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EFFICACY OF IMMOBILISED BACILLUS CEREUS DURING THE BIODEGRADATION OF TEXTILE INDUSTRY EFFLUENTS

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ABSTRACT

Textile industry effluents contain high levels of dyes which are recalcitrant and toxic to aquatic flora and fauna. Besides, they also contain very high levels of total dissolved solids (TDS), total suspended solids (TSS), COD, BOD and hardness. As per some estimates, about 10-15% of dyes end up in the effluents during their synthesis and dyeing processes. Biological treatment by employing microbes is a better alternative, when compared to conventional physical and chemical methods of effluent treatment. In the present study, efforts were made to understand the efficacy of immobilsed microbial cells upon the degradation of textile effluent. One of the commonly used azo-dyes namely, "Reactive Brilliant Red X3b"present in the untreated textile industry effluent was used as a representative dye in the present study and Bacillus cereus was the bacterium used for degradation. The effluent sample was collected from Tirupur, Tamil Nadu, India bears latitude-longitude coordinates as 11.1085° N, 77.3411° E. Very high levels of COD of 821 mg/l and very high levels of BOD of 211 mg/l were recorded for the effluent sample. In the present study, highest biodegradation was achieved at 96 hours of incubation at 20 grams concentration of the bio-beads containing entrapped Bacillus cereus.

KEYWORDS: Bacillus cereus, biodegradation, immobilization, optical density, reactive brilliant red x3b