**Inorganic phosphate transport in human breast cancer cells**

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INTRODUCTION: Breast cancer is one of the most incident cancers in the female population. Several genetic and environmental factors are implicated in the etiology and can generate phenotypic changes in normal tissue until the onset of breast cancer. Recently studies have shown that these cells had high levels of expression of IIb $NaP_i$-carrier (SLC34A2), suggesting that this carrier is a new cancer diagnostic marker. However, the biochemical behavior of $P_i$ transporter in that cell type remains elusive. OBJECTIVES: Characterize kinetics parameters of Pi transport and cell migration. MATERIAL AND METHODS: The inorganic phosphate transport was quantified by input $^{32}P_i$ in cells incubated for 1 h at 37 ° C in a reaction containing 116 mM NaCl or 116 mM choline chloride, 5.5 mM glucose, 5.4 mM KCl, 50 mM HEPES, 0.8 mM MgCl2 and 2.5 µCi/nmol $^{32}P_i$. RESULTS AND DISCUSSION: We determined the influence of sodium concentration, pH, metabolic inhibitors, as well as affinity for inorganic phosphate in $P_i$ transport in MDA-MB-231 cells (human breast cancer cell line) and relate $P_i$ transport with cell migration. We observed that the inorganic phosphate is dependent of sodium transport ($K_{0,5}$ value = 21.98 mM for NaCl). Furthermore, the transport is modulated by different pH values and increasing concentrations of $P_i$, with a Michaelis-Menten kinetics ($K_{0,5}$ = 0.08 mM $P_i$). Monensin, furosemide and ouabain inhibited $P_i$ transport. CONCLUSIONS: Taken together, these results showed that the uptake of $P_i$ in MDA-MB-231 cells is modulated by sodium and regulatory mechanisms of intracellular sodium gradient. Finally, we showed that the Pi uptake has influence on cell migration in metastatic process.

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