

Isolation and characterisation of kerosene degrading bacteria from contaminated water

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The Kerosene/Jet Fuel category covers the kerosene range refinery streams, commonly referred by the generic term “kerosene”. Accidental releases of petroleum products are of particular concern in the environment and this has led to a concerted effort in studying the viability of using oil-degrading microorganisms for bioremediation. The intention of this study was to isolate efficient kerosene degrading bacteria from water sample, characterize, and optimize the parameters of degradation. The 28 isolates obtained were further screened to measure their ability to grow on kerosene medium. Ten isolates thus selected were subjected to secondary screening and four of them were selected and named K1, K2, K3, and K4. These four isolates then characterized biochemically using an automated substrate utilization analyzer. Identity was further confirmed molecularly by 16s rDNA sequencing and were identified as K1 - *Pseudomonas aeruginosa* (JN540024), K2- *Bacillus cereus* (JN 600441), K3 - *Sphingomonas paucimobilis* (JN540025), and K4- *Bacillus mycoides* (JN600440). Frequent monitoring of CO₂ evolution throughout the experiment was used as a proxy for kerosene degradation. The efficiency of kerosene degradation was found to be influenced by pH of the medium, temperature, nutrient source such as nitrogen. High Performance Liquid Chromatography (HPLC) analysis was used to measure the rate of degradation. Further Gas chromatographic (GC) analysis confirmed this and metabolites were identified on mass spectrum. The study confirmed that the microbe mediated processes of mineralization remove kerosene hydrocarbons with reasonable efficiency and can be recommended for developing in situ remediation strategies.

Biography

Jisha M.S has completed her Ph.D. at the age of 28 years from Indian Agricultural Research institute, New Delhi. She is working as Associate Professor (Microbiology) in the School of Biosciences, M.G. University, Kottayam, Kerala. She has published more than 20 papers in reputed journals and more than 30 paper presentations in International and National seminars. She has produced five Ph.Ds and 17 M.Phil and M.Sc. dissertations.

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