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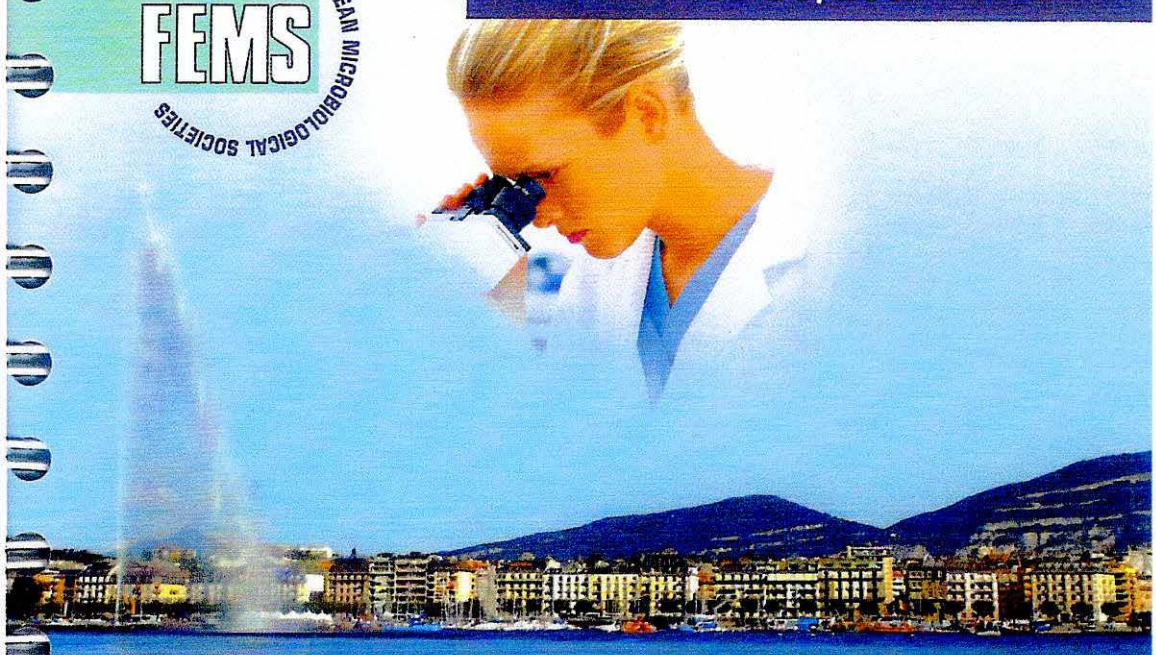

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BIOREACTOR FOR THE DECOLOURISATION OF TEXTILE DYE USING LIGNINOLYTIC FUNGI UNDER HIGH ALKALINE AND SALT CONDITIONS

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The wastewater of textile industry contains not only dyes but also salts, surfactants and others substances and as extreme pH values. Among all dyes and pigments azo dyes are claimed to be between 60 to 70% of the environmental pollutants. Nowadays, environmental regulations in most countries require textile effluents to be decolourised before discharging. This led to the study of innovative and environmental friendly technologies. The extracellular ligninolytic enzyme system of white rot fungi (WRF) has been demonstrated to be very efficient in textile dye decolourisation. The purpose of the present work was to study the dye decolourisation of recalcitrant di-azo Reactive Black 5 (RB5) using WRF in bioreactor. The bioreactor was a 300 ml capacity chemostat with 260 ml working liquid volume assisted by a peristaltic pump. In order to reproduce the current composition of textile effluents the assay was carried out under extreme conditions of pH and salt concentration. *Trametes versicolor* (MUM 04.100) from Micoteca da Universidade do Minho Culture Collection was used. The decolourisation and the enzymatic activities of lignin peroxidase, manganese peroxidase, laccase and glioxidase were assessed during 28 days by continuous and constantly increased addition of a RB5 solution (100 mg l^{-1} at pH 9.5 and 15 gl^{-1} of NaCl) to the bioreactor. The results showed that in spite of extreme pH and salt concentration the decolourisation by WRF achieved 91 to 99%. Laccase seemed to be the most efficient ligninolytic enzyme. Mechanisms of dyes degradation for this strain are now under study.