

Designing And Constructing A Men 'S Shirt By Using Stick Resist Batik Printing And Natural Dyeing

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Abstract- Batik is an Indonesia cultural heritage. In general, batik dyeing uses synthetic dyes, which can cause problems in health and the environment. Therefore, the exploration of natural dyes is needed to apply to batik. Natural dyes were extracted using a heating method with a water solvent. This study explores the feasibility and sustainability of utilizing butterfly pea flowers as a natural dye source. Sustainable natural dyeing from butterfly pea flowers offers eco-friendly alternatives to synthetic dyes, contributing to a more environmentally conscious textile industry. An ecofriendly method was developed for utilization of these wasted flowers by Extraction of butterfly pea flower.

Keywords: Sustainable, Flowers, Natural dyeing, bee wax.

I. INTRODUCTION

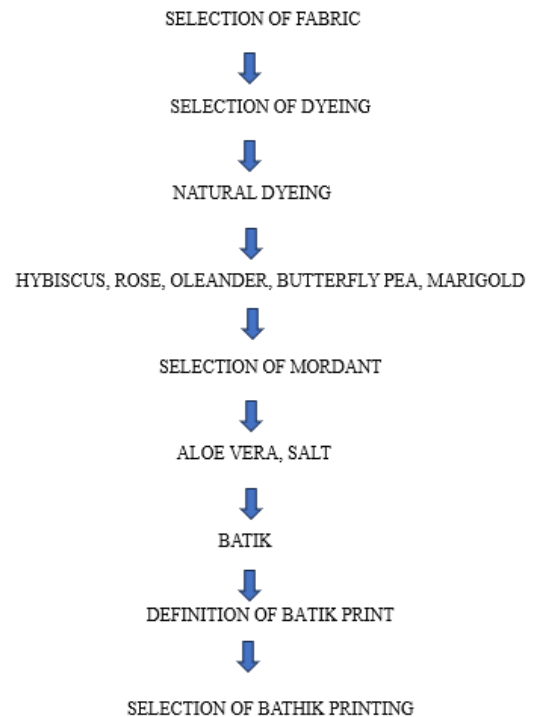
The origin of textile industry may be traced to the interval between the old stone and new stone age¹. During that period domestication sheep and discarded animal skins in favors of reeducates fabric made from wool fiber. Fashion adoption is a process of social acceptance by which a new style or product is adopted by the consumer after commercial introduction by the designer or the manufacture. Fashion is the form of something, mode of action or operation, the prevailing style during a particular time¹. Batik like those in printing like tie – dye, in batik also we create design or pattern by using which helps resist penetration of the color in areas covered by it. In tie and dye the fob knotted and tied to resist the penetration of dyes².

OBJECTIVES:

Hence the specific objectives of the study are to

- To select the suitable material for printing
- To select the suitable batik printing
- To select the natural dyeing
- To apply the design on fabric by batik technologies selected
- To construct the men's shirt
- To evaluate the final garment by visual inspection

II. EXPERIMENTAL PROCESS



2.1 SELECTION OF FABRIC

The material known as linen, which is derived from flax, is mostly used for home goods⁴. While linen and cotton are similar, linen is created from flax plant stem fibres rather than the bolls that surround cotton seeds¹. Linen clothing is preferred in warm, humid weather. The source of linen fibres, flax plants, are collected. When the flax is ready, harvesting is usually done by hand or with machinery⁶. The act of removing the flax stem and fibres. There are two methods for doing it: retting in water (immersion) and retting in dew (exposure to dew). Stems are dried after retting. Both mechanical and natural drying are possible⁵.

2.2 SELECTION OF DYEING

Depending on the chemical makeup of the dyes and the fibres, dying textiles with natural dyes can be done in a neutral bath or an alkaline, acidic solution. Cotton and silk

were dyed with various mordants using dyes such as Hibiscus, rose, Manjistha, henna, indigo, and marigold, oleander, butterfly pea according to Mohanty et al.⁷ Several mordants can be applied to produce a variety of hues, such as black, brown, green, yellow, and orange.

2.3 NATURAL DYEING

The term "natural dye" is typically associated with goods that come from plants, while it also includes dyes made from insects like lac, kermes, and cochineal. Complex mixes of ingredients taken from natural materials like plants, animals, or minerals are used to make natural colour. Natural colorants or dyes come from minerals, plants, or invertebrates. Vegetable dyes derived from plants—roots, berries, bark, leaves, and wood—as well as other biological sources like fungi, make up the majority of natural dyes⁴.

2.4 HYBISCUS

Pink-Red Hibiscus *rosa-sinensis* are common Hibiscus flower in India. Hibiscus⁸. Flower preparations are used for hair care. The flowers themselves are edible and are used in salads in the Pacific Islands⁹. The flowers are used to shine shoes in parts of India. It is also a pH indicator⁸. China rose indicator turns acidic solutions to magenta/dark pink and basic solutions to green. It is also used for the worship of Devi and especially the red variety takes an important⁷.

2.5 ROSE

The rose has been valued historically and accepted by many civilizations due to its many therapeutic, spiritual, emotional, and gastronomic uses². The magical qualities of The Rose can be incorporated into textiles in a variety of ways⁹. One technique that's simple to accomplish in a home kitchen with a pot, heat source, water and roses is extraction¹¹.

2.6 OLEANDER

The samples dyed with oleander and mordanted with FeSO₄ and potassium aluminium sulfate had the best colour strength⁵. The coloured samples that were chosen also had perfect colour fastness to water, washing, perspiration, and rubbing. The Nerium oleander flower can be used for ultrasonic dyeing of cotton and silk⁴.

2.7 MARIGOLD

The marigold flower, or *Tagetes erecta* L., is produced for both its medical properties and as a cut flower⁴.

It is a significant source of carotenoids and lutein. The yellow to orange-red marigold blooms (*Tagetes*) are a significant source of the carotenoid component lutein⁸. Lutein is currently gaining popularity as an active element in textile colouring and the food industry.

2.8 BUTTERFLY PEA

To extract the pigment, the petals are usually boiled or steeped in hot water¹. liquid is then filtered and utilized as a dye. The resulting colour might range from a light blue to a deep purple-blue, depending on the quantity of the dye and the pH of the liquid. Bring half a cup of flowers to a boil with one cup of water, then let simmer for a bit³. Strain the dark blue liquid and add some neutral to make it last longer. Plants contain chemical molecules called anthocyanins².

2.9. SELECTION OF MORDANT ALOE VERA

Aloe Vera, which has long been known for its ability to improve human health and appearance, is now showing promise as a significant mordant for natural dyes⁷.

Natural dyes have been used to dye textile fabrics since ancient times, according to historical records. For broader application, however, a few significant issues still need to be resolved⁶. The fact that these dyes are primarily non-substantive and must be applied to textile materials with the aid of mordants presents one of the challenges¹⁰. Usually, the fabric is mordanted with metal salts like aluminium, iron, copper, chromium, or tin to facilitate the attachment of natural colour. For this purpose, well-known mordants include stannous chloride, ferrous sulphate, or green vitriol, and potash aluminium sulphate⁴.

2.10 SALT

A specific proportion of dyestuff fixed with textiles is added to the alkali, and it acts as a glue to retain the dye molecules in the cloth¹. This is why salt is employed in textile dyeing processes with different colorants (direct dye, reactive dye) as an exhausting agent. Salts have a significant impact on reactive dyeing because they increase the dye's affinity for the fibre, speed up their interaction, and decrease their solubility⁵. Glauber's salt, common salt, or vacuum salt are therefore frequently used⁷.

2.11 BATIK

Wax techniques like batik prevent you from dyeing the entire piece of cloth. The Indonesia island of Java is where this approach first appeared⁸. Batik is created by pressing a

resistance with a copper stamp known as a cork, or by using a specialized instrument called a Kanter to draw dots and lines on a push⁵. Because the applied wax is colour fastness, the craftsman can colour the cloth selectively by dipping it in one colour, removing the wax with boiling water, and then repeating with a copper stamp known as a cork, or by using a specialized instrument called a Wax-resist dyeing, or batik, is an Indonesian method of dyeing an entire textile¹². This method came from Java, an Indonesian island. One method of creating batik is either using a spouted tool called a to make wax dots and lines⁴.

2.12 DEFINITION OF BATIK PRINT

The term "print" has multiple meanings in the economy. They claim governments print money when they expand the money supply or issue new currency⁹. The generation of printed or digital information concerning costs, schedules, or other details is sometimes referred to as print. Drawing candlestick charts is referred to as printing in technical analysis³.

2.13 SELECTION OF BATIK PRINTING

First, a huge mallet is used to wash, soak, and beat a fabric. Patterns are sketched in pencil and then redraw using hot wax, which acts as a dye-resist and is typically formed from a paraffin or beeswax mixture that is occasionally combined with plant resins⁷. There are several tools available for applying the wax¹⁰. The most popular is a pen-like device known as a canting (pronounced in Javanese as occasionally transcribed with archaic Dutch orthography as tjanting)¹¹.

III. RESULT AND DISCUSSION

The acceptance of the particular style or a fashion for current of the constructed men’s shirt were visualized and analysed by the visual inspection. The shirt was evaluated by 25 judges and were rated in percentage. The details of the panel rating including selection of material, suitability of design, suitable of colours, suitability of current trend and opinion about end product. The fabric samples were dyed, dried, and then washed with water to get rid of any leftover colour. A colorimeter was then used to measure the dyed cloth' colour intensity. I have finished my sample made with natural dye to Men’s shirt outfit.

3.1 VISUAL EVALUATION

From the table 1 it is clear the sample BA was rated as excellent by 98% of judges for general appearance, 95% of judges rated the colour of the sample as bright. In case of

evenness, 98% rated the sample BA as even and 95% of judges rated the sample in BA as soft of texture.

[ALOE VERA]

Table 1

SAMPLE NAME	GENERAL APPEARANCE			COLOUR			EVENNESS			TEXTURE		
	EX	G	F	EX	G	F	EX	G	F	EX	G	F
H A	95	3	-	94	1	-	94	2	-	93	3	-
R A	92	4	-	92	5	-	95	4	-	92	2	-
O A	95	2	-	92	2	-	91	3	-	90	4	-
M A	96	3	-	93	3	-	96	2	-	93	2	-
B A	98	5	-	95	4	-	98	5	-	95	4	-

The sample table 2 was rated as excellent by 95% of judges for general appearance and 94% of judges rated the same sample as bright for colour. In case of evenness 94% of the judges rated BS as even and 94% of judges rated the sample BS as soft in texture.

[SALT]

Table 2

SAMPLE NAME	GENERAL APPEARANCE			COLOUR			EVENNESS			TEXTURE		
	EX	G	F	EX	G	F	EX	G	F	EX	G	F
H S	94	2	-	93	4	-	93	2	-	92	3	-
R S	93	5	-	93	2	-	92	1	-	91	4	-
O S	92	2	-	91	3	-	94	3	-	93	2	-
M S	93	1	-	92	2	-	94	2	-	90	1	-
B S	95	5	-	94	4	-	95	3	-	94	3	-

Result:

Hence the visual evaluation of the sample BA and BS were rated as excellent in general appearance, bright in colour, even in evenness and smooth in texture by majority of judges.

3.2 VISUAL EVALUATION DYED BATIK SAMPLE ALOE VERA AND SALT

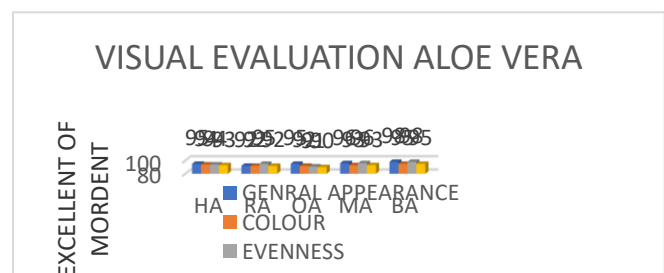


FIGURE 1

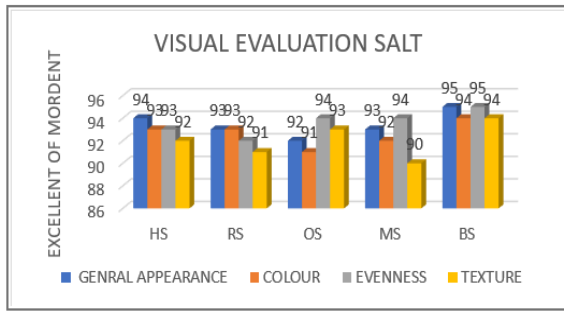


FIGURE 2

3.3 COLOUR FASTNESS TEST

Table 3

S.no	Sample	Sunlight	Washing		Pressing				Crocking			
			Colour change	Staining	Wet		Dry		Wet	Dry		
					Colour change	Staining	Colour change	Staining			Colour change	Staining
1	BA	3	4/5	4/5	4/5	4/5	4	4	4/5	4/5	5	5
2	BS	2/3	4	4	4/5	4	3/4	4	4	4/5	5	5

1 – very poor 1/2 -2- poor 2/3 -3 – moderate 3/4 -fair 4- Good 4/5 – very good 5- excellent

From the table 3, its clear that the samples BA and BS has the moderate colour fastness to sunlight. As regard, colour fastness to washing as well as staining both samples, BA and BS showed good colour fastness. For wet pressing the samples BA and BS showed very good colour fastness and staining. As for dry pressing the sample BA and BS showed excellent and very good colour fastness. For wet crocking, the sample BA showed very good colour fastness and sample BS showed fair colour fastness and dry crocking the sample BA and BS showed excellent colour fastness.

3.4 ASSESSMENT OF COLOURFASTENESS TO WASHING

In this, using a launder-o-meter, the colour fastness of colour linen cotton fabric was evaluated in compliance with the guidelines outlined in IS: 3361-1984 (ISO-II) 15. A sample measuring 10 by 4 cm was cut, tucked in between two nearby textiles, and sewn from all four sides. Two textiles were placed next to each other; one was composed of the same type of fibre as the colour sample that was going to be tested, and the other was composed of wool.

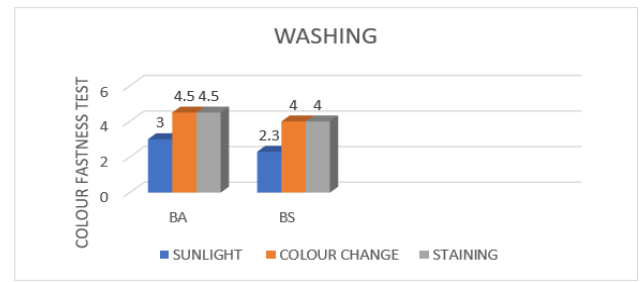


FIGURE 3

3.5 PRESSING TEST

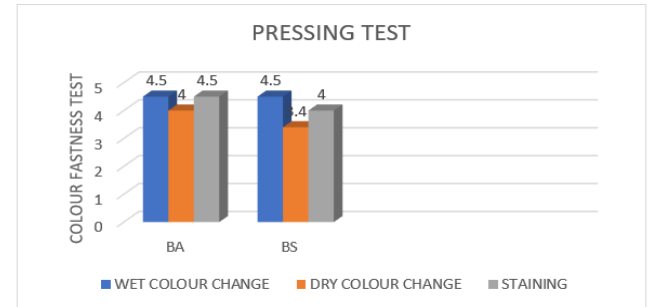


FIGURE 4

3.6 CROCKING TEST

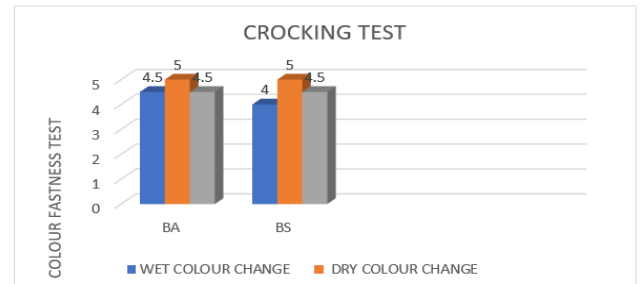


FIGURE 5

3.7 DESIGNED GARMENT IN NATURAL DYE AND BATIK



FIGURE 6. SAMPLE BATIK DESIGN



FIGURE 6. SAMPLE BATIK AND NATURAL DYE SHIRT

IV. CONCLUSION

Natural dyed hand batik on linen cotton fabric has become more and more popular in recent years, driven by the global desire for eco-friendly handcrafted goods and the ever-evolving fashion trend, particularly in the European market. The inventive mediums that today's designers and artists are always exploring are inspiring fresh ideas for textile art. Natural dye batik techniques, which are as old as they are, are gaining a lot of attention and are being updated, blended, and explored in very creative ways. Since most natural dyes are polygenetic, there is a propensity to use various kinds of aloe vera to get a range of hues without taking into account the environmental impact of their toxicity.

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