REMOVAL OF FUCHSINE FROM AQUEOUS SOLUTION BY SEED POD POWDER OF GIANT SENSITIVE TREE (*Mimosa pigra*)

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Many industries, such as paper, textile, dyestuffs and plastics use dyes to color their products. As a result, they generate considerable amount of coloured waste water. More often chemicals used to produce dyes are often highly toxic, carcinogenic and explosive. The removal of colour from contaminated effluents is a major problem for developing countries such as Sri Lanka due to the lack of knowledge and financial support. The use of activated carbon has proved to be an effective process for the treatment of dye contaminated waste water, but running costs are high. Therefore it is necessary to identify low cost adsorption alternative materials. This study investigated the capacity of dried seed pod powder of *Mimosa pigra* biomass to remove fuchsine dye from waste water.

M. pigra seed pods were obtained from Mahaweli river bank of Digana area. Seed pods were dried, ground with mortar and pestle and then sieved. Batch sorption studies were carried out by mixing 0.2 g of biomass with 100 mL of 5.0 mg L^{-1} fuchsine dye solutions at room temperature (27 ^{o}C) on an orbital shaker at 100 rpm. Samples were filtered and analyzed by UV-Visible spectrophotometer. Biosorbent surface was characterized by Fourier transform infrared (FTIR) spectrophotometer.
Batch sorption studies with the dried biomaterial removed 86% of the dye in the aqueous system within 75 mins. Adsorption process follows pseudo second order kinetic model with a rate constant of 4.095 g $mg^{-1}min^{-1}$. Lowest removal of 78% was observed at pH 2 and the maximum adsorption was observed in the pH range of 4-8. Shaking speed of the system showed a significant effect on dye removal where maximum removal was observed at 120 rpm. Absorption process was modeled using Langmuir and Freundlich isotherm models and Freundlich isotherm was found to represent the adsorption process.

This study indicates that *M. pigra* seed pod powder could be used as a cost effective and environmental friendly biosorbent to remove fuchsine dye from contaminated aqueous environments.