

Lead biosorption from aqueous solution by filamentous fungus *Mucor indicus*

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ABSTRACT

The biomass of *Mucor indicus* was used for removal of lead ions from aqueous solution. The biomass was used as both untreated and treated form. Both types were successful in removal of lead ions. The treatment was performed using 0.5 M sodium hydroxide added to the fungi in an autoclave. The biomass was dried before biosorption experiments. The effect of drying temperature on biosorption capacity was investigated by drying the untreated biomass at different temperatures of ambient, 0 °C, and 50 °C. The best drying temperature in which the biosorption capacity was the highest was 50°C. The effect of pH in the range of 3.0-5.0 was studied. Biosorption of untreated biomass was independent of pH while for treated biomass, the adsorption capacity increased by increasing the pH. At low pH, biosorption capacity of untreated biomass is higher than that of treated one while at higher pH, the biosorption capacity of treated biomass is higher. The kinetic of biosorption was also investigated. The time to reach the equilibrium for untreated biomass is less than that for treated one. In order to describe kinetic data, pseudo-first order, pseudo-second order, intra-particle diffusion, and Elovich models were used. Ho's pseudo-second order model was the best one for fitting the kinetic data.

Keywords: Biomass, Biosorption, Lead, *Mucor indicus*, Water treatment

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