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Plastic degradation by biodegradation

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Plastics are used widely in today's world. The use of plastic is getting increased day by day with the increasing population. The increasing problems of plastic leading to health problems, floods, choking in drainage systems, water pollution, land pollution, eutrophication in lake, affecting the overall environment including animals, birds and other living organisms. One of the methods to degrade plastic is biodegradation by using microorganisms, an ecofriendly method. When plastic is dumped in soil there are few microorganisms which feed on carbon of plastic, degrading it slowly. By using such soil from 'Mahim Nature Park Dharavi' which was a dumping ground before 10 years and now a nature park. The growth of these trees showed mutations in this park due to dumped garbage including tones of plastic. Using this soil, Winogradsky column was developed. The column has three layers of soil by inoculating 10 micron plastic at each level so that different zones are created giving rise to aerobic, microaerophilic and anaerobic conditions. It will help the existing soil microbes to grow and degrade the plastic. After three months and 26 days of incubation, Winogradsky column was analyzed for growth of microbes by screening the soil for microbes on different agar media, in different conditions. Qualitative and Quantitative analysis was done by different methods. Quantitative analysis was done by taking density of the tubes on colorimeter. 44 isolates and three fungi showed the properties to degrade plastic. Every isolate was being seen under 1000X after Gram staining for isolates and lactophenol cotton blue for fungi. Plastic degradation properties seen in these microbes have been further incubated and now it has been now four years under observation and analysis will be done soon.

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