

Isolation, identification and diesel-oil biodegradation capacities of indigenous hydrocarbon-degrading strains of *Cellulosimicrobium cellulans* and *Acinetobacter baumannii* from tarball at Terengganu beach, Malaysia

ABSTRACT

In this study, we isolated two indigenous hydrocarbon-degrading bacteria from tarball found in Rhu Sepuluh beach, Terengganu, Malaysia. These bacteria were identified based on their physiological characteristic and 16S rRNA gene sequence analysis, and they showed 99% similarity with *Cellulosimicrobium cellulans* DSM 43879 and *Acinetobacter baumannii* ATCC 19606 respectively. Their hydrocarbon-degrading capabilities were tested using diesel-oil as sole carbon source. Results analysed using GC–MS, showed diesel-oil alkanes were degraded an average 64.4% by *C. cellulans* and 58.1% by *A. baumannii* with medium optical density reaching 0.967 (*C. cellulans*) and 1.515 (*A. baumannii*) in minimal salt media at 32 °C for 10 days. Individual diesel-oil alkanes were degraded between 10%–95.4% by *C. cellulans* and 0.2%–95.9% by *A. baumannii*. Both strains utilized diesel-oil for growth. The study suggests both strains are part of indigenous hydrocarbon-degrading bacteria in tarball with potential for bioremediation of oil-polluted marine environment.

Keyword: *Acinetobacter baumannii*; Bioremediation; *Cellulosimicrobium cellulans*; Diesel-oil; Hydrocarbons; Tarball