THE USAGE OF HENNA LEAVES (*LAWSONIA INERMIS*) FOR DYEING IN COTTON

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RESEARCH HIGHLIGHTS

This research will be focused on the utilization of henna leaves for the dyeing in cotton fabrics. The formulation of henna dye is capable for the dyeing on the cotton replace the chemical dye. Moreover this research was conducted to reduce the usage of chemical dyes that contact the human body with the natural pigment using extraction method. However the usage of the synthetic dyes can reduce the harmful effect to the human health and environment. The henna leaves have various advantages because it is non carcinogenic and environment friendly. The composition of natural dyes for the dyeing process on the cotton fabrics are 10g, 20g, 30g, 40g, 50g, 60g, 70g and 80g with 40ml of distilled water. The physical test involved was viscosity (ASTM D445-18). Furthermore, the 80g of henna leaves with 40ml of distilled water have higher viscosity compared to the other concentrations.

Keywords: Cotton, Henna, Natural, Synthetic, Textile

RESEARCH OBJECTIVES

The aim of this paper is to give the overview about the natural pigments which can used as a dye for the dyeing process as replacement for the synthetic dyes. The natural dyes are eco-friendly and noncarcinogenic to the human and environment [2]. Apart from that, nowadays researcher are searching for the natural dyes and reduce the usage of synthetic dyes in the dyeing industry and produce more greener environment. Most of these natural dyes have also inherently antimicrobial properties and could consequently possess high medicinal activity. Dyes are extracted from different types of plants that contain coloring materials such as tannin, lawsone and flavonoids [3]. National and international awareness about depletion of natural resources, ecological imbalance, pollution problem and our disturbed environment due to the ample usage of hazardous chemicals and particularly synthetic dyes have forced people to think safer alternative [4]. Synthetic dyes are not only toxic and harmful to human skin but also to our environment. Therefore these factors have brighten the scope of utilization of natural dyes. The research objectives are to prepared natural dyes based on henna leaves for the cotton fabrics and to evaluate the physical testing on dyed cotton fabrics for textile application.

MATERIALS AND METHODS

The materials are henna leaves, distilled water, pestle and mortar, dyeing pot and dyeing machine. All the raw material were prepared and weighed according to the composition as 10g, 20g, 30g, 40g, 50g, 60g, 70g and 80g of henna leaves [1]. Then 40ml of distilled water was added when the henna leaves in the mortar and the leaves were crashed using the pestle. Moreover the solution was extracted by using filter paper. Next, the solution was poured on the dyeing pot. The cotton fabric size was cut into 11cm x 14cm followed the standard size and the fabric was immersed on the dyeing pot. Then, the dyeing pot was put in the dyeing machine for 90°C and about 60 minutes. The cotton fabrics were dried for 30 minutes in the environment. Then, the superhydrophobic coating was coated on the top of dyed cotton fabrics.

RESULTS

The viscosity of the 80g of the henna leaves was 1.44 Pas. The viscosity for the 10g of henna leaves and 40ml of distilled water was 0.12Pas and 40g was 0.26Pas respectively. The 80g of

the henna leaves and 40ml of distilled water has higher viscosity reading compared to the other concentration. This is because the solution inside the 80g produce very concentrated solution compared to 70g of henna leaves and 40ml of distilled water [5].

FINDINGS

The purpose for the project of utilization of Lawsonia Inermis was basically to produce a natural pigment that may not harm the environment. This is because the materials used is taken from natural resources such as plant. The reason why the pigments can be said as environment friendly. Besides that, the study is conducted to produce a pigment that can be applied on cotton fabric for any particular purpose such as to produce technical textiles. This is because, the fabric that going through the pigmentation process was expected to be more resistance to water, having low porosity, stronger than the other fabrics.

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