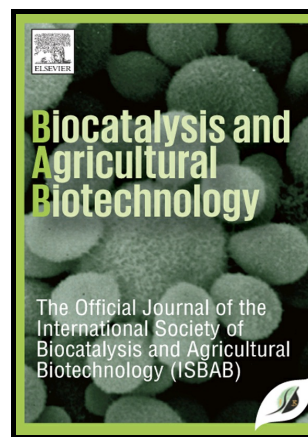


## Author's Accepted Manuscript

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Dharmender Kumar



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**Biodegradation of  $\gamma$ -Hexachlorocyclohexane by *Burkholderia* sp. IPL04****Dharmender Kumar\***

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Deenbandhu Chhotu Ram University of Science and Technology

Murthal-131039 Sonapat Haryana India

\* **Corresponding Author's Email:** dkbiology@gmail.com**ABSTRACT**

The lindane ( $\gamma$ -Hexachlorocyclohexane, HCH) is recalcitrant man-made pesticide and due to its past agriculture use and had toxicity to human, other living organisms and its metabolites detected in the environment. The microorganisms can transform and/ degrade it by the mechanism of transformation and biodegradation, respectively. In this study, the degrading bacteria was isolated from the soil sample taken from contaminated site by the enrichment culture method. The finally selected isolate IPL04 was characterized for  $\gamma$ -HCH degradation by supplementation of mineral salt medium with  $\gamma$ -HCH (10 to 100 mg/L). It should degrade 98 of  $\gamma$ -HCH in 8 days. The isolate IPL04 was characterized by biochemical characterization, microscopic examination and 16S rRNA based sequencing. This isolate was identified as *Burkholderia* sp. and its 16S rRNA sequence was submitted to NCBI GenBank with accession number MF120286. The antibiotic sensitivity tests were also conducted. Effect of pH, temperature and incubation time was standardized during the degradation. The intermediates produced during the degradation by *Burkholderia* sp strain IPL04 were identified by FTIR and GC-MS analysis. The intermediates of biodegradation pathway were detected as *c*-pentachlorocyclohexane (*c*-PCCH), Trichloro-2,5-cyclohexadiene-1-ol (TCCH-1-ol), 2,5-dichlorohydroquinone (DCHQ), 1,2-benzenedicarboxylic acid. The metabolic pathway for the

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