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APPLICATION OF THE LACCASE, PRODUCED ON COCONUT FLESH BY *PLEUROTUS FLORIDA* FOR DYE DECOLORIZATION

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We investigated the ability of Pleurotus florida to produce laccase on coconut flesh as a solid substrate fermentation. The decolorization of two structurally different dyes such as azo (Reactive Blue 198) and triphenylmethane dye (Malachite Green) were analysed. The decolorization of Reactive blue 198 and Malachite Green at 8 hrs was 93% and 63% respectiely. The untreated and treated dye was characterized by UV-Vis and fourier transform infrared (FTIR) spectroscopy scan. FTIR analysis pointed out the involvement of alkene (C = C) and carboxylic (C – O) groups in the decolorization process. The toxicity with respect to Allium cepa root inhibition was measured to demonstrate the potential of laccase in the detoxication and bioremediation process.

Keywords: *Allium cepa,* dye decolorization, FTIR-UV, laccase, *Pleurotus florida*.

Introduction

Synthetic dyes are extensively used in the textile industry. Due to inefficiencies of industrial dyeing process, 10 – 15% of dyes are lost in the effluents of textile units, rendering them highly coloured [1, 2]. It is estimated that 280,000 tons of textile dyes are discharged in such industrial effluents every year worldwide [3]. Large quantities of these dyes are released daily into the environment from various indust-ries. The discharge of waste waters containing recalcitrant residues into river and lakes leads to higher biological oxygen demand thus posing a serious threat to native aquatic life. The available waste water treatment systems are unable to completely remove the recalcitrant dyes and other organic residues from such effluents [4, 5].

White-rot fungi produce several types of oxidative enzymes, which are useful for remediation of environmental pollutants [6 –8]. Laccase (benzenediol: oxygen oxido reductase, EC 1.10.3.2) is one of such enzymes, which is also