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BIOREMEDIATION OF CHROMIUM(VI) FROM AQUEOUS SOLUTION BY *Aspergillus niger*: OPTIMIZATION OF PROCESS PARAMETERS

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Abstract

Hexavalent chromium, Cr(VI), is one of the toxic heavy metals released into the environment by a number of industries, so it is crucial to limit its further discharge into the environment. In the present study, the aerobic reduction of Cr(VI) to less mobile and less toxic Cr(III) by *Aspergillus niger* was investigated. The potential of this fungus strain as biocatalyst was capable of resisting Cr(VI) up to 300 mg/L. The effects of the process parameters such as solution pH, initial Cr(VI) concentration on bioaccumulation and bioreduction of Cr(VI), total sugar consumption, cell dry weight at 218 h were appraised. The maximum for chromium (VI) removal, cell dry weight, and total sugar consumption was 100%, 0.81 g/L, and 78.8%, respectively, at 25° C and at 5 mg/L initial Cr(VI) concentration. Furthermore, when optimization of the solution pH was carried out at 25 mg/L initial Cr(VI) concentration, the pH of 3.5 was obtained with values of 84.7%, 0.46 g/L and 81.6% for Cr(VI) removal, cell dry weight production and total sugar consumption, respectively.

Key words: *Aspergillus niger*, bioremediation, hexavalent chromium, biosorption

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