

BIOCHEMICAL AND MORPHOLOGICAL ALTERATIONS CAUSED BY ALUMINUM IN FISSION YEAST

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Aluminum (Al) is the third most abundant element of earth's crust. The toxicity of Al is a serious factor that affects crop production in acid soils. Al also is known as a neurotoxic agent implicated in neurodegenerative diseases. In this study we used the fission yeast *Schizosaccharomyces pombe* to analyze the morphological and biochemical changes promoted by 0.5 mM AlK(SO₄)₂. Using the transmission electronic microscopy we observed that Al treatment caused a thickening of the cell wall, formation of very long cells and multiseptated cells with aberrant septum. The activity of β -1,3-glucanase in total membranes isolated from cells grown with Al was significantly less than that of untreated cells. Thus Al perturbs the final stages of cytokinesis by interfering with septum dissolution. In addition, we verified if plasma membrane H⁺-ATPase is also a target of Al. To this end, we analyzed vanadate-sensitive H⁺ transport in total membrane vesicles and found that it was stimulated by 4 times after Al treatment. We suggest that up-regulated proton pump could contribute to cell expansion by acidifying the cell wall.

Key words: aluminum, fission yeast, proton ATPase, cell wall, morphology. Supported by CNPq, FAPERJ, UENF.