Biodegradation of phenol with chromium (VI) reduction by the *Pseudomonas* sp. strain JF122

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**ABSTRACT**

A bacterium capable of degrading phenol coupled with reducing chromium (VI) was isolated and was identified as being *Pseudomonas* sp. JF122 using 16S rRNA sequence analysis. The bacterium was able to simultaneously remove 600 mg/L phenol and 2.0 mg/L Cr(VI) within 72 h. Results from a study of the phenol biodegradation coupled with chromium (VI) reduction suggested that the electron donors involved in the reduction of Cr(VI) were intermediate phenol degradation products. Phenol concentrations higher than 800 mg/L inhibited both phenol degradation and Cr(VI) reduction. However, at a phenol concentration of 200 mg/L, not enough electron donors were produced to fully reduce the initial Cr(VI) concentration (1.2 mg/L). Cr(VI) concentrations below 2.0 mg/L enhanced both phenol degradation and Cr(VI) reduction. Cr(VI) was reduced to soluble Cr(III), which remained in the supernatant solution. This bacterium seems to have potential for the efficient and simultaneous treatment of organic pollutants and heavy metals in complex wastewaters.

**Keywords:** Phenol; Biodegradation; Chromium (VI) reduction; *Pseudomonas* sp. JF122; Bioremediation; Chromium

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