Physical and Biological Approaches of Cadmium Removal of Synthetic Effluent Using *Saccharomyces cerevisiae* Isolated from Cachaça Fermentation

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**INTRODUCTION:** The elimination of toxic heavy metals present in watery solutions has been performed with the employment of biosorbent materials coming from microbial sources, considering the capacities they have for the metallic ions uptake, especially in removing dissolved heavy metal ions (concentration are less than 100 mg/L) from wastewaters, where conventional methods such as chemical precipitation and ions exchange, may be ineffective or very expensive. 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. **MATERIAL AND METHODS:** This research used atomic absorption technique to determine the capacity of *Saccharomyces cerevisiae* strains isolated of the fermentation and laboratorial for the withdrawal of cadmium. Biosorption properties (pH, biomass concentration and metal concentration) and adsorption isotherms were determined for the removal of cadmium. Analysis of oxidative stress parameters such as carbonyl protein and total sulfhydryl assay was performed after stress with different concentration of metal. **RESULTS AND DISCUSSION:** The removal of cadmium from aqueous solution is affected by the pH, concentration of biomass and metals. It was observed by linear regressions, the Langmuir model fits better than the Freundlich, despite significant coefficients of determination. These results suggest that the cadmium adsorption on the surface of yeast cells occurring in a monolayer. The levels of oxidized proteins carbonylation were higher in the laboratory yeast when compared the fermentation yeasts. Yeasts from the cachaça fermentation presented less damage to proteins, showing to be more resistant to the effects of cadmium. The determination of total sulfhydryl residues indicated that the presence of the metal in the intracellular environment stimulate the defense mechanisms against the stress caused by metal. **CONCLUSIONS:** Theses parameters were altered in presence of cadmium, proving influence of this metal in cellular metabolism.

Word Keys: bioremediation, cadmium, *S. cerevisiae*

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