Isolation, fingerprinting and genetic identification of indigenous PAHs degrading bacteria from oil-polluted soils

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Abstract:

Abstract In the present study, thirty five bacterial isolates were obtained from hydrocarbon-contaminated soil samples using an enrichment method. These isolates were tested to grow on mineral salt medium containing anthracene or phenanthrene as sole carbon source. Only five isolates showed the ability to degrade these compounds. RAPD-PCR fingerprinting was carried out for the five isolates, and the DNA patterns revealed that there was no similarity among the examined bacteria whenever the RFLP using four restriction enzymes HaeIII, Msp1, Hinf1 and Taq1 failed to differentiate among them. Five bacterial isolates were grown in high concentration of anthracene and phenanthrene (4% w/v). Two bacterial isolates were selected due to their high ability to grow in the presence of high concentrations of anthracene and phenanthrene. The isolates were identified as Bacillus flexus and Ochrobactrum anthropi, based on DNA sequencing of amplified 16S rRNA gene and phylogenetic analysis. Finally, the ability of these bacterial strains to tolerate and remove different PAHs looked promising for application in bioremediation technologies. PMID: 26930863

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