Inorganic phosphate modulates cell proliferation and ecto-phosphatase activity of *Trypanosoma rangeli*

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Trypanosoma rangeli is a digenetic hemoflagellate widely distributed in Central and South America, being apathogenic for the vertebrate host. Ecto-phosphatases are enzymes with their catalytic site facing the external medium, and they have been detected in different microorganisms. In this study, we demonstrate that growth of *T. rangeli* is strongly dependent on the presence of inorganic phosphate (Pi) in the culture medium. The inhibition of the ectophosphatase activity by sodium orthovanadate also arrested the proliferation of *T. rangeli.* Several reports have shown that surface phosphatase activities can be modulated by the environmental phosphate content, which makes this fact relevant to study these enzymes in response to Pi starvation. We also observed that ectophosphatase activity from *T. rangeli* grown at low Pi concentration was inhibited by the increase of the pH, while the ectophosphatase activity from cells grown at high Pi concentration was not modulated by variations in pH medium. Okadaic acid inhibited the ecto-phosphatase activity from cells grown at low Pi concentration but not the ecto-phosphatase activity from cells grown at high Pi concentration. Accordingly, phosphatase activity from *T. rangeli* grown at low Pi concentration was able to hydrolyze P-serine and P-threonine at high velocity rate but not P-tyrosine. In contrast, the phosphatase activity from *T. rangeli* grown at high Pi concentration was able to hydrolyze P-serine, P-threonine and P-tyrosine at the same rate. Taken as a whole, these results support the view that ecto-phosphatase activities hydrolyzing phosphorylated compounds present in the extracellular medium of *T. rangeli* are regulated by the external Pi concentration.

Supported by CNPq, CAPES and FAPERJ.