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ABSTRACT BOOK

Biosorption of heavy metals using flocculent cells of *Saccharomyces cerevisiae*

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The potential of metal concentration by certain types of biomass provides the basis for the development of a new approach to remove heavy metals when they occur at low concentration. Some types of industrial fermentation waste biomass are excellent biosorbers. Yeast cells are an inexpensive source of biomass (they are wastes from brewing industry) with ability to accumulate a broad range of heavy metals under a wide range of conditions, being a wastewater treatment alternative, where cost effectiveness is the main attraction. In this work, we report the study of the evaluation of yeasts flocculation capacity in the presence of heavy metals, as well as the optimization of metal ions accumulation conditions by the biomass. Firstly, yeast sedimentation conditions were checked and optimized. Then, sorption kinetic and equilibrium studies were performed independently for copper, nickel and zinc ions with live or killed yeast cells at 45°C. The values of Q_{max} (the maximum metal concentration biosorbed by the biomass, expressed in mmol/g dry weight biomass), calculated from Langmuir equilibrium model, showed similar values for all metals with dead cells (between 122 and 163), which were more than ten times higher than the values of Q_{max} obtained for nickel and zinc with live cells (between 8 and 12). In conclusion, dead cells retained flocculation ability and showed higher heavy metal removal, being more suitable to be used in the bioremediation process. Acknowledgment: Financial support by Foundation of Science and Technology from Portuguese Government (Project POCTI/CTA/47875/2002), with FEDER funds, is gratefully acknowledged. *Corresponding author: phone +351 22 5081650, fax +351 22 5081449, hsoares@fe.up.pt

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