

TITLE: DISCOLORIZATION OF TEXTILE DYE BY *Ganoderma lucidum* IN SOLID STATE FERMENTATION BIOREACTOR

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ABSTRACT: *Ganoderma lucidum* is one of the most widely distributed White-Rot-Fungi (WRF) in the world. Several studies are focused on its laccase producing capacity and its ability for the degrade of dyes and organic compounds. Despite these studies, the potential of *G. lucidum* and its ligninolytic enzymes in bioremediation processes is still far from being fully explored. Most studies on dye discoloration have been carried out using submerged liquid fermentation a system which does not reproduce the natural living conditions of the WRF. Therefore, the objective of this study is to evaluate the ability of *Ganoderma lucidum* to promote the discoloration of a solution of Remazol Brilliant Blue R (RBBR) in a solid state system. The experiments were carried in a bioreactor (2 L of capacity) which was previously filled with the fungus grown on “pupunha” (*Bactris gasipaes*) agroindustrial waste. After 7 days of adaptation, the RBBR solution (100 mg.L⁻¹) was pumped to the bioreactor. The efficacy of decolorization process was analyzed throughout 6 days, by measuring the absorbance of the RBBR at 590 nm, which correspond to the maximum absorbance of the dye. According to our results, the efficacy of the discoloration was 74.8%. Additionally, the ability of the WRF to produce laccase was also verified, being the highest activity (847.2 IU.mL⁻¹) attained at the 5th day of culture. This study provides new perspectives for up-scaling the process of textile dye decolorization using WRF and “pupunha”, given the capacity of this waste act as an adsorbent of dyes and as a substrate for fungal hyphae producing oxidative enzymes which degrade xenobiotic compounds.

Keywords: White rot fungi, oxidative enzymes, up-scaling.

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