D-69 Isolation and identification of bacteria from textile waste waters and evaluating their biodegradability

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The textile industry is a significant contributor to the Sri Lankan economy. Textile manufacturers use natural raw materials and synthetic raw materials to produce a diverse range of products for consumers.

Pollutants arise from the dirt and grease that is removed from raw natural fibres as well as from process chemicals and dyestuffs that are lost during the manufacturing process. The extensive use of synthetic chemicals can lead to serious environmental and occupational impacts if proper precautions are not taken.

To depollute these textile wastes, many methods have been used, but none of them is perfect. In the case of biological treatment, the eliminating extent (which is a measurement of breakdown of the dye) of dyestuffs by activated sludge or trickling filter is small. Therefore for the purpose of increasing the efficiency of depollution, the present study was aimed at isolating bacteria having the degradability of dyestuffs, from the draining ditch of Veyangoda textile mill. The isolated bacteria were tested on the textile dye Reactive Red 2.

The effectiveness of the isolates against the dye when they were present singly as well as in mixed cultures was investigated. This was done with the aid of a spectrophotometric method. A spectrophotometric analysis was also done to ascertain the formation of possible intermediate components during the course of the degradation.

There were 8 bacterial species isolated and *Enterobacter aerogenes, Bacillus circulans* and *Klebsiella aerogenes* showed the highest capability to degrade 0.03g/100 ml of a dye concentration within a very short period of 4 to 6 days. They were also the dominant bacterial spp. in the textile wastes.