

# Degradation of Spiked Pyrene and Non-pyrene Hydrocarbons in Soil Microcosms by *Pseudomonas* Species Isolated From Petroleum Polluted Soils

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## Abstract

The abilities of three *Pseudomonas* sp. strain LP1, *Pseudomonas aeruginosa* LP5 and *P. aeruginosa* LP6 to survive and enhance the degradation of pyrene and non-pyrene hydrocarbons in soil were tested in field-moist microcosms. All three organisms were able to survive and maintain high densities  $> \times 10^7$  in soil. In sterilized soils inoculated with bacterial isolates, 37.34%, 50.30%, and 42.21% were degraded by LP1, LP5, and LP6, respectively. The rates of pyrene degradation in soil microcosms were 0.046, 0.041, and 0.061 mg kg<sup>-1</sup> h<sup>-1</sup> for LP1, LP5, and LP6, respectively. A mixture of the three isolated degraded 7.73% was degraded in sterilized soil and 87.65% in native unsterilized soil (NS). The isolates also degraded non-pyrene hydrocarbon in the soils by more than 80%. The potentials these *pseudomonas* isolates for use as seed for bioremediation was successfully demonstrated.

**Keywords:** bioaugmentation, biodegradation, microcosm, *Pseudomonas*, pyrene

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