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DEGRADATION OF DIESEL OIL BY SOIL BACTERIA IN SHAKE FLASK SYSTEM USING FOOD WASTE AMENDMENTS

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ABSTRACT

Diesel oil contains compounds that can cause harm to humans and the environment. Hence, biodegradation method is an alternative way to reduce the pollution caused by diesel oil. The aim of this study is to determine the diesel oil degradation by soil bacteria amended with food wastes in the flasks system. It also aims to determine the food wastes such as sugarcane

bagasse and fishbone to enhance the biodegradation of diesel oil. The degradation analysis was performed in an enrichment
culture flask containing soil, diesel oil with the addition of food waste. The degradation analysis was carried out for 42 days
at 30°C at 150 rpm. The bacteria was isolated and identified based on colony morphology and biochemical tests. Five potential
diesel oil-degrading bacteria were preliminary identified as
Pseudomonas fluorescens, Pseudomonas aeruginosa, Klebsiella
species, Shewanella putrefaciens
and
Bacillus cereus
. Diesel oil degradation compound was analyzed using Gas
Chromatography - Mass Spectrometry. Four compounds namely styrene, ethanol, 2-butoxy, benzene, 1-ethyl-2, 3-dimethyl
and benzene 1-ethyl-2, 3-dimethyl showed degradation by bacteria amended with food wastes. The results of this study
demonstrate the potential use of food wastes such as sugarcane bagasse and fish bone as substrates for enhancing the
remediation of hydrocarbon contaminated soil.

Key words: Degradation, diesel oil, soil bacteria, shake flask