



Isolation and characterization of oil-degrading bacteria from marine sediment environment

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Received 14 March 2018; Accepted 11 September 2018

ABSTRACT

The oil degrading bacterial strains were isolated from marine sediments collected from fuel oil-polluted coastal area in Penang, Malaysia. Bioremediation is an ideal tool to be applied as biological treatment of oil pollution due to it is cost-effective and eco-friendly. However the bacteria used in the bioremediation are highly important because they should achieve high efficient biodegradation rate and not pathogenic or virulence toward the environment. Two bacterial strains TZ1 and TZ2 were selected as potential oil-degrading isolates and were identified as *Chryseobacterium* sp. strain AJO and *Escherichia* sp. strain UIWRF0110, respectively. The emulsification index (E_{24}) and microbial adhesion to hydrocarbons (MATH) values of *Escherichia* sp. strain UIWRF0110 59.51 ± 5.56 and 28.40 ± 1.92 were slightly higher than *Chryseobacterium* sp. strain AJO values 45.12 ± 10.86 and 19.11 ± 2.10 , respectively. The degradation efficiency of *Escherichia* sp. strain UIWRF0110 was 90% as compared with *Chryseobacterium* sp. strain AJO with 84%. Overall, these strains could be useful for the bioremediation of oil-polluted sediments.

Keywords: Bioremediation; Emulsification index; Hydrocarbons; Protein profiling

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