BIODEGRADATION OF PLASTIC MATERIALS IN THE PRESENCE OF PHYTOREMEDIATING MICROORGANISMS

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Confusion often exists in the consumers tendency between bio and biodegradable plastics and polymers from which they are sometimes confused under the term bioplastics

Bio-based polymers or biopolymers such as cellulose, starch and lignin are carbon compounds derived from renewable biological sources, such as plants, as opposed to fossil-based polymers.

Biodegradation refers mare broadly to the impact of microorganisms on the properties of plastic, without the chemical transformation of carbon-containing compounds info plastic to biodegrade must take some time.

The recovery of plastic waste may be due to the presence of several communities of microorganisms (phytoremediators) under different unfavorable conditions with several unique characteristics. It has been found that in seawater, plastic releases dissolved organic carbon, stimulating the activity of heterotrophic microbes. Adapting to new carbon sources can create new characteristics for microorganisms, especially those that produce active enzymes. Enzymes adapted to unfavorable microorganism conditions offer numerous opportunities for biotechnological exploration and offer new insights into a wide range of applied problems, such as non-recyclable plastic pollution,

Thus, the potential of microorganisms from various unfavorable conditions can be used in outdoor landfills. Among the prominent microbial agents used for biodegradation, belonging to the fallowing species *Pseudomonasm Streptomices*, *Corynebacterium*, *Arthrobacter*, *Micrococcus* and *Rhodococcus* are mentioned more often, *Cryobacterium* and *Flavobacterium*, *Colwella, Marinomonas* and *Shewwanela*.

The abundance of microorganisms in ecosystems reaches up to hundreds of millions of bacterial cells in a gram of wet aquatic sediment. Moreover, it is assumed that any surface in the polluting environments are colonize all the plastic that is introduced into the environment.

A limited number of researches have been conducted on the interactions between plastic and microbiota in unsuitable environmental conditions. Bacterial colonization on plastic begins almost immediately. In a few hours, microorganisms are able to form microbial assembliens and cower the surface of the plastic, which is defined as attachment.

In these stages, microbial assemblies would catalyze metabolic reactions leading to adsorption, desorption, and fragmentation of the associated microplastic compounds.

In the laboratory are studied soil microorganisms will be isolated from the rhizosphere of berry plants, studied, and used as biodegradation agents for non-recyclable plastic waste.

The aim of the research is to study the role of microorganisms in and phytoremediation plants in the degradation of non-recyclable plastic.

Based on the study we concluded that soil with a high capacity of microbial biodiversity non-recyclable plastic.