

Molecular Identification and Characterization of Crude Oil Degrading Bacteria Isolated from Engine Oil Contaminated Soil

Authors : Abubakar Aisami, Ahmad Deedat

Abstract : Soil contamination by crude oil and other hydrocarbons poses significant environmental challenges due to its adverse effects on soil fertility and ecosystem health. Bioremediation, employing indigenous microorganisms, offers a promising and eco-friendly approach to mitigate such contamination. In this study, a bacteria from oil engine oil contaminated soil was isolated and characterized for crude oil degrading. Molecular identification of the isolated bacterial strains was conducted by 16S rRNA gene sequencing and phylogeny. Cultural conditions such as pH, temperature, crude oil concentration and salinity were tested in a mineral salt media containing crude oil as the only carbon source. The isolate was identified as *Enterobacter* sp. Strain Deedat01 and was deposited at NCBI gene bank with accession number OR026987. The optimal conditions for crude oil degradation were determined to be pH 8, temperature of 40°C, crude oil concentration of 9%, and salinity of 8%. Under these conditions, the isolated bacteria exhibited enhanced crude oil degradation efficiency. This study provides valuable insights into optimizing environmental conditions for the molecular identification and characterization of indigenous crude oil degrading bacteria isolated from engine oil contaminated soil.

Keywords : crude oil degradation, 16S rRNA, contamination, enterobacter sp, engine oil

Conference Title : ICB 2025 : International Conference on Bioremediation and Biodegradation

Conference Location : Istanbul, Türkiye

Conference Dates : May 01-02, 2025