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B - - Inorganic phosphate transport in *Giardia duodenalis*

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INTRODUCTION

Giardia duodenalis is a flagellate protozoan that infects the small intestine of vertebrates, the most common cause of epidemics diarrhea in the world. The infection begins by cysts ingestion, followed by excystation and colonization of the small intestine by trophozoites, which are responsible for the clinical manifestation of the disease. One important environmental change is availability of nutrients, as inorganic phosphate (P_i). P_i is an extremely important nutrient in the cellular metabolism and it is required for the synthesis of DNA, RNA, lipids, sugars and proteins; in addition, P_i is involved in biochemical reactions transfer of phosphoryl grouping.

OBJECTIVES

The aim of this work is characterize biochemically the P_i transport in *G.duodenalis*, investigating the kinetics characteristics of P_i transport, as time course, cell density, pH and the substrate affinity of the P_i transporter.

MATERIALS AND METHODS

It was used the trophozoite form to accomplish the quantification of P_i transport in *G.duodenalis*. The P_i transport was measured by the $^{32}P_i$ uptake: the cells were incubated at room temperature for 15 minutes in a reaction mixture containing 140 mM choline chloride, 5 mM KCl, 1.5 mM $CaCl_2$, 1 mM $MgCl_2$, 10 mM HEPES (pH 7.2), 0.1 mM KH_2PO_4 , 2.5 $\mu Ci/nmol$ $^{32}P_i$.

DISCUSSION AND RESULTS

This P_i transport is linear with time and cell density, but it isn't modulated by different pH values, suggesting that P_i transporter has no preference by P_i in the monovalent or divalent form. This phosphate transport was inhibited by SCH28080 (H^+,K^+ -ATPase inhibitor), bafilomycin A_1 (H^+ -ATPase inhibitor) and FCCP (proton ionophore) indicating that the proton gradient across the plasma membrane is important for the transporter activity.

CONCLUSION

The P_i transport in *G.duodenalis* is linear with time and the cell density but isn't modulated by pH. The P_i transporter is high affinity and is $P_i:H^+$ symporter.

Keywords: P_i , giardia, biochemically

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