



Decolorization of azo and triphenylmethane dyes by MW113 *Beauveria bassiana* strain

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Received 8 July 2018; Accepted 30 September 2018

ABSTRACT

Dyes are used extensively to add color to various substrates in the manufacturing process and they are difficult to remove from wastewater. There is constant need for good biological alternatives to wastewater treatment. Fungi have a great potential to degrade and biotransform color dyes because of their broad enzymatic abilities. We performed the toxicity tests of the processed products to prove the possibility of using fungal processes to degrade synthetic dyes. In the experiments, two dyes (brilliant green and Evans blue) belonging to different classes – triphenylmethane and azo, respectively, were used (as well as their 1:1 w/w mixture). The MW113 fungal strain of *Beauveria bassiana* was chosen as a potential organism to degrade the dyes in a bioreactor. The experimental conditions included dyes concentration, static/shaken culture, mycelium immobilization, and medium composition and were established during earlier studies. The changes in zootoxicity (against *Daphnia magna*) and phytotoxicity (against *Lemna minor*) were estimated at the end of the experiments. The investigated MW113 fungal strain effectively removed dye mixture in the bioreactor. The highest removal reached 99.4% after 168 h at third week of experiment. The toxicity tests showed that *B. bassiana* metabolites were not toxic to *L. minor* and highly toxic (Bioreactor I) and toxic (Bioreactor II) to *D. magna*.

Keywords: Dye decolorization; Zootoxicity; Phytotoxicity; *Beauveria bassiana*; Triphenylmethane dye; Azo dye

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