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## EFFICIENT BIOTRANSFORMATION OF PHENOL AND ITS DERIVATIVES USING *Streptococcus epidermis* BY CATECHOL 2,3-DIOXYGENASE METABOLISM

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### Abstract

The present study explores the potential of *Streptococcus epidermis*, an indigenous isolate for biotransformation of phenol and phenol derivatives. Different phenolic derivatives such as 4-methylphenol, methylbenzene, 2,4-dichlorophenol, 2,6-dichlorophenol and 4-nitrophenol were attempted for biotransformation study. The results have shown that 4-nitrophenol was best transformed. The effect of degradation parameters like pH and temperature was studied, showing the value of 7.0 as optimum pH, while the optimal temperature for phenol transformation was 32°C. The metabolic pathway for phenol and phenol derivatives degradation was assigned to *meta*- cleavage activity based on 2-hydroxy muconic semialdehyde (2-HMSA) determination and catechol 2,3-dioxygenase enzyme assay. Consequently, the isolate *Streptococcus epidermis* was well documented for phenol and phenolic derivative biotransformation.

**Key words:** 2-hydroxy muconic semialdehyde, biodegradation, enzyme assay, *meta* pathway

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