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Extraction of Natural Dye from *Acalypha hispida* Flowers for Fabrics**Yasassri M.A.H., Weerasinghe W.D.C., Udayakumara S.V.****Department of Materials Science & Engineering, University of Moratuwa, Sri Lanka***udayakumara@uom.lk***Abstract**

Currently most countries use the eco-friendly concept and various steps are being taken to preserve the environment and to diminish pollution. Textile industry is becoming the most promising industry in the world. The Industry releases various kinds of pollutants to the environment that can cause serious damage to the biosystem. Hence, the industry tends to use non-toxic and eco-friendly natural dyes instead of hazardous synthetic dyes for textiles to minimize the pollution. These may have a wide range of shades and can be gained from various parts of plants including roots, barks, leaves, flowers, and fruit and the dyeing procedure does not destructive to the environment. This study was carried out to isolate natural dye from the flowers of Chenille Plant (*Acalypha hispida*) by aqueous extraction method under acidic conditions. Extraction was done with 1:5 M: L ratio for 2 hours at 100° C to isolate the dyestuff extraction solution. This was an effort to utilize the waste material in an efficient manner which could minimize the cost of dyeing. A known concentration of acetic acid added to the dye solution to increase the stability of the extracted dyestuff. Dyeing in an acidic medium gave the better results in terms of the effect of different mordants, dye absorption, brightness and color variation as compared to the samples dyed in neutral and alkaline medium. The natural dyestuff solution obtained was applied to cotton fibers treated with tannic acid (4%). Dye absorption for fibers accompanied by a pre-mordanting method with the mordants (2%) as Aluminum Sulfate, Potassium Dichromate, Copper Sulfate, Ferrous Sulfate and Stannous Chloride. The color shade differences, L*, a*, b*, ΔE values and K/S values were estimated using datacolor 800 family spectrophotometer. Mordanting with the different metal salts exhibited different shades and higher K/S value to cotton fabric due to their ability to form coordination complexes with the dye molecules. The relative color strength of the dye was found to be more with ferrous sulphate and potassium dichromate mordants. Samples showed good to excellent color fastness properties against washing, perspiration, and crocking fastness. These findings revealed that the extract of floral of *Acalypha hispida* can be used for cotton fabric coloration.

Keywords: *Acalypha hispida*, Natural dye, Mordants, Chenille plant