



## EVALUATION OF THE MYCO-REMEDICATION POTENTIAL OF REAL TEXTILE WASTEWATERS BY NATIVE FUNGAL SPECIES

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### Abstract

Textile industry positively drives the Sri Lankan economy, though its effluent creates various negative impacts on the environment. Therefore, the present study evaluated the decolorization potential of real textile wastewater effluents using five different fungal strains (*Aspergillus aculeatus* (SUB6585851), *Aspergillus nomius* (MN718216), *Aspergillus niger* (MN990895), *Cuvularia aerea* (MN999546) and *Talaromyces* sp. (MT005744)) that previously identified as potential dye decolorizing agents. Textile wastewater samples collected from seven textile wastewater effluents sites in Poogoda (2), Biyagama (3) Rathmalana (1) and Negambo (1) were centrifuged and filter sterilized (0.22  $\mu$ m) prior to the experiment. Each fungal species was grown on agar plates and four discs of mycelium (d=10 mm) were inoculated to 50 mL of textile wastewater contained flasks and incubated at 28 °C under shaking at 100 rpm. All the experiments were carried out in triplicates and controls were maintained without the addition of fungi. The color removal percentage was recorded by measuring the changes of absorbance at  $\lambda$  max for each wastewater sample. All five tested fungal strains were shown over 90% of dye decolorization within 120 h of incubation with response to seven wastewater samples screened. Among them, *A. niger* was the most efficient fungal strain which showed over 95% of decolorization for all seven textile wastewater samples tested within 48–72 h time and the least potential of dye decolorization was recorded by *A. nomius* while controls remained unchanged. In all seven wastewater samples, the basic water quality parameters; COD, N-NH<sub>4</sub><sup>+</sup>, TSS, TDS were reduced to 50-75% after the treatment by *A. niger* and pH has recorded in the range of 6.5- 8.0. Hence, the results of the present study emphasize the potential applicability of *A. niger* for the development of a bioreactor to treat real textile wastewater in an environmentally friendly manner.

**Keywords:** Decolorization, Textile wastewater, Myco-remediation, Fungi, *Aspergillus niger*