

Isolation of the bacteria from contaminated soils and estimation of those efficiency for degradation of phenanthrene

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Abstract:

Polycyclic aromatic hydrocarbons (PAHs) are organic pollutants, which released into the environment mainly due to the anthropogenic activities and have known negative effects on plants and animals. These compounds have a long half-life in the nature and some of them have carcinogenic potential. Phenanthrene is the widespread PAHs that frequently found in contaminated areas. Some bacteria can degrade PAHs and reduce their negative environmental impacts. Therefore, in this research the efficiency of bacterial strains isolated from PAHs contaminated soils for estimation of phenanthrene degradation potential has been studied. Phenanthrene degrading bacterial strains were isolated from PAHs contaminated agricultural soils around Tabriz and identified using molecular methods. The isolated strains were cultivated on specific culture media containing 2% phenanthrene and remaining phenanthrene concentration was measured using a gas-chromatograph after 24 h. Five bacterial strains with phenanthrene degradation potential were isolated from contaminated soil. The degradation efficiency of three strains was 100 %. In general, all of the isolated bacterial strains from contaminated soil can degrade phenanthrene but the strains efficiency was different.