

**A STUDY ON NATURALLY AVAILABLE  
BACTERIA AS AN EFFECTIVE OIL  
BIOREMEDIATIVE AGENT**

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## ABSTRACT

Oil is one of the major pollutants which effects marine ecosystem. Removing oil from water can be done by physical, chemical and biological method. Physical and chemical methods are very expensive and time consuming while biological method is less expensive and environmental friendly. Biological method is known as biodegradation. Biodegradation is a process by which the toxic complex compounds are converted into less toxic and/or nontoxic simpler compounds by the microorganisms. Bacteria can degrade the diesel oil and utilize the hydrocarbons as carbon source for their own energy needs, growth and reproduction. Negombo lagoon water was polluted by diesel emission from boats. Because there can be present huge amount of bacteria polluted water. In the present study four bacterial strains were isolated from the diesel contaminated water based on the morphological and biochemical characteristics according to the Bergy's manual identification. Among them two organisms were Gram positives and two of them were Gram positives rods. One organism of the Gram positive and Bacilli shape and other one is Cocci shape. Cocci shape bacteria were identified as *Staphylococcus aureus*. One of the Gram negative rods was identified as *Escherichia coli* and other one was *Pseudomonas* spp. After the subjecting of *Pseudomonas* spp and *Staphylococcus aureus* to find out the growth potential of different type of oil ( Crude oil, Diesel oil, Kerosene oil ) *Pseudomonas* spp showed highest absorption in the diesel oil. It indicate *Pseudomonas* spp. have the highest growth ability in the hydrocarbon media. Also there was significance difference (p value<0.05) between type of oil versus type of bacteria in the hydrocarbon degradation test. After the comparison there was significance difference between *Staphylococcus aureus* in different type of oil. But there was no significance difference in the diesel oil and Kerosene oil degradation in *Pseudomonas* spp. Although *Pseudomonas* spp. showed highest mean degradation value. Because *Pseudomonas* spp. is the most effective bacteria strains than *Staphylococcus aureus* in the hydrocarbon degradation.

Key Words; Biodegradation, Diesel, Gravimetric method, *Pseudomonas* spp, *Staphylococcus aureus*,