

Studies on Natural Dyeing Obtained from Clitoria Ternotea Flowers for Dyeing Cotton and Silk in Different Conditions

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ABSTRACT: As the present trend through out the world is shifting towards the use of ecofriendly and bio-degradable commodities the demand for natural dyes is increasing day by day .They can be obtained from any of plants, viz, leaves, fruits, seeds, flowers, barks, and roots. Natural dyes have several advantages over synthetic dyes for health safety ecological point of view and biodegradability in nature dyes include low toxicity and are not allergenic. Other advantage associated with natural dyes includes low toxicity and are not allergenic. The aim of the present work is to investigate the potential of Clitoria Ternotea flower extract as the dye substance with cotton and silk fabric.

KEY WORDS: clitoria ternotea, natural dye, mordants, fabric.

I. INTRODUCTION

Today, the protection of environment has become a challenge for the chemical industries worldwide. All over the world environment regulation are becoming stricter. The need to realize the importance and the technology of natural dye is more urgent. This is then led to returning to a traditional for more natural way of life. A part of this trend there is now a lobby for using natural coloring matter dye textiles.

Many natural dye stuff and stains were obtained mainly from plants and dominated as sources of natural dyes producing different colures like red yellow, blue, black, brown, and a combination of these. Almost all part of the plants like root, leaf, wood, seed, flower, etc produce dyes. It is interesting to note that over 2000 pigments are synthesized by various parts of plants. Natural dyes are obtained from substance such as flowers, trees, shrubs, buries lichens, shellfish, leaves and minerals.

These days have been used for centuries to produce colour for fabrics, yarns, leather, foods etc. Natural dye can give soft as well as bright colour to the yarns and fabrics. A mordant is a substance used to set dyes on fabrics or tissue sections by forming a coordination complex with the dye which then attaches to the fabric tissue. Natural dyes have lower toxicity are non carcinogenic. Better biodegradability and generally higher compatibility with the environment and no disposal problems. They are obtained from renewable resourses.

The colour is enhanced with age and mellow to increasing beauty. Used in the conservation and repair of historic textiles and saves energy because the raw materials are not from petroleum.

Clitoria Ternotea-Flower



PLANT DESCRIPTION

Clitoria ternatea, is shrub belongs to the Fabaceae family.

It is a perennial herbaceous plant. Its leaves are elliptic and obtuse. It grows as a vine or creeper, doing well in moist neutral soil. The most striking feature about this plant are its Vivid deep blue flowers. They are solitary, with light yellow markings. They are about 4 cm long by 3 cm wide. There are some varieties that yield white flowers.

II. EXPERIMENTAL METHODS

Preparation of dye extract

50 g of Clitoria Ternotea flower was taken in 100ml Ethanol(70%)and that solution was crushed as mixed and then filtered

Optimization of the dyeing variables Selection of ML ratio

To optimize the ratio 1:20,1:30, 1:40, 1:50 were tried for the dyeing process. The suitable MLR was determined by using OD values of photo calorimeter.

Effect of dyeing temperature

To study the effect of temperature of dyeing of Clitoria Ternotea Flower, the cotton fabric was dyed at different temperature 50°C; 60°C, 70°C, and boiling from the optical density values then suitable temperature were identified.

Effect of dyeing time

To optimize the dyeing time, 15 minutes, 25 minutes, 30 minutes duration were taken for the dyeing process. From the optical density values the suitable time for getting maximum depth and brightness in the fabric were determined

Chemicals used for dyeing

The following chemicals were used.

Sodium carbonates (2%)

Sodium chloride (2%)

The different metallic salts (3%) used as mordents are:

1. Copper sulphate, 2.ferrous sulphate, 3.potassium dichromate, 4.magnesium sulphate

Procedure

Accurately weighed samples were entered into dye baths containing required amount of dye extracted and water. After 5 minutes required amount of sodium carbonate was added. The dyeing was carried out for 30 minutes at 60°C the dyed samples were taken out, rinsed with water squeezed and dried.

III. RESULT AND DISCUSSION

Dyed samples of cotton with Clitoria Ternatea. Flower With different mordents.



From the table it was confirmed that dyed sample of pre mordant method have deep and even shade when compare to other method.

Dyed samples of silk with Clitoria Ternatea. Flower With different mordents.

International Journal of Innovative Research in Science, Engineering and Technology

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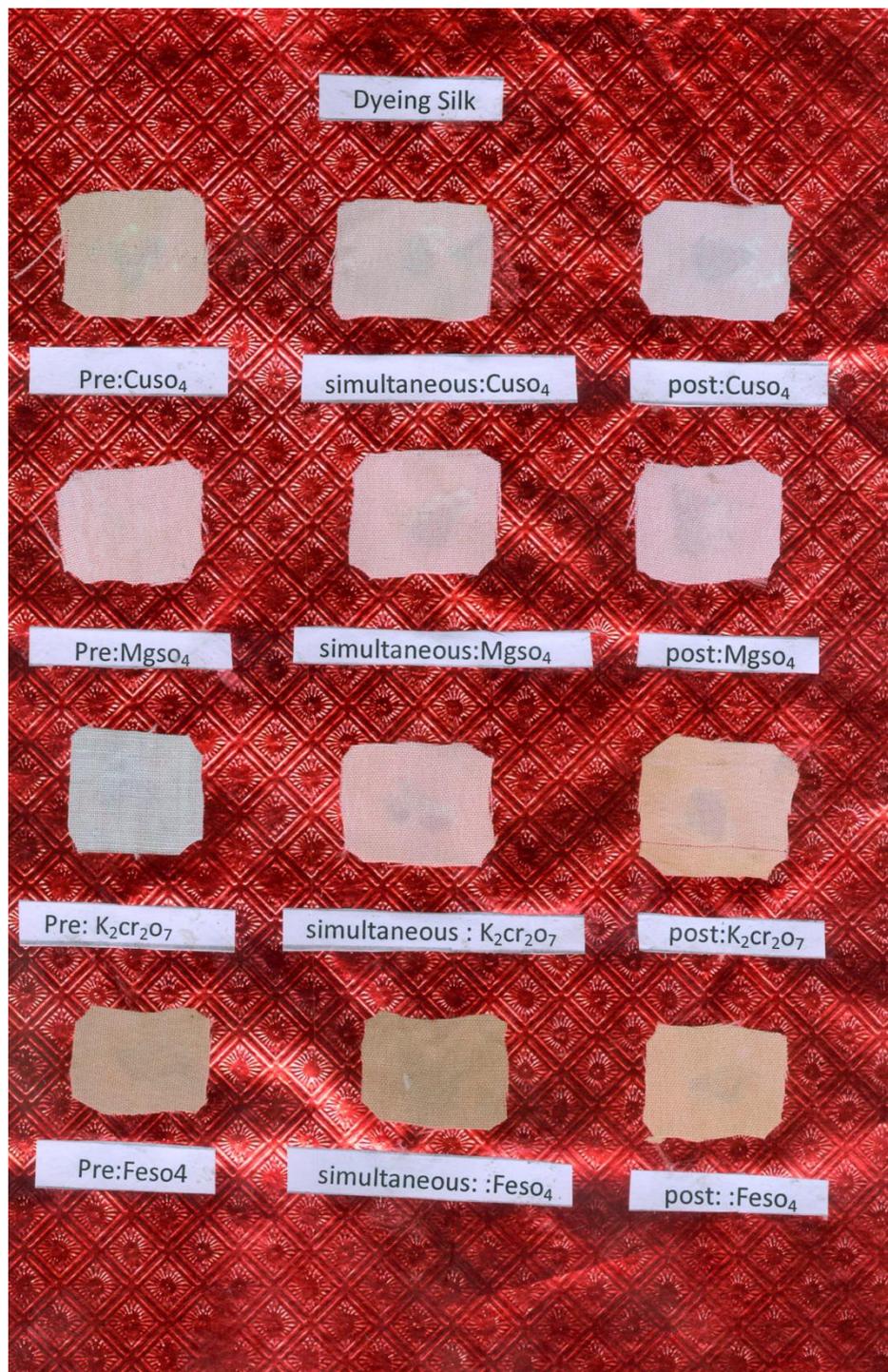
Volume 4, Special Issue 1, February 2015

THIRD NATIONAL CONFERENCE ON ADVANCES IN CHEMISTRY (NCAC – 2015)

On 18th February 2015

Organized by

Department of Chemistry, Easwari Engineering College (SRM Group of Institutions), Chennai-600089, India.



From the table it was confirmed that dyed sample of pre mordant method have deep and even shade when compare to other method.

IV. DISCUSSION

The yields of the dye can be improved by using sophisticated techniques. The fabric dyed with “**clitoria Ternotea**” flower gave different shades of green yellow blue. Mordents play very important role in imparting colour to the fabric. The used different mordents gave different shades. Better colour strength result are depends on the metal salt used. Strong co-ordination of metal enhances the interaction between the fiber and dye, resulting is high dye is uptake.

For Cotton:

From the 1st table it was confirmed the dyed sample of pre mordant method have deep and even shade when compared to others.

It has been used four different mordents such as copper sulphate, potassium dichromate, ferrous sulphate, and magnesium sulphate with three different mordanting methods such as premordanting simultaneous mordanting and post mordanting.

According to depth of colour pre mordanting gives good result with other two mordanting. In pre mordanting, copper sulphate gives good result.

For Silk:

From the 2nd table it was confirmed the dyed sample of post mordant method have deep and even shade when compared to others.

According to depth of colour post mordanting gives good result with other two mordanting. In pre mordanting, ferrous sulphate gives good result.

For Cotton:

The dye extracted from the flower of Clitoria Ternotea has good affinity for cotton fabric, when dyed in the different metallic salt. Different metallic salt produces differ colour. Pre mordanting method gives good fastness results then post and simultaneous mordant method. It was found that Clitoria Ternotea flowers were suitable for medicinal textiles.

For Silk:

The dye extracted from the flower of Clitoria Ternotea has good affinity for Silk fabric, when dyed in the different metallic salt.

Different metallic salt produces different colour. Post mordanting method gives good fastness results then pre and simultaneous mordant method. It was found that Clitoria Ternotea flowers were suitable for medicinal textiles.

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