



Optimum Conditions for LDPE Strips Biodegradation by Local Bacterial Isolates

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Abstract: Optimum conditions (Temperature, pH and incubation time) were studied for selected bacterial isolates *Pseudomonas fluorescens*, *Pseudomonas aeruginosa* and *Acinetobacter ursingii* to biodegrade the low density polyethylene (LDPE) by using mineral salts medium (MSM) contains one pieces of LDPE strips (1cm ×5cm) using bacterial growth and amount of dissolved carbon dioxide as an indicators for ability of degradation. The results have been revealed that the above three bacterial isolates were shown high ability to degrade the LDPE strips after 15 days of incubation in liquid mineral salts medium pH 7 in 30°C, the growth was 0.351, 0.272 and 0.241, respectively, while the amount of dissolved CO₂ was 1.18, 1.05 and 0.95 g/l, respectively. The results of FTIR spectrum of LDPE strips which treated with three bacterial isolates were shown different changes in transmission bands for active groups of LDPE strips. *Pseudomonas fluorescens* isolates was shown the highest % of C-H group biodegradation (40.47%) compared with the other two isolates 35.89% and 30.55%, respectively.

Keywords: LDPE biodegradation, optimum condition, CO₂, FTIR

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