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Biodegradation of direct golden yellow, a textile dye by *Pseudomonas putida*

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ABSTRACT

In this study, biodecolorization of Direct golden yellow dye using a bacterial strain *Pseudomonas putida* was investigated. Laboratory scale experiments were performed to investigate the effect of operational parameters such as pH, dye concentration and dissolved oxygen on the decolorization efficiency of the strain. The most efficient decolorization was achieved in the pH range of 7–9 and the biodecolorization process was found to be effective under static and anoxic conditions but aeration strongly inhibited the decolorization. In decolorization, the maximal absorption wavelength in the UV-visible spectra for the dye containing culture shifted from visible light range towards the ultraviolet visible range confirming the structural modifications of the dye molecule during the course of degradation. The strain also exhibited excellent stability during the reported batch experiments. It has been observed that there is an induction of reductase enzyme (azo-reductase), which helps in the anaerobic reduction of azo bonds present in the dye structure. The cells obtained from the late-stationary phase exhibited high azo-reductase activity than the cells from exponential and early-stationary phase. Hence the study reveals the potential of *P. putida* to degrade Direct golden yellow dye effectively under static conditions.

Keywords: Biodecolorization; *Pseudomonas putida*; Direct golden yellow dye; Azo-reductase activity

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