

Biochemical Changes in Yeast Used in Bioremediation of Cadmium

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Pollution problems of heavy metals present serious situation with the rapid development of industry. Contamination of soils, groundwater, sediments, surface water and air with hazardous and toxic chemicals is one of the major problems facing the industrialized world today. Cadmium is notorious for its negative effects on the environment and its easy accumulation in living system. Conventional techniques, such as chemical precipitation, ion exchange and activated carbon adsorption, present difficulties in the removal of heavy metals from industrial wastewaters (concentration of metal below to 100ppm). In these conditions the use of bioremediation, that is, the use of biological organisms living or dead, might represent a viable alternative. Brazil has a big production of yeast as a by-product of the fermentation of sugar cane for the production of ethanol or, artisanal cachaça. This research used neutron activation technique and atomic adsorption spectrophotometer to determine the capacity of 10 isolated yeast of the fermentation for the withdrawal of cadmium. Two processes were used for the incorporation of the metal: bioaccumulation (use of living cells) and biosorption (use of dead cells). The results obtained were compared with the yeast strain of laboratory, *Saccharomyces cerevisiae* W303-WT. The tolerance of cadmium to concentration of 100ppm and the influence of increase of cadmium concentration on the growth of cells were evaluated. Parameters of oxidative stress such as: peroxidation of lipid, total sulfhydryl content and capacity antioxidant total of strains, were determined. These parameters were altered in presence of cadmium, proving influence of this metal in cellular metabolism.

Key words: bioremediation - cadmium - oxidative stress - *Saccharomyces cerevisiae*.