Bioreduction of Cr(VI) using live and immobilized *Phanerochaete chrysosporium*

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**ABSTRACT**

The aim of the study was to investigate the bioreduction capacity of the live and immobilized *P. chrysosporium*. The basidiospores were immobilized in different matrices viz., Ca alginate, acryl amide and agar. Of the various dosages of inoculums studied for each matrix 10% (v/v) Ca alginate, acryl amide, agar was found to be optimum for the growth and reduction of Cr(VI). The effects of the physical parameters like glucose concentration, pH, and temperature on bioreduction were investigated. A maximum of 98.3% of bioreduction of Cr(VI) was obtained with an initial Cr(VI) concentration of 10 mg L\(^{-1}\) at pH 5 and temperature of 25°C. The optimum concentration of glucose for the bioreduction of Cr(VI) was 20 g L\(^{-1}\). The best suitable matrix was optimized to be Ca alginate. An enzyme-based model was also studied.

**Keywords:** Bioreduction; Cr(VI); White rot fungi; Immobilization; Ca alginate; Acryl amide; Agar