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Analysis and Study of Growth Rates of Indigenous Phytoplankton in Enriched Spent Oil Impacted Ecosystems in South Western Nigeria Coastal Waters

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Abstract : In order to determine the effect of spent oil on the growth rates of indigenous phytoplankton in an aquaculture pond, a study was carried out on varying concentrations of samples using the bioassay procedure for a period of 14 days. Four divisions Cyanophyta, Chlorophyta, Euglenophyta and Bacillariophyta were observed in the water samples collected from the Aquaculture pond. The growth response was measured using a microprocessor photocolorimeter at optical density of 680nm. A general assessment of spent oil contaminated samples showed either a sharp rise or fall in growth rate from day 0 to day 2 followed by increased growth response for most higher concentration of pollutants up to Day 8, then fluctuations in the growth response pattern for the other days. There was no marked significant difference in the growth response of phytoplankton in the spent oil impacted water samples. The lowest and highest phytoplankton abundance was recorded in 10/90ml and 2.5/97.5ml spent oil impacted water sample respectively. Oscillatoria limosa, Chlorella sp., Microcystis aeruginosa, Nitzschia sp. and Navicula sp. showed high tolerance to oil pollution and these species used as bioindicators of an organic polluted environment increased abundantly and can therefore be employed in the cleanup and bioremediation process of an oil polluted freshwater body.

Keywords : phytoplankton, pollution, species abundance, environmental characteristics
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