



Isotherm and thermodynamic studies of the biosorption of lead, cadmium and copper from aqueous solutions by rice bran

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ABSTRACT

The biosorption of lead [Pb(II)], cadmium [Cd(II)] and copper [Cu(II)] onto rice bran, a residue of rice processing industry, in a batch experiment has been studied. Equilibrium isotherms and thermodynamic parameters have been evaluated. Equilibrium data agreed well with Langmuir isotherm model. Gibbs free energy was spontaneous for all interactions, and the biosorption process exhibited exothermic enthalpy values. Although rice bran presented a quite high metals sorption ability for Cd(II) and Cu(II), it seemed to be especially suitable for removal of Pb(II). Rice bran was shown to be a promising biosorbent for Pb(II), Cd(II) and Cu(II) removal from aqueous solutions.

Keywords: Rice bran; Heavy metals; Equilibrium; Biosorption; Thermodynamic; Wastewater treatment

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