Molecular characterization of a consortium enriched from an oilfield that degrades phenanthrene

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Abstract:

Abstract Characterization of functional and phylogenetic genes was carried out on a bacterial consortium, enriched from a water treatment system of an oilfield, that could use phenanthrene as the sole carbon source. The mixed culture degraded 130 mg phenanthrene l⁻¹ in 16 days, which is significantly faster than previously reported pure cultures. The existence of catabolic genes (nahAc, C23O) in the mixed culture was quantitated by most probable number PCR. The plasmid encoding phenanthrene catabolic genes increased relative to the chromosome genes. Heterogeneous bacteria were present according to both PCR denaturing gradient gel electrophoresis and cloning methods, suggesting the possible existence of cooperation between different biochemical PAH-transforming pathways.

Keywords:

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