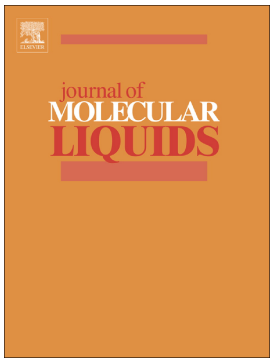

A review on biocatalytic decomposition of azo dyes and electrons recovery

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Title: A review on Biocatalytic Decomposition of Azo Dyes and Electrons Recovery

Short Title: Biocatalytic Decomposition of Azo Dyes

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Abstract

Discharge of waste water from textile industry during coloring processes contain high concentrations of biologically difficult-to-degrade dye chemicals along with antifouling agents. Azo dyes considered to be the largest class of synthetic dyes used in the textile industries and are present in significant amounts in its effluents. These are highly stable because of its complex aromatic structure and covalent azo bonds. Traditional physico-chemical methods are not considered sufficient because of their high cost, partial degradation and more sludge production. The use of biocatalysts for decolorization is a gaining momentum due to having redox-active molecules. Current review explored techniques for the decomposition of textile dyes, their merits, limitations and recommended the emerging microbial fuel cell technology followed by aerobic treatment for complete degradation of dye intermediate metabolites.

Keywords: Textile Industry; Azo dye, physicochemical methods;Biocatalysis; Microbial fuel cell

1 Introduction

The yearly world production of azo dyes is assessed to be about 1 million tons. It is found in diverse forms and natures and more than 2,000 fundamentally different azo dyes are presently in use [1]. Azo bond linkage (–N = N–) may be present more than once, mono azo dyes have one azo linkage. While, there are two linkages in diazo dyes and three in triazodyes respectively. Azo