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Screening of factors affecting reactive blue 19 decolorization by *Ganoderma* sp. using fractional factorial experimental design

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ABSTRACT

Synthetic dyes are extensively used in different industries; however, they have adverse impacts on human health and the environment. White rot fungi are capable of degrading dyes and various xenobiotics. In order to detect the important factors affecting decolorization, experimental screening is usually conducted to optimize the process. In the present investigation, fractional factorial design was used for identifying factors affecting reactive blue 19 decolorization by *Ganoderma* sp. among 10 initial factors. Implemented factors considered include media components and operating conditions of color removal process. Depicted results showed that experimental design is the appropriate approach to determine the main and interaction effects. The ANOVA showed that the signifi cant main and interaction effects include temperature, type of carbon and energy source, pH and carbon source concentration. Screening procedure suggested that the optimization of decolorization process focused on glycerol concentration around 20 g/l as carbon source, temperature around 30°C, and pH around 6. Other factors and their levels included yeast extract 0.4 g/l, copper sulfate 0.001 g/l, dye concentration 100 mg/l, ethanol 2%, volume of inoculation 5 ml and shaking speed 150 rpm.

Keywords: Dye; Decolorization; *Ganoderma* sp.; Screening experiments; Fractional factorial design

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