

## **Molecular Characterization and Determination of Bioremediation Potentials of Some Bacteria Isolated from Spent Oil Contaminated Soil Mechanic Workshops in Kaduna Metropolis**

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**Abstract :** Spent oil contaminated Soil from ten selected mechanic workshops were investigated for their bacteria and bioremediation potentials. The bacterial isolates were morphologically and molecularly identified as *Enterobacter hormaechei*, *Escherichia coli*, *Klebsiella pneumoniae*, *Shigella flexneri*, *Wesiella cibaria*, *Lactobacillus planetarium*. The singles and a consortium of these bacteria incubated in the minimal salt medium incorporated with 1% engine oil exhibited various biodegradation rates, with the mixed consortium exhibiting the highest for this oil. The gene for the hydrocarbon enzyme Catechol 2, 3 dioxygenase (C2,3O) was detected and amplified in *Enterobacter hormaechei*, *Escherichia coli* and *Shigella flexneri* using PCR and Agarose gel electrophoresis. The detection of the (C2,3O) enzyme gene in, and the spent oil biodegradation activity exhibited by these bacteria suggest their possible possession of bioremediating potentials for the spent engine oil. It is therefore suggested that a pilot study on the field application of these bacteria for bioremediation and restoration of spent oil polluted environment should be done in mechanic workshops.

**Keywords :** spent engine oil, pollution, bacteria, enzyme, bioremediation, mechanic workshop

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