

Characterisation of hydrocarbon degrading *bacteria* *Luteimonas terricola* isolated from oil spilled seawater

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ABSTRACT

Introduction: Increased practice of automobiles and industrialization rapidly increased the environment exposure to toxic substances. Three different seawater samples were collected from harbor area (Tuticorin, India) for assessment of hydrocarbon degrading bacteria in oil spilled seawater samples. The objective of the present study was mainly focused on effective detection of the hydrocarbon degrading bacteria from oil spilled seawater sample. **Materials and methods:** The collected samples were screened for identifying and isolating the hydrocarbon degrading activity. Various methods such as blue-agar plate method, haemolytic assay, drop-collapse assay, oil spreading assay, microplate assay, penetration assay, stable emulsion index and BATH assay were performed to identify the ability of isolates in degrading hydrocarbons present in oil spilled seawater samples. **Results and conclusion:** Out of ten isolates used for the study, five strains exhibited hydrocarbon degrading activity. Among them, the strain *Luteimonas terricola* produced higher zone size in zobell marine agar medium. In GC-MS studies, the selected *Luteimonas terricola* isolate showed 100% disappearance of alkanes. Blue agar plate shows that the dark halo around the colonies indicated bio-surface active agents (BSs) production. Hemolytic assay produces a green zone around the colony (Beta hemolysis). Drop-collapse assay showed the drop collapse clearly. Oil spreading assay exhibited clear zone by displaying their ability to displace the oil thus indicating the presence of BSs. Micro plate assay indicates the presence of BSs qualitatively. Penetration assay revealed that the upper phase of the supernatant changing from red to cloudy white within 15mins. Colour change of *Luteimonas terricola* strain in Bushnell-Haas observed at 24 hrs, 48 hrs and 168 hrs at 37° C has effectively degraded the hydrocarbon. Thus, the strain *Luteimonas terricola* has been shown to exhibit potent hydrocarbon degrading activity and produced bio surface active agents.