

Summary & Conclusion

5.0 SUMMARY AND CONCLUSION

Textile dye contamination by human activities is one of the serious ecotoxicological problems. Contamination of soil and water by toxic dye is a serious concern in environment perspective for safe utilization in agriculture.

Bioremediation is an emerging microbial based technology for the removal of toxic contaminants from soil and water. Bioremediation can be used to enhance biodegradation of dyes. It is relatively invasive and provides a low cost remedial option well suited to many sites.

The present study was focused with an objective to decolourize textile effluent using bacteria isolated from the effluent contaminated soil.

The textile dyeing effluent was collected at regular intervals and the physicochemical characteristic of the selected textile effluent was analyzed. From the analysis, the textile effluent was found to have high pH indicating alkalinity of the sample and found to have large amount of total suspended solids and total dissolved solids.

DECOLOURIZATION OF SELECTED AZODYES BY ISOLATED MICROORGANISM

Bacteria used in this study was isolated by enrichment in the nutrient agar medium containing three different dyes and then isolated by serial dilution method.

The isolated bacteria which was named as ADU -1 was very effective in decolourization of reactive red (97%) than reactive blue (89%) and reactive yellow (80%) after 48 hrs

BIOCHEMICAL CHARACTERISTICS

Biochemical tests were performed for the isolated microorganism from textile effluent. The microorganism was found to be Gram negative bacterium, which gave positive results for Glucose fermentation, indole production, methyl red test, voges proskauer, Catalase activity, Oxidase activity and Citrate activity and negative results for Strach hydrolysis and Urease activity. The isolated microorganism was confirmed as *Aeromonas* Sp.

EFFECT OF PROCESS PARAMETERS ON DECOLOURIZATION OF REACTIVE RED USING THE ISOLATED AEROMONAS SP.

The results showed that optimal pH for the decolourization by this isolate was 7, temperature was 40⁰c and it decolourize dye concentration upto 75 mg/l very effectively. The decolourization was very effective under static condition.

TREATMENT OF TEXTILE EFFLUENT AND OTHER TEXTILE DYES.

Among the four dyes tested (Navy blue, Acid red, Malachite green and Congo red) which are widely used in textile industries, the isolated *Aeromonas* Sp was effective in decolourization of Navy blue (83%) compared to other dyes. Decolourization percentage of other dyes like acid red, malacite green and congo red was 75%, 63% and 47% respectively after 48 hrs of incubation at 50mg/l dye concentration.

Textile effluent was treated with free microbial cells and microbial cells immobilized in sodium alginate beads. Effluent treated with free microbial cells showed low BOD (19 mg/l) and COD (213 mg/l) compared

to effluent treated with immobilized cells (BOD (110 mg/l) and COD (500 mg/l)).

But both treated effluent showed a decrease in BOD and COD of the untreated textile effluent. This result suggests that the isolated *Aeromonas* Sp was effective in treatment of textile effluent.