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Characterization of furnace oil bioremediation potential of hydrocarbonoclastic bacteria isolated from petroleum contaminated sites of the Sundarbans, Bangladesh

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Spillage of furnace oil is an increasing event in recent times. In this study, environmental samples from furnace oil spillage sites of the Shela River, the Sundarbans, Bangladesh, were collected after three weeks of spillage. Serial dilution was applied and total seven bacterial isolates were separated as pure cultures. The oil-degrading potentiality of all seven isolates were further assessed, confirmed and compared with the growth pattern in furnace oil supplemented media, 2, 6-dichlorophenol indophenol test, and gravimetric analysis. After 7 days of incubation, isolates SS₃, RW₂ and SB degraded 56%, 43% and 52% of supplemented furnace oil, respectively. The top three hydrocarbonoclastic bacterial isolates were selected as potential and identified as *Pseudomonas aeruginosa* (SS₃), *Bacillus* sp. (RW₂) and *Serratia* sp. (SB). All three isolates showed significant oil-degrading capacity compared to negative control, when incubated in sterile pond water supplemented with 2% furnace oil, suggesting them as potential bioremediation agents.

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