

Decolorization and Detoxification of Real Textile Wastewater by the Isolated Bacterium: *Micrococcus luteus*

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The wastewater generated from textile based industries is one of the most hazardous effluents and is difficult to treated using conventional physico-chemical treatment methods. Hence, the objective of the present study was to carry out decolorization and detoxification of real textile wastewater effluent using the bacterium *Micrococcus luteus* (MK166783). Overnight grown bacterial suspension was equalized ($A_{590} = 0.35$) and introduced (5 % v/v) into the filter sterilized textile wastewater solution and incubated at 28 ± 1 °C under static conditions. Decolorization was quantitatively determined through the changes of absorbance measured at 605 nm using UV-Vis spectrophotometer. Seed germination assay for *Oryza sativa* (monocot) and *Vigna radiata* (dicot) seeds was employed to assess the toxicity of decolorized dye solution by *M. luteus*. All the experiments were carried out in triplicates and the controls were maintained without addition of bacteria. *M. luteus* showed complete decolorization (100 %) of textile wastewater within 48 h of incubation at 28 ± 1 °C under static conditions without supplement of additional nutrients, while control showed no decolorization. Both *O. sativa* and *V. radiata* seeds showed 100% germination in control and decolorized wastewater solution by *M. luteus*. However, *O. sativa* and *V. radiata* seeds treated with textile wastewater showed only 6 ± 1 % and 5 ± 1 % of germination respectively. Thus, the results of the present study emphasize the potential of using of *M. luteus* as a viable alternative to high cost physico-chemical treatment methods to remove and detoxification of real textile wastewater.

Keywords: Decolorization, textile wastewater, *Micrococcus luteus*