

Reduction and bioaccumulation of hexavalent chromium by *Bacillus megaterium* from a tannery's activated sludge

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ARTICLE INFO

Article History :

Received : 16/03/2017

Accepted : 20/03/2018

Key Words:

Bacillus megaterium; hexavalent chromium; Chromate-reductase; bioaccumulation

ABSTRACT/RESUME

Abstract: Hexavalent Cr(VI) is used in leather industry and when left untreated, it exhibits its known carcinogenic and mutagenic effect toward many organisms including humans. Several bacteria possess the capability to reduce Cr(VI) to a less dangerous form: the trivalent Cr(III), others are able to accumulate it or to adsorb it, so microbial bioremediation gives immense opportunities for the development of technologies to detoxify Cr(VI)-contaminated soils or water as an alternative to the existing physicochemical technologies.

This work deals with the evaluation of the ability of *Bacillus megaterium* A3-1, isolated from local tannery activated sludge, to resist high concentrations of Cr(VI), by determining the MIC, on the one hand, and secondly by investigating the involved Cr(VI) removal mechanisms, namely enzymatic reduction and bioaccumulation. Our results indicated that, *B. megaterium* A3-1 exhibited an MIC for Cr(VI) of 80 mg/L, and could reduce chromate to 100 % when present at a concentration of 30 mg/L after 72 h at 37 °C, furthermore, the rate of Cr(VI) accumulation was 27.50 mg/g biomass dry weight at the same initial concentration.
