

## **Development of cost effective process for enhanced dye production from selected micro fungi *Curvularia*, *Phoma*, *Pestalotiopsis* sp., large scale testing and formulation as industrial textile dyes**

Totally 88 colored cultures were isolated from the sampling trips and maintained in malt extract medium. Molecular identification was carried out at Centre for Advanced Studies in Botany and melanin pigment producing gene in *Curvularia lunata* has been identified. Identification of genes responsible for pigment production from *Phoma* and *Pestalotiopsis* is underway. Continuous production of extracellular and intracellular dyes was carried out up to 10 L capacity per month from *Phoma foveata* (13 g/ 3L), *Curvularia lunata* (12 g/10L) in MCDB and PDB for *Pestalotiopsis* sp. Simple extraction procedure of dyes was carried out and successfully harvested magenta red from *Phoma foveata* (30 g/ 10L), green/yellow dyes from *Curvularia lunata* and yellow dyes from *Pestalotiopsis* sp. within a period of fifteen days. Further the production of dyes from selected microfungi in fermenter / bioreactor to the volume of 10 L is in progress. The extracted dyes were tested for their dyeability on different cotton fabrics (50 meters wide cotton fabric) and developed variety of shades using different dyeing techniques and its efficacy such as repeated wash fastness and rubbing fastness was tested at M/s Vaibhav Processing Mills, Erode.

The antibacterial activity against selected organism was tested in “South Indian Textile Research Association (SITRA), Coimbatore and Sree Chitra Tirunal Institute for Medical Sciences and Technology (SCTIMST), Trivandrum” and recorded promising outcomes. The promising outputs encouraged us to scale up towards precommercialization of microbial dyes to the textile industries. Filing of patent with the positive outcomes developed from this process is in progress.

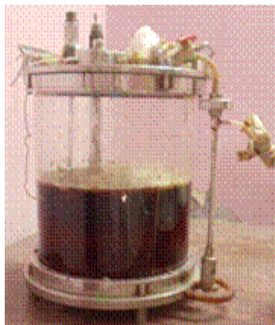
An offshoot of this project, brown and orange dyes from selected mushroom such as *Ganoderma* and *Pycnoporus* respectively was done along with these selected micro fungi for formulation of additional shades. Industrial testing of these dyes was also carried out along with the selected micro fungi and developed variety of brown and dark yellow shades. In combination of mushroom dyes with micro fungal dyes, different shades were developed. An offshoot of this project, “A novel process for the treatment of raw textile dyeing effluents” was designed and tested at laboratory scale. The IP on this was protected by filing a patent (5818/CHE/2014).



*Collection of samples*



*Production of Curvularia in 10L fermenter*



*Production of pink dyes in 3L bioreactor*



*Dyeing of microfill dyes using jigger machine*



*Extraction of brown dyes for industrial dyeing*



*Dyeing of cotton fabric using brown dyes in industrial jigger machine*



*Dyeing of cotton fabric using pink dyes using industrial jigger machine*



*Dyed fabric*