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## MECHANISM OF Cr(VI) BIOACCUMULATION BY *Phanerochaete chrysosporium*

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### Abstract

The aim of the present study was to investigate the mechanism of Cr(VI) bioaccumulation by living and active *Phanerochaete chrysosporium*. Fungal growth was inhibited beyond 10 mg L<sup>-1</sup> Cr(VI) concentration thereby reducing the chromium bioaccumulation capacity. The optimum pH was found to be 6 for the growth and bioaccumulation of Cr(VI) by *P. chrysosporium*. Bioaccumulation efficiency decreased from 81.47% to 23.82% when Cr(VI) concentration was increased from 10 to 40 mg L<sup>-1</sup>. A Fourier transform infrared spectra was employed to elucidate the functional groups involved in the bioaccumulation of Cr(VI) by *P. chrysosporium*. The changes in the Cr(VI) loaded fungal FTIR indicated the chemical interaction between the functional groups and the metal ions. SEM and TEM analysis were performed to study the surface binding and intracellular accumulation of Cr by the white rot fungi. Clear morphological changes were observed in the SEM images of Cr(VI) accumulated biomass. The EDAX analysis of the SEM and TEM clearly indicated the presence of Cr in the cells. A two step mechanism was proposed for the Cr(VI) bioaccumulation.

*Key words:* bioaccumulation, chromium, mechanism, white rot fungus, wastewater treatment

*Received:* September, 2011; *Revised final:* May, 2012; *Accepted:* May, 2012

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