BATCH AND CONTINUOUS PACKED COLUMN STUDIES OF CADMIUM BIOSORPTION BY HYDRILLA VERTICILLATA BIOMASS

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The removal of heavy metal ions by the nonliving biomass of aquatic macrophytes was studied. We investigated Cd biosorption by dry Hydrilla verticillata biomass. Data obtained in batch experiments indicate that H. verticillata is an excellent biosorbent for Cd. Cd was rapidly adsorbed and such adsorption reached equilibrium within 20 min. The initial pH of the solution affected Cd sorption efficiency. Results obtained from the other batch experiments conformed well to those obtained using the Langmuir model. The maximum adsorption capacity $q_{\text{max}}$ for H. verticillata was 15.0 mg/g for Cd. The breakthrough curve from the continuous flow studies shows that H. verticillata in the fixed-bed column is capable of decreasing Cd concentration from 10 to a value below the detection limit of 0.02 mg/l. The presence of Zn ions affected Cd biosorption. It can be concluded that H. verticillata is a good biosorbent for treating wastewater with a low concentration of Cd contaminants.

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