Metal removal from chromium containing synthetic effluents by *Saccharomyces cerevisiae*

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ABSTRACT

Yeast *Saccharomyces cerevisiae* (*S. cerevisiae*), was used to remove metal ions from four complex effluents with the following composition: Cr(VI)-Fe(III), Cr(VI)-Fe(III)-Ni(II), Cr(VI)-Fe(III)-Ni(II)-Zn(II), and Cr(VI)-Fe(III)-Ni(II)-Zn(II)-Cu(II). Biosorbent was characterized using scanning electron microscopy and Fourier-transform infrared spectroscopy. The effect of pH, chromium concentration, contact time, and temperature on metal biosorption was investigated. Langmuir, Freundlich, Temkin, and Dubinin–Radushkevich equilibrium models have been used to describe the experimental sorption equilibrium data, while the kinetics of the sorption was explained by pseudo-first-order, pseudo-second-order, Elovich, and the intra-particle diffusion models. The maximum amount of chromium sorbed by biomass has been calculated from the Langmuir isotherm. To estimate biosorption nature $\Delta G°$, $\Delta H°$ and $\Delta S°$ values were calculated. *S. cerevisiae* can be successfully applied for complex wastewater treatment.

Keywords: Saccharomyces cerevisiae; Chromium; Iron; Nickel; Zinc; Copper; Biosorption

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