

Bioremediation of Phenanthrene by Monocultures and Mixed Culture Bacteria Isolated from Contaminated Soil

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Abstract : Three different bacteria capable of degrading phenanthrene were isolated from hydrocarbon contaminated site. In this study, the phenanthrene-degrading activity by defined monoculture was determined and mixed culture was identified as *Acinetobacter* sp. P3d, *Bacillus* sp. P4a and *Pseudomonas* sp. P6. All bacteria were able to grow in a minimal salt medium saturated with phenanthrene as the sole source of carbon and energy. Phenanthrene degradation efficiencies by different combinations (consortia) of these bacteria were investigated and their phenanthrene degradation was evaluated by gas chromatography. Among the monocultures, *Pseudomonas* sp. P6 exhibited 58.71% activity compared to *Acinetobacter* sp. P3d and *Bacillus* sp. P4a which were 56.97% and 53.05%, respectively after 28 days of cultivation. All consortia showed high phenanthrene elimination which were 95.64, 79.37, 87.19, 79.21% for Consortia A, B, C and D, respectively. The results indicate that all of the bacteria isolated may effectively degrade target chemical and have a promising application in bioremediation of hydrocarbon contaminated soil purposes.

Keywords : phenanthrene, consortia, *acinetobacter* sp. P3d, *bacillus* sp. P4a, *pseudomonas* sp. P6

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