Biodegradation of p-cresol by *Pseudomonas* spp.

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**ABSTRACT**

Phenols are toxic to several biochemical reactions. However, biological transformation of phenols to nontoxic entities exists in specialized microbes, owing to enzymatic potential involving enzymes of aromatic catabolic pathways. In this study, a series of experiments were performed to examine the effects of the mineral medium composition and the pH on p-cresol removal. In this purpose, p-cresol biodegradation was carried out in a batch reactor containing mixed bacteria; the temperature (30°C), the stirring velocity (200 rpm), the KH₂PO₄ concentration (1.5 g/L), the K₂HPO₄ concentration (2 g/L), and p-cresol concentration (100 mg/L) were kept constants. The initial pH was varied in the range 5–9 and the mineral components were tested in the following concentration ranges: 0–2 g/L for Nitrogen sources (NH₄Cl, KNO₃, and NH₄NO₃), 0–0.5 g/L for NaCl, and 0–0.2 g/L for MgSO₄. Their effects on p-cresol biodegradation and specific growth rate were examined. The shorter biodegradation time of p-cresol was 30.5 h for NH₄Cl, NaCl, and MgSO₄ concentrations of 1, 0.3, and 0.1 g/L, respectively. Maximum specific growth rate (0.34 h⁻¹) and total p-cresol removal were recorded for an optimal pH value of 8.

**Keywords:** Biodegradation; p-Cresol; *Pseudomonas* spp.; Kinetics

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