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The aqueous adsorption of copper and cadmium ions onto sheep manure

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Abstract: Dried sheep manure (SM) has been found to be an effective adsorbent for the removal of copper and cadmium ions from dilute aqueous solutions. Batch adsorption experiments using different concentrations of copper and cadmium ions (2.0–20.0 mg/ml) were carried out for different periods of agitation. Adsorption uptakes were found to increase with an increase in the initial metal ion concentration, SM concentration and solution pH for both copper and cadmium ions. Maximum uptakes for 100 ppm Cu²⁺ and 100 ppm Cd²⁺ ions were found to be 17.8 mg/g and 10.8 mg/g, respectively. The equilibrium uptakes for both copper and cadmium ions were attained within the first 10 min. The Langmuir isotherm model failed to represent the adsorption of both copper and cadmium ions on SM. In contrast, the Freundlich isotherm model fitted the experimental data for both copper and cadmium ions very well. The presence of EDTA in the solution decreased the equilibrium uptake of both copper and cadmium ions significantly.