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Biosorption properties of cadmium(II) and zinc(II) from aqueous solution by tea fungus

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ABSTRACT

The study evaluated the sorption of Cd(II) or Zn(II) ions from aqueous solution by a new biosorbent, dead tea fungus. The rate and extent of accumulation were affected by pH, initial metal ion concentration and contact time. The maximum removal of Cd(II) or Zn(II) were found to be 32 mg L^{-1} at pH 9 and 39 mg L^{-1} at pH 10, respectively. The equilibrium process was described well by the Langmuir isotherm model with maximum sorption capacities of 35 and 40 mg g^{-1} of Cd(II) and Zn(II) on tea fungus, respectively, which in agreement with the experimental data. The removal process was rapid and equilibrium was established in less than 30 min. Good correlation coefficients were obtained when the pseudo-second-order kinetic model of this process was assumed. Dead tea fungus was found to be an efficient biosorbent of metal ions from the effluent of electroplating industry.

Keywords: Tea fungus; Cadmium; Zinc; Biosorption isotherm; Kinetic; Electroplating wastewater

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