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Biodegradation of Oil-Based Plastic Wastes by Bacteria Isolated from Fish Breeding Tanks

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Abstract

Several studies have shown that certain microbes, mainly bacteria may have the ability to digest plastic wastes. The goal of this study was to see how well *Bacillus subtilis, Staphylococcus lentus, Aeromonas hydrophila*, *Sphingomonas paucimobilis* and *Kocuria paedia* degrade three kinds of oil-based plastics: low-density polyethylene (LDPE), polystyrene (PS) and polyvinylchloride (PVC) polymer sheets. The experiment was conducted for 30 days under laboratory conditions with occasional shaking at 180 rpm and 32°C. Biodegradation was measured in terms of weight loss.. Accordingto IR Spectroscopy, the C-H stretch band at 2920cm-1 improved as a result of bacterial degradation of polyethylene. The most affected polymers were LDPE and PVC films. While PS films were the least affected polymers. *B. subtilis* was shown to be the most successful of the five bacterial species, whereas *K. paedia* was determined to be the least effective.

Keywords: Polymers waste, Environmental pollution, Polyvinylchloride, polystyrene, Polyethylene, Degradation of plastics

التحلل الحيوي للنفايات البلاستيكية ذات الأساس البترولي بواسطة البكتيريا المعزولة من أحواض تربية الأسماك

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