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Bacterial Influence on Textile Wastewater Decolorization

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ABSTRACT

The study aims to isolate and optimize bacterial strains having the ability to degrade and decolorize azo dyes produced in the final effluent of textile dying industries. In this regard, ten bacterial strains were isolated from wastewater treatment plants, and most of them were subjected to the colored effluents resulting from dilapidated houses. The ability of these bacterial isolations to use a wide range of azo dyes to determine the sole carbon source was determined. According to these screening testes, two bacterial isolations were selected as the most potent decolorizer for azo dyes, and they were identified as Comamanas acidovorns-TN1 and Burkholdera cepace-TN5. The optimization process started with the addition of 1 g/l yeast extract, where the decolorization ability of the two strains increased sharply and according to this experiment, the two azo dyes, Acid orange 7 and Direct blue 75, were selected to complete the study. The effect of different conditional and chemical factors on the decolorization process of Acid orange 7 and Direct blue 75 by Comamanas acidovorns-TN1 and Burkholdera cepace-TN5 was studied. Factors that contributed to the difference were different pH, temperature, incubation period, inoculum size, carbon source, nitrogen source and the respective concentrations of yeast extract. This study recommends the application of the two most potent bacterial strains in the decolorization of the azo dyes, along with acid orange 7 and direct blue 75, specifically in the industrial effluents under all nutritional and environmental conditions.

KEYWORDS

Decolorization; Biodegradation; Azo Dys; Textile Wastewater

Cite this paper

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