

Enhancement of textile wastewater decolourization and biodegradation by isolated bacterial and fungal strains

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ABSTRACT

This study was made to isolate bacterial and fungal strains from sludge samples obtained from a continuous stirred tank reactor treating indigo dye-containing textile wastewater. Twenty-two bacteria and four fungi were isolated and tested for the decolourization and the degradation of this effluent. The higher decolourizing and degrading strains were identified as *Bacillus cereus* (KEB-7) and *Bacillus pumilus* (KEB-10) for bacteria and *Aspergillus alliaceus* (KF-3) for fungi. Decolourization of 91%, 92%, and 93%, and COD removal of 90%, 93%, and 90% were achieved for the three strains, respectively. The three effective isolates were used in different combinations to examine the effect of their concerted metabolism on the decolourization and COD removal efficiencies. It was shown that the microbial consortium formed of the mixture of the three strains presented a significant improvement of textile wastewater decolourization (100%) and COD removal yields (98%) due to the synergetic reaction of bacterial and fungal strains.

Keywords: Textile wastewater; Decolourization; PCR-SSCP; Bacteria; Fungi

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