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# Polyethylene Terephthalate Plastic Degradation by Fungus Rasamsonia Emersonii

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**Abstract :** Microplastics, tiny plastic particles less than 5 mm in size formed by the disposal and breakdown of industrial and consumer products, have become a primary environmental concern due to their ubiquitous presence and application in the environment and their potential to cause harm to the ecosystem, wildlife and human health. In this, we study the ability of the fungus Rasamsonia emersonii IMI 393752 to degrade the rigid microplastics of Coke bottles. Microplastics were extracted from Coke bottles and incubated with Rasamsonia emersonii in Sabouraud dextrose agar media. Microplastics were pre-sterilized without altering the chemistry of microplastic. Preliminary analysis was performed by observing radial growth assessment of microplastic-containing media enriched with fungi vs. control. The assay confirmed no impedance or change in the fungi's growth pattern and rate by introducing microplastics. The degradation of the microplastics was monitored over time using microscopy and FTIR, and biodegradation/deterioration on the plastic surface was observed. Furthermore, the liquid assay was performed. HPLC and GCMS will be conducted to check the biodegradation and presence of enzyme release by fungi to counteract the presence of microplastics. These findings have important implications for managing plastic waste, as they suggest that fungi such as Rasamsonia emersonii can potentially degrade microplastics safely and effectively. However, further research to optimise the conditions for microplastic degradation by Rasamsonia emersonii and to develop strategies for scaling up the process for industrial applications will be beneficial.

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