

Identification of Pyrene Degrading *Bacillus cereus* from Oil Contaminated Soil

Tahmineh Saadati*¹; Mohamad Roayaei²; Arash Moradzadegan²; Ghasemali Mohebali³

1-Department of Biology, Faculty of Science, University of Chamran, Ahvaz, Iran

2- Department of Chemistry, Faculty of Chemistry, University of Chamran, Ahvaz, Iran

3-Oil Industry Research Center, Biotechnology Research Center, Tehran, Iran

tahmineh.saadati@gmail.com

Background & Objectives: Of the principle challenges and matter of great concern that the environment is facing is the remediation of highly oil contaminated sites. Pyrene with 4-ring aromatic as indicator of high molecular weight aromatic hydrocarbons investigated in this study. This substance is a member of 16 PAHs that US Environmental Protection Agency designated as priority pollutant. Biodegradation as a non-destructive, cost and treatment-effective clean-up technology is a promising tool to remove PAH from contaminated soils. Isolation and characterization of microorganisms which participate in the biodegradation has great significance for environmental and applied microbiology. The aim of this study was to identification of bacteria with the catabolic potential to degrade the pyrene.

Methods: Pyrene-degrading bacterium and biodegradation potency of this isolate investigated by using HPLC system. Isolate was identified by classical tests (Gram staining, oxidase and catalase test and ...). Molecular identification was carried out by PCR technique and used general eubacteria specific primers for amplification of 16s rRNA gene. DNA was extracted using phenol-chloroform procedure.

Results: In HPLC assay, this bacterium was shown the best yield in degradation of pyrene, so it was selected for identification. PCR product indicated sharp band in 1500 bp. Bacterium was identified by biochemical test results, sequencing and BLAST-NCBI, as *Bacillus cereus*.

Conclusion: *Bacillus cereus* with high potential for pyrene degradation may be could use as appropriate option for remediation of PAH contaminated soil.

Keywords: Identification; *Bacillus cereus*; Pyrene; HPLC