

Microbial and plant mediated bioremediation of dyes and textile wastewater

Gajanan S Ghodake, 조은미, 서영득, 이대성*,
Sanjay P Govindwar¹
경북대학교 환경공학과; ¹Shivaji University
(daesung@knu.ac.kr*)

The textile industries are generating highest amount of liquid waste, due to use of high quantities of water based dyeing processes. The disposal textile wastes cause environmental damage because of reduced light penetration and carcinogenic nature affects metabolism of aquatic lives. Microbial treatment using *Acinetobacter calcoaceticus* were employed for the biodegradation of commercially used different dyes and textile industrial waste. The biodegradation mechanism and induction enzymes represented their involvement in the biodegradation of dyes. A lignin peroxidase from *A. calcoaceticus* was able to oxidize variety textile dyes indicating as a versatile peroxidase. We also studied phytoremediation using *Brassica juncea*, *Sorghum vulgare*, and *Phaseolus mungo* to evaluate decolourization of the textile effluent; we found 79, 57, and 53%, respectively. *B. juncea* grown in textile effluent showed enhanced growth with respect to the height of the shoot and root, 129 and 178%, respectively. *B. juncea* showed highest decolourization and lowering environmental parameters provides insights about textile waste remediation.