



Comparative analysis of Polythene degrading bacteria isolated from soil from different Garbage dumping sites of Patna, Bihar

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Abstract : Polythene has become a basic need for one and all. But its slow degradation process raises questions regarding environmental degradation. The degradation of polythene with the help of microbes seeks worldwide attention. Our present work is aimed to isolate, purify the microorganisms and analyze the pretreated polythene degradation by them. A total of three bacteria were recovered and identified to be *Staphylococcus aureus* as (A1), *Pseudomonas aeruginosa* as (B1), and *Bacillus subtilis* as

(C1). All the three isolate (A1, B1, and C1) were used for the comparative degradation of 10 and 51 micron polythene. Out of which, *Bacillus subtilis* (C1) showed 9.3% followed by *Staphylococcus aureus* (A1) showed 6.9% and *Pseudomonas aeruginosa* (B1) with 4.6% degradation by weight lost in 20 days, in 51-micron polythene. Thus, our study suggests that *Bacillus subtilis* could be utilized as the polythene degrading microbe and in future could help in balancing the environmental pollution caused due to polythene accumulation. Hence, from this study it can be speculated that microbes have enough potential to degrade polymer in due course of time.

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Introduction:

Polythene is a polymer made up of long chain monomers of ethylene. Plastics can be said as building material because of its utility in our day to day life. The use of plastics has become a part in all sectors of the economy. The widespread applications of plastics are not only due to their favorable mechanical and thermal