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ASSESSMENT OF BACTERIA STREPTOMYCES TERMITUM WICCB66 AND STREPTOMYCES INDIAENSIS WICCB67 FOR LOW DENSITY POLYETHYLENE DEGRADATION

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ABSTRACT

Given its extended earthly persistence and detrimental effects on ecosystems, plastic waste disposal is one of the most concerning problems in the waste management industry. Plastics, which are strong, durable, and lightweight, have a big impact on society all over the world. Most of the waste is dumped, and only 7% of it is recycled. Plastic poses a serious threat to the ecosystem, thus getting rid of it is crucial. Biodegradation is one of the most efficient methods for plastic decomposition when compared to other degradation processes. This is because of the eco-friendly, cost-effective, and non-polluting method. Bacteria are crucial for biodegradation because they act on plastic by secreting a degrading enzyme, which then converts the polymer's high molecular weight into a monomer. The bacteria strain that breaks down plastic was introduced into low density polyethylene (LDPE). Thus, this study is aimed to evaluate and compared the polyethylene plastic degrading bacteria. The LDPE plastic are

compared in terms of biomass and weight after incubated with bacteria for 30 days. The bacteria used are Streptomyces termitum WICC-B66 and Streptomyces indiaensis WICC-B67. From the results, both bacteria strain simultaneously grow and then started to decline with time. Moreover, the results shown both bacteria able to degrade LDPE plastic but Streptomyces indiaensis WICC-B67 poses the higher degradability rate with 0.83%. In conclusion, Streptomyces termitum WICC-B66 and Streptomyces indiaensis WICC-B67 were able to degrade LDPE plastic with Streptomyces indiaensis WICC-B67 gave higher degradability rate.