Abstract

Dead streptomyces rimosus was found to be an effective biosorbent for the removal of chromium from industrial tanning effluents. A sorption level of 65 mg/g was observed at pH 4.8 while the precipitation effect augmented this value at a higher pH range. Chromium desorption increased with decreasing desorption agents pH (including HCl and H2SO4) to a maximum value of 95% at approximately zero pH. The biosorption data of trivalent chromium by streptomyces rimosus has been used for kinetic studies based on fractional power, Elovich, pseudo-first order and pseudo-second order rate expressions. The time-dependent Cr (III) biosorption data were well-described by a pseudo-second-order kinetic model. The intraparticle diffusion is not the rate-limiting step for the whole reaction. It was found that the biosorption equilibrium data fit well with the Langmuir model