Desalination and Water Treatment
www.deswater.com

doi:10.5004/dwt.2017.20399

73 (2017) 308–315
April

Utilization of eco-friendly gelatin for Cr(VI) adsorption

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Received 21 June 2016; Accepted 30 November 2016

ABSTRACT

Gelatin is a biodegradable, biocompatible, non-toxic, non-carcinogenetic and natural polymeric derivative of proteins and peptides. In this article, we applied gelatin as an eco-friendly biosorbent assay for removal of the Cr(VI). The behavior and cogency of gelatin as a biosorbent for interaction with Cr(VI) in aqueous solution was presented. The excellent adsorption properties of gelatin and modified gelatin were confirmed by measuring the capacity of Cr(VI). The batch adsorption model was applied as a function of time, adsorbent dosage, and pH to examine biosorbent's activity. Biosorbents showed an excellent adsorption capacity at pH 3.0. The maximum adsorption capacities was found to be 62.50 and 43.86 mg/g of modified and raw gelatin for Cr(VI) ion respectively. The applicability of Freundlich and Langmuir adsorption models were investigated for Cr(VI)-biosorbent interaction. Equilibrium data followed Langmuir adsorption isotherm excellently.

Keywords: Hexavalent chromium; Gelatin; Equilibrium; Adsorption; Modification

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Presented at the EDS conference on Desalination for the Environment: Clean Water and Energy, Rome, Italy, 22–26 May 2016.