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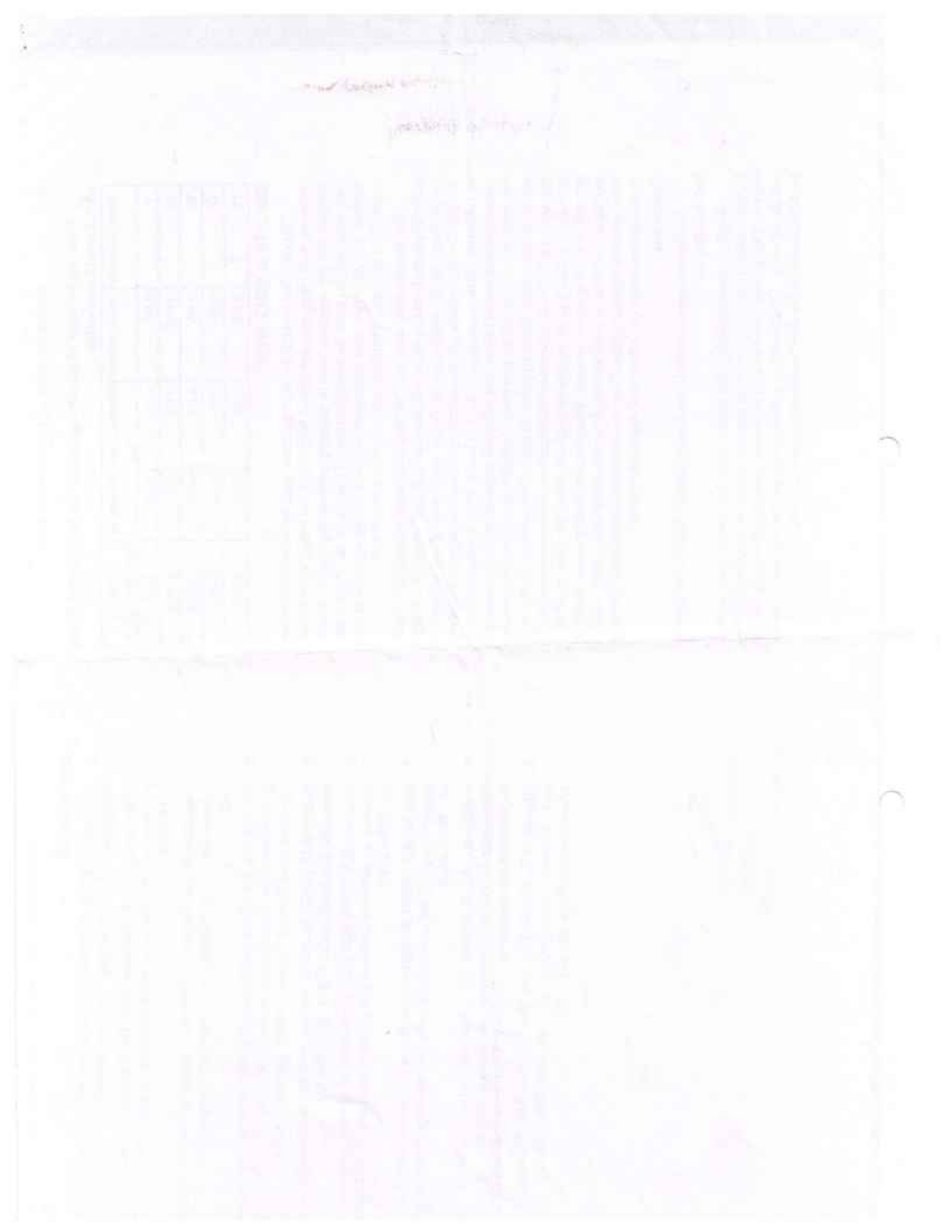

Table no.3:-Result of plastic degradation by bacteria and fungus after 1 month incubation.

Isolated species	Initial wt. (mg)	Final wt. (mg)	Difference	Weight loos/month (in %)
1	0.190	o.166	0.024	0.003
B2	0.190	0.170	0.02	0.00032
B3	0.190	0.183	0.007	0.00034
F1	0.190	0.184	0.006	0.00349
F2	0.190	0.167	0.023	0.00031

RESULTS & DISCUSSION

This study has covered the major concerns about the natural and synthetic polymers, their types, uses and degradability also it has looked at the disposal methods and the standards used in assessing polymer degradation. Another area examined has been the biodegradation of plastics by the liquid culture method. It is clear that most recalcitrant polymers can be degraded to some extent in the appropriate environment at the right concentration.

The present study deals with the isolation, identification and derivative ability of plastic degrading microorganisms from soil. Different types of changes are produced by the microorganism during morphological and biochemical analysis. Synthetic plastic sample was collected from the dumped soil was used in this study. This plastic was used to study their biodegradation by microorganisms isolated from them Microbial degradation of a solid polymer like polyethylene requires the formation of a biofilm on the polymer surface to enable the microbes to efficiently utilize the non-soluble substrates by enzymatic degradation activities. Development of multicellular microbial communities known as biofilm, attached to the surface of synthetic wastes has been found to be powerful degrading agents in nature. When the total biodegradation process of any organic substrate is considered the formation of microbial colony is critical to the initiation of biodegradation. Thus, the duration of the microbial colonization is an important factor that effects total degradation period.

Conclusion

The bacteria were identified to be *Bacillus Subtilis, Bacillus Amylolyticus and Bacillus sp.*

*Bacillus amylolyticus*degrades plastic more than that of other bacteria. *Bacillus subtilis*has less capacity to degrade plastic as compared to other bacteria. The isolated microbes were native to the site of polyethylene disposal and shown some degradability in natural conditions, yet they also exhibited biodegradation in laboratory conditions on synthetic media

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Assistant Professor

61. STUDIES ON BIODEGREDATION OF PLASTIC CARRY BAGS

– Andhare R. A

Plastic polyethylene waste accumulating in the environment is posing a ever increasing ecological threat. Plastics that are biodegradable can b considered environment friendly, they have an increasing range of potentia application and are driven by the growing use of plastic in packaging. Th present study is an attempt to assess the biodegradation of polythene bag. Th bags were analyzed for one month of incubation in liquid culture method. Th microbial species found associated with the degrading materials were identifie as two gram positive and one gram negative bacteria and two fungus species. Physiological and biochemical test of degrading microorganism by morphological color, texture, gram staining and spore staining method were carried out. Th isolated species were added in to the nutrient broth media with weighted plastic. After one month of incubation the degradation ability of an isolated species were checked. The results reveal that, the microbes associated with th polythene material's biodegradation were *Bacillus* species.

KEY WORDS: Plastic, Polythene, Waste, Biodegradation, *Bacillus*, environment friendly.

Introduction

Polyethylene is a polymer made of long chain off ethylene monomer. The polyethylene is the most commonly found non degradable solid waste that has been recently recognized as a major threat to marine life and also blockage in intestine of fish, bird and marine mammals.

The degradation of plastic is a great challenge as the material is increasingly used. The worldwide plastic waste is generating annually about 57 million tons.

Plastic materials have been increasingly used in food clothing shelter transportation, construction, medical and recreation industries. The plastic are strong, light weighted and durable and the disadvantages of plastic is they are resistant to biodegradation, leading to pollution and harmful to the environment.

The microorganisms can degrade plastic over 90 genera, from bacteria and fungi, among them *Bacillus megaterium,Pseudomonas* sp., *Azotobacter,Rastoniaeutropha,halomonas* sp., etc. Plastic degradation by microbes due to the activity of certain enzymes that cause cleavage of the polymer chains into monomers and oligomers. Plastic that has been enzymatically

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