عنوان مقاله:

Tea Wastes Efficiency on Removal of Cd(II) From Aqueous Solutions

محل انتشار:

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خلاصه مقاله:

Background & Aims of the Study: Heavy metals, such as cadmium (Cd(II)), enter into theenvironment and cause health hazard due to their toxicity and bioaccumulation in thehuman body. Therefore, they must be removed from water. In recent years, much attentionhas been focused on the use of material residues as low-cost adsorbents for the removal ofheavy metal ions from aqueous solutions. The aim of this paper is the assessment of teawastes efficiency on removal of Cd(II) from aqueous solutions.Materials and Methods: The present study was conducted in experimental scale. In thispaper, tea wastes were prepared and used as an adsorbent for the removal of Cd(II) ionsfrom water. In batch tests, the effect of parameters like pH (1.0-8.0), initial metalconcentration (100-800 mg L-1), contact time (15-120 min), adsorbent dose (1.0-5.0 g) andtemperature (25-55 °C) on the adsorption process was studied.Results: The results demonstrated that the maximum percentage of Cd(II) adsorption wasfound at pH 6.0 and the equilibrium was achieved after 60 min with 3.0 g tea wastes. Theexperimental isotherm data were analyzed, using the Langmuir and Freundlich models andit was found that the removal process followed the Langmuir isotherm. In addition, theadsorption kinetics followed the pseudo-second-order kinetic model. The maximumadsorption capacity calculated by Langmuir fitting was 71.4 mg g−1.Conclusion: The results suggest that tea wastes could be employed as an effective materialfor the removal of Cd(II) ions from aqueous solutions and the maximum adsorptioncapacity was found to be 71.4 mg g−1.

کلمات کلیدی:

Heavy Metal, Aquaticecosystem, Cadmium (II),Kinetic, Adsorption, Iran

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