Development of *Trypanosoma rangeli* in the invertebrate host *Rhodnius prolixus* depends of phosphate content during its growth

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Trypanosoma rangeli is considered harmless to humans and animals and can infect triatomine insects. During the blood meal, the triatomine insect acquired the trypomastigote forms, then *T. rangeli* differentiate into short epimastigotes, proliferate in digestive tract, moves across the intestinal barrier and reaches haemolymph, where long forms are found. Parasites complete their development in the lumen of the insect salivary glands, where metacyclogenesis takes place. Inorganic phosphate (Pi) is an important nutrient to all cellular functions. In order to evaluate the importance of Pi for the development of *T. rangeli* in its invertebrate host *Rhodnius prolixus*, and its relevance in processes such as cell proliferation, differentiation and parasite-host cell adhesion, we measured the Pi content in *R. prolixus* haemolymph, anterior midgut, posterior midgut and rectum. The result demonstrated that Pi content was higher in the anterior midgut with values of 2.33 nmol Pi x $(mg\ ptn)^{-1}$. In posterior midgut, rectum and haemolymph, Pi content decreased to 1.13; 0.21 and 0.096 nmol Pi x mg^{-1} ptn respectively. We also demonstrated that cells maintained at low-Pi medium showed arrested proliferation and inhibited cell differentiation. In addition, epimastigotes growth at low-Pi medium were not able to complete their life cycle *in vivo*. Taken together, these results suggest that Pi is a crucial nutrient required for cell division and differentiation of *T. rangeli in vivo* or *in vitro*.

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