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Isolation and characterization of two crude oil-degrading fungi strains from Rumaila oil field, Iraq

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Highlights

- The ability of indigenous fungi in degradation of crude oil was examined.
- Two strains exhibited a cell surface hydrophobicity higher than 70 %.
- The two strains RMA1 and RMA2 reduced surface tension in MSM containing 1% crude oil.

Abstract

Among four crude oil-degrading fungi strains that were isolated from a petroleum-polluted area in the Rumaila oil field, two fungi strains showed high activity in aliphatic hydrocarbon degradation. ITS sequencing and analysis of morphological and biochemical characteristics identified these strains as *Penicillium* sp. RMA1 and RMA2. Gravimetric and gas chromatography analysis of the crude oil remaining in the culture medium after 14 days of incubation at 30 °C showed that RMA1 and RMA2 degraded the crude oil by 57% and 55%, respectively. These strains reduced surface tension when cultured on crude oil (1% v/v) and exhibited a cell surface hydrophobicity of more than 70%. These results suggested that RMA1 and RMA2 performed effective crude oil-degrading activity and crude oil emulsification. In conclusion, these fungal strains can be used in bioremediation process and oil pollution reduction in aquatic ecosystems.

Keywords: Biodegradation; Kinetics; Crude oil; 2, 6-dichlorophenol indophenol (DCPIP); *Penicillium*

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