also tested the addition of deferoxamine (an iron chelator). The results show that the parasites growth didn't increase demonstrating the heme importance for them. Although heme induces the proliferation in these cells it may promote an oxidative stress. Thus, we examined the participation of heme in lipidic peroxidation using TBARS assay. We observed that the lipoperoxide formation increased accordingly heme addition. This result is supported by ROS formation analysis through flow cytometry of CM-H₂DCFDA. The fluorescent signal is proportional to heme concentration but decreases in minutes. Taken altogether, our data show that the heme molecule, but not iron ion, is fundamental for EPI proliferation and its presence promotes oxidative stress, an important event for its cell cycle. Supported by FAPERJ and PIBIC/UERJ.