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# Cadmium and Mercury Uptake by Immobilized Pleurotus sapidus

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**Abstract:** Pleurotus sapidus} basidiospores immobilized onto Ca-alginate beads were used for the removal of cadmium and mercury ions from aqueous solutions. The biosorption of Cd(II) and Hg(II) ions on the alginate beads and both immobilized live and heat inactivated fungal mycelia of Pleurotus sapidus} was studied from aqueous solutions in the concentration range of 30-500 mg $L^{-1}$. The biosorption of Cd(II) and Hg(II) ions by the alginate and both live and heat inactivated immobilized preparations increased as the initial concentration of the ions increased in the medium. Maximum biosorption capacity for immobilized live and heat inactivated fungal mycelia of Pleurotus sapidus} was found to be 96.57 mg $g^{-1}$ (0.86 mmol $g^{-1}$) and 127.12 mg $g^{-1}$ (1.13 mmol $g^{-1}$) for Cd(II) and 207.89 mg $g^{-1}$ (1.04 mmol $g^{-1}$) and 287.43 mg $g^{-1}$ (1.43 mmol $g^{-1}$) for Hg(II), respectively. The electronegativities and standard electrode potentials of the divalent ions of Group II elements show a definite trend with sorption capacity. Biosorption equilibria were established in about 1 h and were very well described by Langmuir isotherms. The temperature change between 15 and 45°C did not affect the biosorption capacity. The effect of pH was also investigated and the maximum uptake of metal ions on the alginate and both live and inactivated immobilized fungal mycelia were observed between pH 3.0 and 7.0. The alginate-fungus beads were regenerated using 10 mM HCl, with up to 97% recovery, the biosorbents were reused in three biosorption-desorption cycles without any considerable loss in the biosorption capacity.

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