

BIOREMEDIATION OF TEXTILE DYE WASTEWATER BY USING MICROBIAL ISOLATES FROM DYE EFFLUENTS

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Residual dyes, auxiliaries and chemicals are often left in the process water and discharged with the wastewater. Therefore the wash off from the dye house invariably contains large amount of residual dye. The three major chromophores of various commercial dyes are Azo, Antraquinone and Indigo. These effluents are discharged to sewers from where they enter into the Municipal wastewater treatment plants. In the dye-manufacturing units, there is considerable debate on the level of environmental hazard produced by coloured effluents. Nonetheless, although the problem of colour could be argued as only aesthetic, it is accepted that the problem has to be rectified. Thus, the mounting pressure on the industry to treat the dye house effluents have led to a host of new and old technologies competing to provide cost effective solution to the problem of residual colour imparted by dyes. For the present work, textile effluent and sludge was used for isolation of dye decolorizers. Total 21 isolates were selected on the basis of their Gram reaction and colony characteristics. Both types of organisms, Gram positive and Gram negative were found present with dominant being the Gram negative species. Then five potential bacterial and four fungal isolates was selected on the basis of their dye decolorizing ability of four dyes, basic fuchsin, blue, yellow, and orange. The complexity of the dye led to variable percentage of decolorization of different dyes by the same organism. Bioremediation of environmental pollutants relies on the pollutant degrading capabilities of naturally occurring microbes. Employing static treatment was successful in not only decolorization of dyes but extensive degradation of the dyes was achieved. This result was supported by sharp reduction in toxicity of degradation metabolites on the germination and early seedling growth in wheat and green gram and the bacterial toxicity, when compared with original dye compound.

Biography

Chanda V Berde Parulekar has completed her PhD from Microbiology Department of Goa University, Goa, India following 2 years of Postdoctoral studies from the same department. She is involved in teaching and research in the field of Biotechnology for the past 12 years. She has 30 research publications in reputed journals, 2 book publications, 2 chapters in books in the pipeline and is an Editorial Board Member of *JPABS*. She has guided 62 MSc research projects in Biotechnology and Microbiology. She has also attended more than 15 conferences, national and international. She is on the Board of Directors of Society for Environment, Biodiversity and Conservation, India.

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