ALUMINUM INHIBITS YEAST-MYCELIUM TRANSITION AND STIMULATES P-TYPE H^+-ATPASE IN *YARROWIA LIPOLYTICA*

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Yeast has proven to be an excellent system for isolating and characterizing genes responsive to environmental stresses. *Yarrowia lipolytica* is a dimorphic fungus found in different habitats including soil. Al is a major factor which affects crop productivity in acid soils and also is a neurotoxic agent. Here we used *Y. lipolytica* to study the mechanisms of Al tolerance and toxicity. We found that Al concentrations which are inhibitory to plants (0.1-1.0 mM $AlK(SO_4)_2$) did not affect *Y.lipolytica* growth at pH 4.5 neither induced drastic changes in cell morphology. However, high Al concentrations prevent yeast-mycelium transition. Yeast-hyphae transition is a determination factor for pathogenicity of several human fungi including *Candida, Cryptococcus* and *Histoplasma* and is controlled by environmental pH in *Candida* and *Yarrowia.* To test whether fungal H^+-ATPase is a potential target for Al, total membrane vesicles were isolated from cells cultivated in the presence of 1 mM $AlK(SO_4)_2$. They exhibited stimulation of vanadate-sensitive H^+ transport by ~2-fold but no significant increase in ATPase activity. The data reveal a link between proton homeostasis, resistance towards Al and fungal dimorphism and appoint plasma membrane H^+ pump as a key factor underlying these processes.

Key words: yeast, aluminum, H^+-ATPase, dimorphism. Supported by CNPq, FAPERJ, UENF