



EXTRACTION OF NATURAL COLOURANTS AND ITS VARIOUS APPLICATION



INTRODUCTION

Natural dyes comprise those colorants that are obtained from animal or vegetable matter without chemical processing. They are mainly mordant types, although some vat, solvent, pigment, direct and acid types are known. The first fiber dyes were already used in prehistoric times after the last ice age, around 1000 BC.

They consist of fugitive stain from barriers, blossoms, bark and roots. They were early example of so-called direct dyes. The dye that colors the fiber without special treatments of the dye material or textile. Accordingly, the dyeing process itself was simple but resulted in rather limited color fastness. Poor resistance towards color change after repeated washings or exposure to light. More sophisticated dyes were to produce color with better fastness. The discovery of methods of synthesizing alizarin and indigo spelt the death knell of the indigenous industry. Due to the ease of application, the bright shades obtained and the hard sell of the colonial rulers and weavers started to synthetic dyes without the clear understanding.

OBJECTIVE

1. Since long ages natural dye is in use but only for protein fiber, silk, wool. But very less work has been done on cotton using natural dyes.
2. To Study its fastness properties.
3. To Study its washing properties.
4. Development of colour on various natural fabric by dyeing or printing and studying its mechanism.

PLAN OF WORK

MATERIALS USED:

1. FABRIC:

- Commercially sourced and bleached 100% cotton fabric was used for investigation.
- Wool fabric

2. SOURCES OF NATURAL DYES:

- Tamarind seeds
- Almond shell
- Almond coating
- Sunflower

MORDENT

- Stannous chloride
- Alum
- Copper sulphate
- Alum-Stannous chloride

COLOUR

Yellow
Orange
Brown
Golden Yellow

CHEMICALS AND AUXILIARIES:

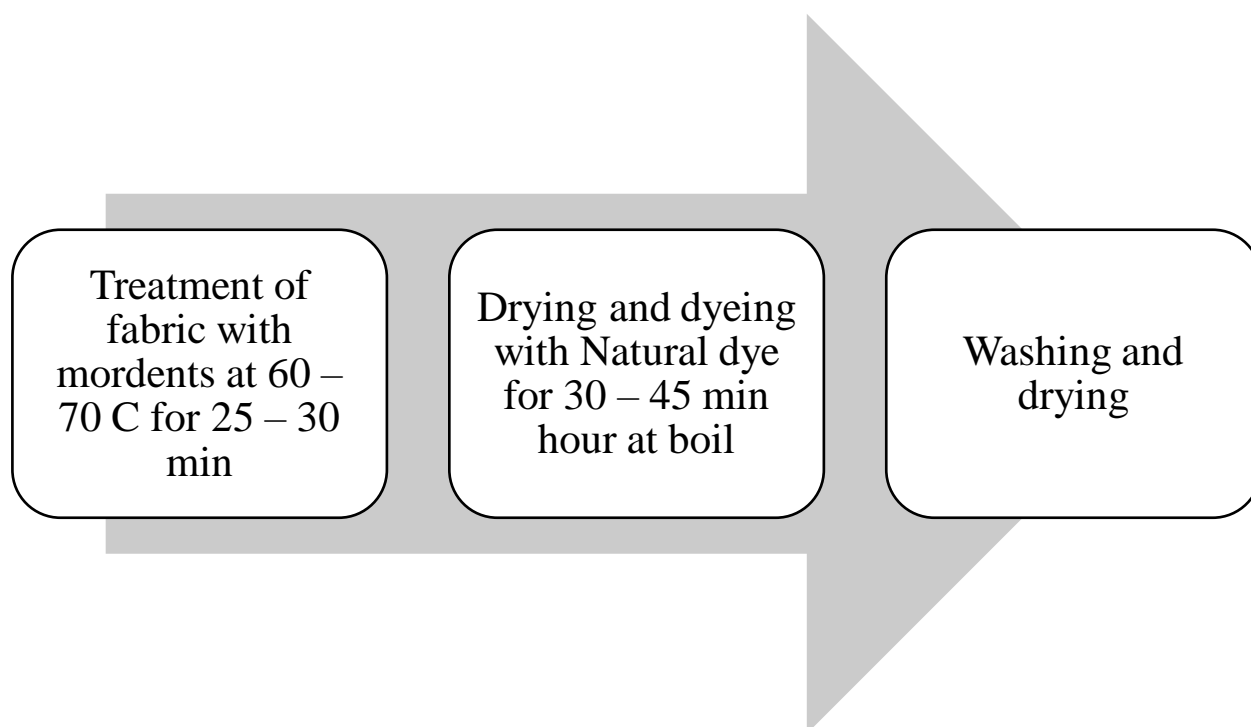
- Soda ash
- Tartaric acid
- Citric acid

EXTRACTION OF NATURAL DYES FOR DYEING

AQUEOUS EXTRACTION METHOD:

- Dye powder – 60 gpl (gram per liter)
- Sodium carbonate – 20 gpl
- Total volume 1 litre with water
- Temperature – Boiling
- Time – 60 min

DYEING WITH NATURAL DYES



PRINTING PASTE FORMATION

Natural dye	6gm
-------------	-----

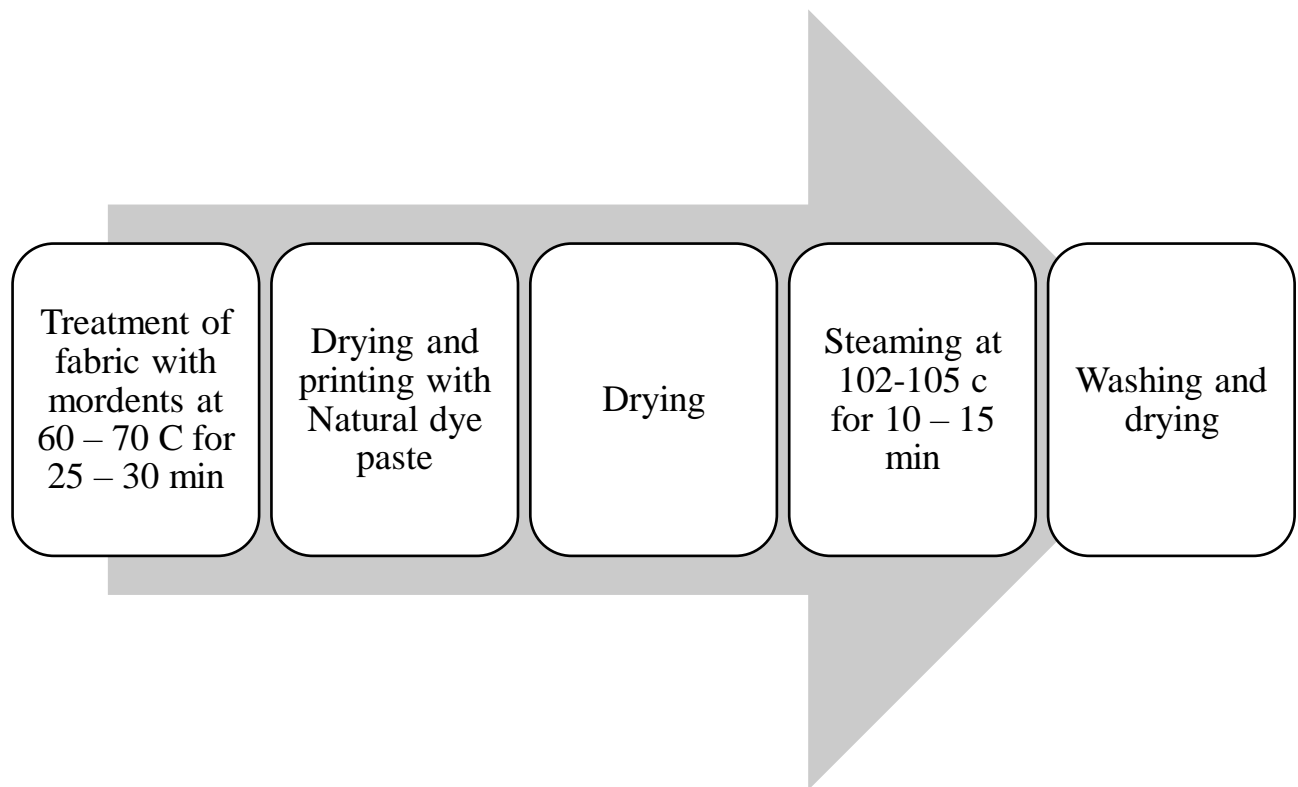
Soda ash	25gm
----------	------

Water	10-15ml
-------	---------

Thickener	Remaining
-----------	-----------

Total	100gm
-------	-------

APPLICATION PROCESS ON TEXTILES



TESTING OF COLOUR FASTNESS

1. Colour fastness to rubbing:

Conditions: 14*5 cm, 10 cycles

M/C: Crock-o-meter

2. Colour fatness to washing

ISO 105 C01

Conditions: soap – 5g/l

Time-30 min

Temp – 40C

ISO 105 C03

Condition: soap – 5g/l

Time-30 min

soda – 2g/l

Temp-60C

M/C – LAUNDR-O-METER

3. Colour fastness to bleaching (hypochlorite and hydrogen peroxide)

REFERENCES

1. Gulrajini M L, "Present statues of natural dyes in: convention of natural dyes," IIT Delhi Dec-Nov 1999, pg 20.
2. Roshan Paul, Sandeep Naik "Natural dyes: classification, extraction and fastness properties". University of Bombay, Textile Dyer and Printer, Oct 1996, pg 16.
3. M. Sundaranjan, S. Raji. "Improve the wash fastness of natural dyes on silk fabric" Department of Industrial Chemistry, Tamilnadu, Colourage Aug 2009, Vol 8, Pg 67-70.
4. Rashmita das, A. Nayak, "natural dyes from the waste leaves of Artocarpus Hetrophylluse" Natural product department "Bhuvaneshwar, Colourage May 2009, pg 89-94.
5. Ms. Irfans Siddiqui, M. Khaleeq Siddqui," Effect of mordants on durability of cotton and silk fabric dyed with parijataka flower", Dept. of clothing and textiles, Colourage April 2009, vol 4, pg 74-79.
6. Yogita shing and Alka Goel, "Dyeing of wool fabric with reactive, acid and natural dye for comparative study" College of Home Science, Textile dyer and printer, June 4 1997, pg 15-16.
7. Rameshwar Dyeal, Rakesh Kumar "Natural dye from Parphenium hysterothorus "Forest reach Inst, Colourage Aug 2008, Vol 8, Pg 75-77.