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**Synergistic effects of pretreatment and blending on Fungi mediated biodegradation
of polypropylenes.**

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Abstract:

Environmental issues raise concern on restrict the use of nondegradable polymers and encourage the development of degradable once. This study is carried out was to understand the rate of biodegradation of untreated and pretreated (100° C or UV for 10 days) polypropylene (PP), pro-oxidant blended (MI-PP) and starch blended polypropylenes (ST-PP) with two different fungal strains, *Phanerochaete chrysosporium* NCIM 1170 (F1) and *Engyodontium album* MTP091 (F2). About 18.8 and 9.42 % gravimetric weight loss and 79 and 57% TGA weight loss (at 400°C) were observed with UV pretreated MI-PP in one year with F2 and F1 strains respectively. The amount of lacasse produced by the organism and biomass attached on the polymer surface are correlated with TGA weight loss(0.6-0.93). The formation of extractable oxygenated compounds and unoxidized low-molecular weight hydrocarbons are high in pretreated and blended samples. These results indicate blending and pretreatment strategy leads to an optimal waste-disposal strategy.

Keywords:

Biodegradation, *Phanerochaete chrysosporium*, *Engyodontium album*,
Polypropylene, Metal ions, Starch, GC-MS, TGA.

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