

**ISOLATION AND SCREENING OF OIL-DEGRADING  
BACTERIA FROM OIL-CONTAMINATED SOILS**

**SUBYLA PHILIP**

**BACHELOR OF SCIENCES (Hons.) BIOLOGY  
FACULTY OF APPLIED SCIENCES  
UNIVERSITI TEKNOLOGI MARA**

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## ABSTRACT

### ISOLATION AND SCREENING OF OIL-DEGRADING BACTERIA FROM OIL-CONTAMINATED SOILS

Bioremediation is a process which uses microorganisms or plants to remove toxic hydrocarbons, heavy metals, and other volatile organic compounds. This study focus on the isolation of oil-degrading from two soil samples taken from a car workshop and a parking lot which is located at the University Condominium Apartment, Jalan Menggatal, Kampung Dambai, Sabah. A total of eight isolates were obtained from both samples and were subjected to phenotypic and biochemical characterization using Gram-staining, endospores staining and catalase test. All of these isolates have undergone biochemical test for classification purposes which were Gram-staining, endospores staining and catalase staining. There were three Gram positive bacteria and five Gram-negative bacteria and all isolates produced catalase enzyme. However, no sporulation detected in all isolates. The colony colours that were found among these isolates were milky white, milky yellowish, pink, yellowish, light brown, white and greenish. Under microscopic examination, the isolates were cocci, coccobacilli and bacilli. Four isolates were selected for their degradation ability (Sample 1: S1-3 and S1-4; Sample 2: S2-2 and S2-3). S2-2 was found to degrade diesel oil more compared to the other isolates by 2.6%. The characteristics of S2-2 were light brown colour colony, had bacilli shape, Gram- positive bacteria, no spore and had catalase enzyme. The nearest suggested family of oil-degrading bacteria according to these characteristics was Pseudomonadaceae from Eubacteriales order. Further analyses such as molecular identification using 16S rRNA gene, GC-MS to measure the oil degradation and optical density (OD) measurement to measure the growth of bacteria cultures are recommended.