**Original Paper**

# Degradation of polycyclic hydrocarbones anthracene by using *Pseudomonas aeruginusa*

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## Abstract

**Background and Objective:** Polycyclic Aromatic Hydrocarbons (PAHs) are the most important organic pollutants that causing multiple side effects including carcinogenic, mutagenic and toxicity. Among the aromatic compounds degrading bacteria, *pseudomonas* produce board spectrum of degrading enzymes and are used, as biological tools, for decreasing of PAHs. This study was done to evaluate the degradation of polycyclic hydrocarbones anthracene by using *Pseudomonas aeruginusa*.

**Methods:** In this descriptive – analytic study, sampling was collected from river estuary sediment and had cultured in Minimal Salt Medium (MSM). *Pseudomonas aeruginosa* was one of the isolated bacteria from river sediment which identified by molecular technique. In next step, influence of pH (6.5 and 7.5) temperature (25 and 35°C) and concentration of anthracene (150 and 200 ppm) were surveyed on anthracene biodegradation and bacterial growth during zero, 24 and 48 hours by HPLC and spectrophotometry method respectively.

**Results:** The results showed that the optimized condition for biodegradation included pH=7.5, 35°C and 150 ppm of anthracene. Bacterial degradation of anthracene was increased with prolong of incubation time. Biodegradation efficiency of anthracene in the presence of *pseudomonas* was 50% within 2 days, which indicates the ability of the bacteria for the enzymes production.

**Conclusion:** High growth potential of *pseudomonas* in unsuitable areas and due to the production of degrading enzymes, it can be used as indicator bacteria used to remove anthracene.

**Keywords:** Polycyclic aromatic hydrocarbons, Anthracene, *Pseudomonas aeruginosa*

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