عنوان مقاله:

Isolation and identification of plastic degrading bacteria from dumpsites Lagos

محل انتشار:

فصلنامه پیشرفت ها در فناوری محیط زیست, دوره 8, شماره 1 (سال: 1401)

تعداد صفحات اصل مقاله: 13

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خلاصه مقاله:

Plastic pollution is a threat to the environment because of its slow degradation rate and high usage. The continuous accumulation of these synthetic plastic wastes poses an ever-increasing threat to animals, humans, and the environment. The use of microorganisms to effectively degrade plastic waste can provide a solution to this problem. This study aims to isolate plastic degrading microorganisms from soils taken from the Alimosho local government area of Lagos State, Nigeria. The soil samples were collected from dumpsites filled with plastic and plastic materials. The effectiveness of the degradation of plastic materials was studied over six (۶) weeks in broth and agar culture under laboratory conditions by the weight determination method. Physicochemical and microbiological analysis was carried out on the various soil samples using standard protocols. The biodegradation of polyethylene and polystyrene was done in-vitro using the microorganisms isolated from the soil. The following microorganisms were able to degrade a higher percentage of the plastic materials; Staphylococcus aureus, Streptococcus sp, Bacillus sp, and Escherichia coli. The total viable count for bacteria was within the range of ۱۱.۸×۱۰۵ to ۲.۰×۱۰۱۰CFU/g. Staphylococcus aureus, Streptococcus sp, Bacillus sp, and Micrococcus sp degraded plastic up to ۲۵%, ۳۱.۲%, ۲۵%, and ۳۱.۲%, respectively. These isolates may be used to actively degrade plastics, thereby reducing the rate of plastic pollution in our ecosystem.

کلمات کلیدی:

Biodegradation, microorganisms, Pollution, Polyethylene, polystyrene