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COLOR REMOVAL OF REACTIVE TEXTILE DYES FROM AQUEOUS SOLUTION BY RAW AND MODIFIED FUNGAL BIOSORBENT

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Abstract

This study concentrates on the reactive biosorption of dyes such as Reactive Red 3:1 (RR3:1), Reactive Orange 13 (RO13), Reactive Blue 13 (RB13), Reactive Blue 72 (RB72). The modified fungal biosorbent, *Paecilomyces* sp., had a higher dye biosorption yield in our study. 100% of biosorption yield observed on RR3:1 and RB13 and 94.09% of color removal of RO13 with the chemically modified biosorbent were great. Also, such modified biosorbent exhibited remarkable performance in simulated textile wastewater at pH 8.66. As the raw biosorbent was compared to protonated and decarboxylated biosorbent, the obtained results for the biosorption of simulated textile wastewater at alkaline conditions showed that biosorption yields enhanced from 0% to 56.06%; 8.06% to 66.09%; 0% to 48.33%; 8.65% to 33.54%, for respectively RR3:1, RB13, RO13, and RB72. For this reason, this biomass may be an extremely powerful candidate for dye biosorption from industrial wastewaters. When the Freundlich and Langmuir models were used for the mathematical description of the biosorption equilibrium and isotherm constants, Langmuir model was found most suitable for describing the biosorption of all dyestuffs.

Key words: biosorbent modification, dye removal, fungal biosorbent, magnetic biosorbent, protonated biosorbent

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