DESIGNING OF STOLES WITH TIE AND DYE TECHNIQUE USING NATURAL DYES

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Abstract

Due to the deleterious effects on the environment and living systems, synthetic dye disposal has become a cause for concern. Efforts are now being made to replace synthetic dyes with natural dyes with natural dyes derived from plants. Present study aimed to design stoles with tie and dye technique using natural dye, was taken up to extract natural dyes from vegetable waste material and its application on tabby silk fabric for creation of stoles with tie and dye.Natural dyes were extracted from seven selected vegetable wastes and used for designing of stoles by selected combination of dyeswith different tie and dye techniques. The ferrous sulphate (5%) and aluminium sulphate (10%) mordantswere used for dyeing. The concentration of dye material was kept 20% (owf). The fabric was tied and dyed at 100^{o}C for 45 minutes keeping the M:L ratio 1:50. Pre-mordanting and post mordanting techniques were used before and after dyeing respectively. It was found that dyed samples were having very good colour fastness to washing, pressing, artificial perspiration and sunlight. Costs of created stoles were calculated and the marketability and consumer acceptability of the designed stoles were assessed.

Key Word- Natural Dyes, Mordant, Silk, Tie- Dyeing.

INTRODUCTION:

Tie-dyed products are a result of local wisdom of unique patterns and colours in silkfiber, which is a naturalmaterial. A simple design process begins with designing the patterns and colours from natural ingredients. These are unique natures of the tie-dyeing, which is transmitted from generation to generation (Mayusoh, 2015). However, this uniquesimplicity fails to capture the heart of people or make people proud (maulik, R. 2011). The new generation cannot see the beauty of this art form and sees thefabric as being opaque, dark, and outdated.People today do not accept the transfer on the emotional level, feel pride, or the desire to inherit this form ofart from their ancestors. As long as globalization continues, valuable local knowledge, such as the tie-dyed natural products would disappear eventually.

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This raises the issue ofhow we can preserve the wisdom of creating tie-dyed, natural products.(Karolia, 2010)

Hence, the researchers have attempted to study the design process of dyeing with natural dyes to mimic thequalities of synthetic dyes, including the colour shades and they often forget about the unique qualities of naturalcolours and try to apply the rules and criteria of synthetic dyes to natural substances, especially in terms of thedurability of the dye, which is very different (maulik, R. 2011). Naturally dyed products become more beautiful as the colour transfers and fades. In the past, after dyeing thegarment, people would soak them in water and beat them until the fiberturned soft. The older the garment gets, the morebeautiful it becomes. It is one of a kind and unique technique, which is the charm. These fabrics are conceived from wisdomand the greeneries around the maker, sometimes from rare plants. Some colours not only add to the look of the fabric,but also preserve the fibers. Natural colours should be used with care.

This research designed thestoles with unique patternsof tie-dye and dyed silk with extracted waste material of nature and eco- friendly mordants and best method of mordantingwere used. Natural dyes have a superior aesthetic quality and skin friendly and also protect our skin to reactions which was caused by using synthetic dyes and is also better for theenvironment.

AIMS AND OBJECTIVES:

The Aims and Objectives of the present study are:-

- Extraction of natural dyes from different sources.
- Application of extracted dyes on selected fabric with different mordants and mordanting techniques.
- Designing of stoles by selected combination of dyes, mordants and tying techniques.
- Determination of colour fastness of dyed samples.
- Finding out the marketability and consumer acceptance of created stoles.

MTHODOLOGY:

Seven natural dye materials in the form of peels, leaves, roots, petals etc were selected for the study. The details of selected natural dyes are shown in (Table no. 1).For the extraction of dye, selected raw material (pomegranate rind, water chestnut, onion peels, madder roots, Harsingar, Burans and Marigold) were collected and dried for 6 to 7 days in shade, then

grinded into powder form. Powder of raw materials were mixed in hot water and boiled for one hour for the extraction of dye maintaining the level of solution in the container while boiling. After the colour was extracted from the raw material, the solution was cooled and then filtered with muslin cloth for immediate use. But the extraction method of dye fromonion peel, water chestnut, pomegranate rinds was different from other source, these peels were crushed and dipped in distilled water and allowed to boil in a beaker for one hour.

Table no. 1: List of raw material selected for the study

S.NO.	Common Name	Botanical Name	Part used
1	Onion	*Allium cepa*	Peels
2	Madder	*Rubiatinctorum*	Roots
3	Water chestnut	*Trapanatans*	Chestnut shells
4	Burans	*Rhododendron arborium*	Flower Petals
5	Marigold	*Tagateserecta*	Flower petals
6	Harsingar	*Nyctanthesarbortristis*	Flower petals
7	Pomegranate	*Punicagranatum*	Pomegranate rind

- Natural fibres such as cotton, wool and silk are suitable for natural dyes. Tabby silk was selected for dyeing with natural dyes because it gave bright colour. It is protein fibre and has good absorbency and good affinity towards natural dye. It is a light weight fabric and suitable for stoles. That is why; tabby silk was selected for the study.Scouring is the process of removing all these impurities from the fabric. For Tabby silk scouring was carried out by soaking the fabric in the mild soap solution for 2 or 3 hours and then the fabric was rinsed thoroughly with water and dried in the shade.
- For the present study, two mordants were used i.e. Aluminium Sulphate and Ferrous Sulphate because these two mordants are the most eco-friendly. The fabric was mordanted with selected mordants using pre-mordanting and post-mordanting.

In pre-mordanting the scored fabric were first treated with mordant for 30 minute and then dyed with the natural dye.

In post-mordanting the dyed fabric was treated with mordant for 30 minute.

- The various methods and techniques were employed in tie and dye. It consists of marbling, knotting, folding and binding etc that shown in (table no. 2). While tying the fabric must be kept in mind the techniques are suitable for the article and nature of the fabric. The following techniques were done in the present study (Rastogi, 2016):

TECHNIQUE	FIGURE
Marbling	
Rouching	
Circular Design	
Stripped Design	
Folding	
Plain Binding	

Knotting	
Tritik	 
Twisting and Coiling	

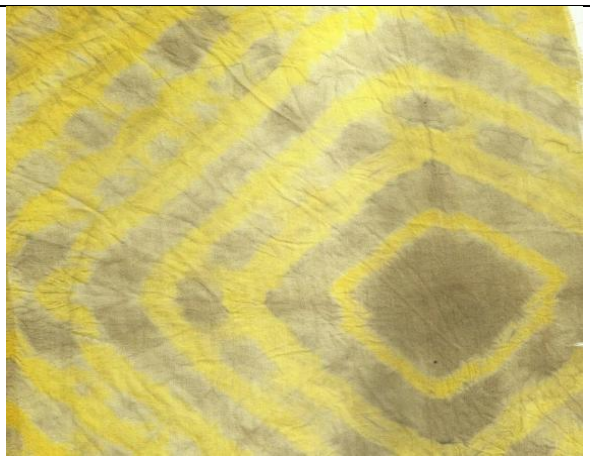
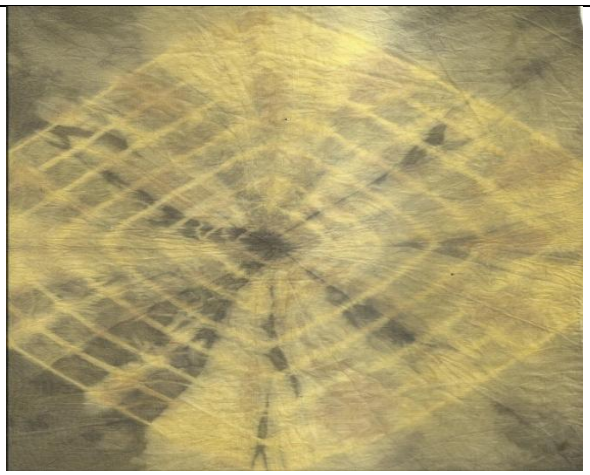
Table no. 3: Combination of dyes for making stoles with tie and dye technique.

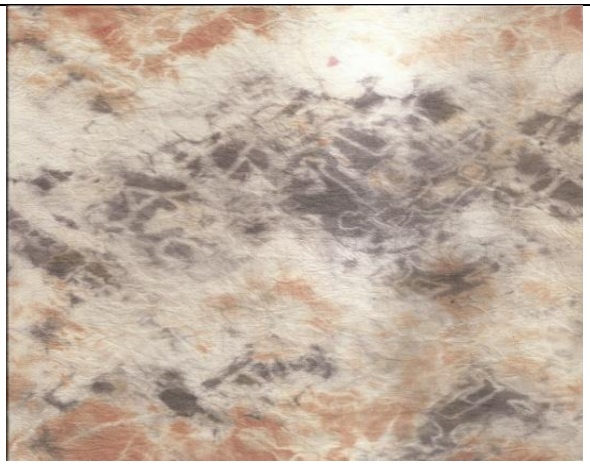
Sr no.	**Combination of dyes for dyeing stoles with tie and dye**
1.	Water chestnut peels and Madder roots with aluminium sulphate mordant
2.	Madder roots and Burans flower with aluminium sulphate mordant
3.	Harsingar flower and Madder roots with aluminium sulphate mordant
4.	Marigold flower and Pomegranate rind with aluminium sulphate and ferrous sulphatemordants
5.	Water chestnut peels and Harsingar flower with aluminium sulphate and ferrous sulphate mordants
6.	Madder roots and Harsingar flower with aluminium sulphate and ferrous sulphatemordants
7.	Madder roots and Burans flower with aluminium sulphate and ferrous sulphate mordants
8.	Pomegranate rind, Madder roots and Burans flower with aluminium sulphate and ferrous sulphatemordants
9.	Harsingar flower and Madder roots with aluminium sulphate and ferrous sulphatemordants
10.	Onion peels and Madder roots with aluminium sulphate and ferrous sulphatemordants
11	Burans flower with aluminium sulphate mordant
12.	Onion peels and Madder roots with aluminium sulphate mordant

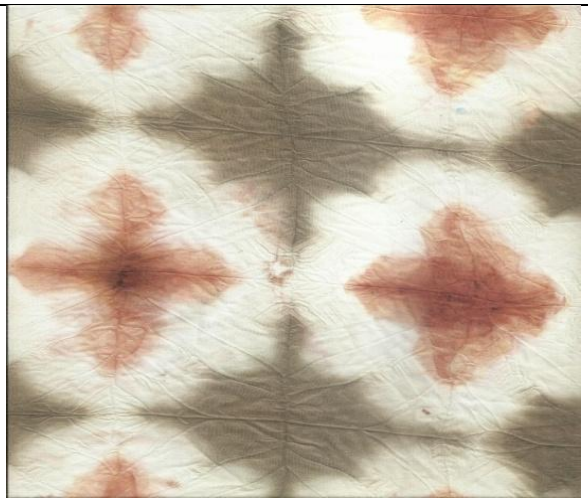
13.	Burans flower with aluminium sulphate and ferrous sulphatemordants
14.	Marigold flower and Harsingar flower with aluminium sulphate and ferrous sulphatemordants
15.	Burans flower with aluminium sulphate mordant

RESULTS:

Table no. 4: Application of different natural dyes on silk fabric:

	**FOLDING** • Pre-mordanted with aluminium sulphate. • Dyed with Harsingar flower. • Post mordanted with ferrous sulphate.
	**FOLDING AND BINDING** • Pre-mordanted with aluminium sulphate. • Dye with Marigold flower. • Post mordanted with ferrous sulphate.
	**FAN FOLDING** • Post mordanted with ferrous sulphate. • Dyed with Burans flower.

	**KNOTTING** • Post mordanted with ferrous sulphate. • Dyed with Water Chestnut peels.
	**TRITIK AND BINDING** • Pre-mordanted with Aluminium sulphate. • Dyed with Water Chestnut peels.
	**LEHERIYA** • Pre-mordanted with aluminium sulphate. • Dyed with Pomegranate rind. • Post mordanted with ferrous sulphate.
	**MARBLING** • Pre-mordanted with aluminium sulphate. • Dyed with onion peels. • Post mordanted withferrous sulphate.

	**FAN FOLDING** • Pre-mordanted with aluminium sulphate. • Dyed with Madder roots. • Re-tied the fabric. • Pre-mordanted with aluminium sulphate. • Dyed with Burans flower. • Post mordanted with ferrous sulphate.
	**KNOTTING AND FOLDING** • Pre-mordanted with aluminium sulphate. • Dyed with Buransrlower.

After yielding the colour, the dyes were applied on fabric with tie and dye technique. For this purpose, the most striking and appealing colour combinations were tried for their feasibility. Different traditional and contemporary techniques of tie and dye in single colour with different mordants and two colours with combination of mordants were tried out. Some samples are shown in Table no. 4. One or two techniques of tye and dye are used (folding with binding, knotting with folding and tritik with binding, leheriya, marbling)

Colourfastness test:

In the case of wash fastness it was observed that all the samples showed very good to excellent fastness, ranging between 4.5 – 5. Pressing fastness for samples dyed with all the dye sources gave good to excellent (4 – 5) results with both dry and wet pressing. Samples showed noticeable change in colour of all the printed samples after 4 days exposure to sunlight.In terms of artificial perspiration, samples were subjected to two types of chemical acidic and alkaline and it was seen that thesamples had fastness ranging between 4 to 5, good to excellent

DESIGNS OF STOLES











Marketability and consumer acceptance:

Designed stoles were appreciated by most of the shopkeepers and consumers. They liked the overall appearance of the stoles and found that the quoted price of the stole were reasonable and most of the respondent were willing to buy the stoles and placed an order for the stoles.

CONCLUSION:

This is a study about theart of designing stoles by tie-dyeing with extracted natural dyes: A study ofstyle, technique and design process of tie-dyeing, method of mordanting and the extraction of natural dyes that led to the design of tie-dyed silk stoles. In these designs, the researcher studied the extraction of natural dyes from waste material of plants and fruits: onion peel, madder roots, water chestnut, burans petals, marigold petals, harsingar flower and pomegranate rind. Then the preliminary design principles of tie-dye is applied: folding,marbling, twisting and coiling, binding, knoting, stripped design rouching and circular design, combined until a new pattern is formed to produce colourful and beautiful stoles.

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