

Decolorization of Six Reactive and Direct Azo Dyes by the Yeast Isolate: *Issatchenkia Orientalis* JKS6

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Background & objectives: Azo dyes are the most commonly used dyes in textile industries. They are considered as xenobiotic compounds. It is estimated that 10-15% of the total production of colorants is lost during synthesis and dyeing processes. The disposal of colored wastes into waters causes environmental damages. In present study an ascomycetous yeast strain, *Issatchenkia orientalis* JKS6, was isolated from activated sludge.

Method: 100 ml of culture medium (contained 200 mg Reactive Black 5 1-1) in 250-ml flasks was inoculated with 5% (v/v) of the yeast suspensions in distilled water plus 0.85% (w/v) NaCl and incubated at 150 rpm and 32°C. At regular time intervals, 2 ml of the culture media was withdrawn from the flasks and centrifuged at 12000 rpm for 10 min and the supernatant was analyzed for remaining dye content. The decolorization was determined by measuring the absorbance of culture supernatant at λ_{max} (597 nm). Culture supernatants were subjected to spectral scanning (200-800 nm) using a UV-Vis spectrophotometer in order to analyze dye degradation. The ability of isolated yeast in the decolorization of five other azo dyes, Reactive Orange 16, Reactive Red 198, Direct Blue 71, Direct Yellow 12 and Direct Black 22, was examined.

Results: The yeast isolate could efficiently decolorize (94.85%) RB5 within 12 h. Extensive decolorization (95-99%) was obtained in presence of other azo dyes. A latent period (12 h) was observed in the decolorization of DB22. It is may be due to complex structure of this triazo dye. UV-Vis spectra and colorless biomass obtained after complete decolorization showed that the decolorization occurs through biodegradation.

Conclusion: The decolorization efficiency of isolate against all the azo dyes tested in this study suggested that isolate could be used to decolorize the complex dyestuff effluent containing various azo dyes.

Keywords: Azo Dyes; Decolorization; *Issatchenkia orientalis*; Textile Wastewater