

A STUDY ON NATURAL DYEING WITH *COCOS NUCIFERA HUSK* & ANTIBACTERIAL ACTIVITY OF *MADHUCA LONGIFOLIA* ON COTTON KNITTED FABRIC

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ABSTRACT

The scenario of textiles has turned back from synthetic textiles into eco-friendly textiles. Nature has a source of medicinal agents for thousands of years and an impressive number of modern drugs have been isolated from natural sources, many based on their use in traditional medicine. It is reported that over 50% off all modern clinical drugs are of natural product origin and natural products play an important role in drug development programs in the Pharmaceutical industry.

Medicinal plants are rich in several potential drugs and it holds healthier and harmless alternate to synthetic drugs .Different parts such as leaf, root, stem, fruit, seed, and bark are used to obtain several drugs. Extracts of medicinal plants are useful in the treatment of several health problems.

Keywords: hygienic life style, Natural dyeing, Anti-bacterial finish

INTRODUCTION

Microorganisms may be classified as bacteria and fungus. Bacteria are categorized as gram negative and gram positive. In bacteria family gram positive is staphylococcus and gram negative is E-Coli. Some specific types of bacteria are pathogenic and cause cross infection. Antimicrobial textile have been used for decades. The consumers are now increasingly aware of the hygienic life style and there is a need for herbal textiles. Cloths are in permanent contact with skin. Mostly bacteria's from sweat and environment affects the skin. Skin bacteria's creates odour problems and discolouration of textiles. To avoid such problems herbal textiles are developed.

METHODOLOGY

DYEING

Selection of Material

Bleached Cotton knitted fabric were selected for dyeing.

Selection of Dye stuff

Cocos Nucifera Husk were collected to dye the cotton knitted fabric.

Pre-Treatment

Cotton knitted fabric is soaked in soap oil for 30mins .This process helps the fabric to absorb the dye uniformly.

Extraction of Dyes

Cocos Nucifera Husk were grinded into powder.2gm of powder was dissolved in 100ml distilled water and allowed to boil for 1 hour. The extraction was completed from the husk by the end of 1 hour. Then the solution was filtered using filter paper in hot condition .

Dyeing Procedure

The samples were dyed keeping M:L ratio as 1:30 ml.Dyeing was carried out at 100° c for 1hr in dye bath. After dyeing, the dyed material was washed with cold water and dried at atmospheric temperature. The dyed fabric is subjected to various fastness test.

ANTI - BACTERIAL FINISHING

Selection of Fabric

Cotton fabrics are generally used for natural dyeing. Knitted fabrics are more absorbent than woven fabrics Commercially available cotton knitted fabric is selected for the study.

Selection of herb

Madhuca Longifolia is selected to give Anti- bacterial finish on dyed cotton knitted fabric.

Preparation of Extract

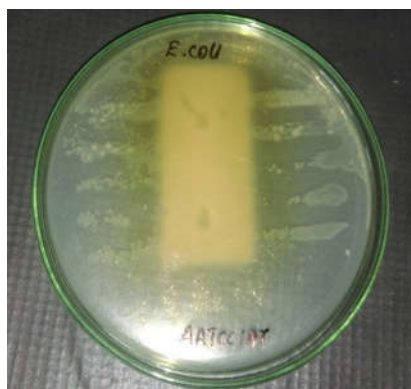
The fresh leaves of *Madhuca Longifolia* were washed under running water and later dry shaded for 15 days and it was grinded into powder. Then the powdered sample were dissolved in the *Ethanol* solvents and taken in conical flask at the M:L ratio of 1:5ml and kept in shaker for 48hrs. After 48 hrs the solution was filtered using ordinary filter paper and Whatmann No – 1 filter paper. Then the extract was stored in the vessel for further study.

Dip & Dry Method

Madhuca Longifolia extract is taken in a vessel and the sterilized dyed cotton knitted fabric is immersed in the solution for 20mins. After 20mins the sample is taken out and dried at room temperature. Then the finished sample is subjected to identify the zone of inhibition.

ZONE OF INHIBITION FOR FINISHED COTTON KNITTED DYED FABRIC

Treated Sample

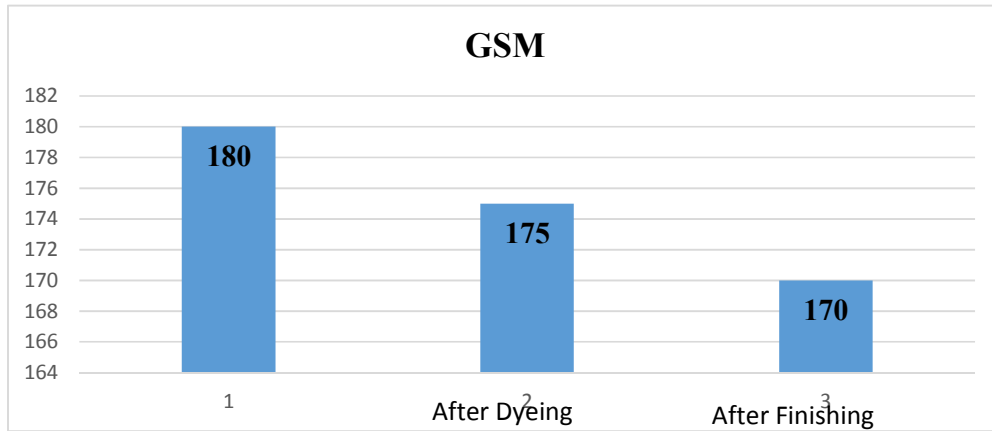


OBJECTIVE EVALUATION OF DYED & FINISHED COTTON KNITTED

FABRIC

Sample	Before dyeing	After dyeing	After finishing
GSM g/m ²	180	175	170

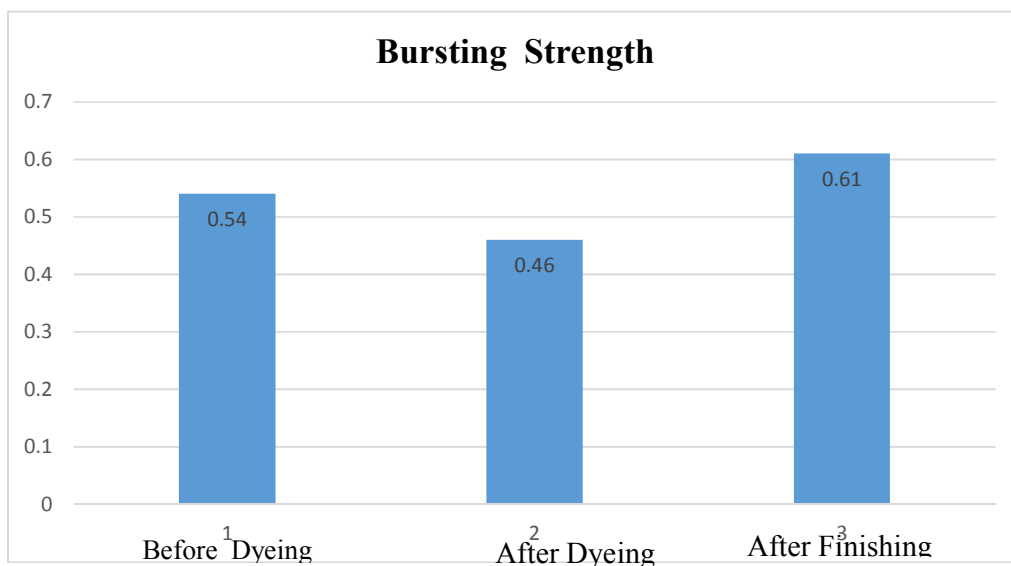
GSM



The GSM has decreased after finishing due to several process during dyeing & finishing.
Before Dyeing

BURSTING STRENGTH

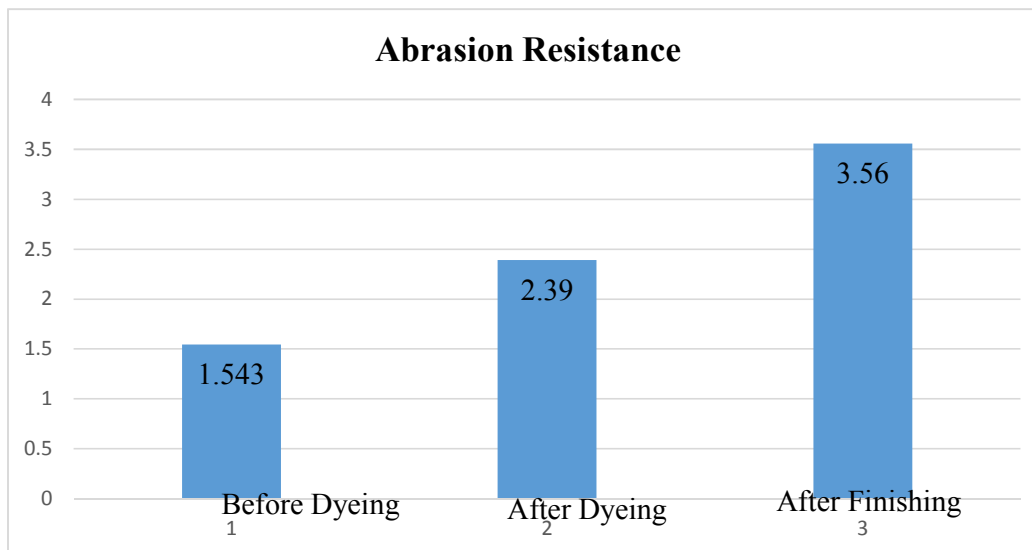
Sample	Before dyeing	After dyeing	After finishing
Mean	8.16	8.62	9.19
SD	0.047	0.034	0.05
CV%	0.61	0.46	0.54



The Bursting strength of the sample has mild changes during dyeing & finishing.

ABRASION RESISTANCE

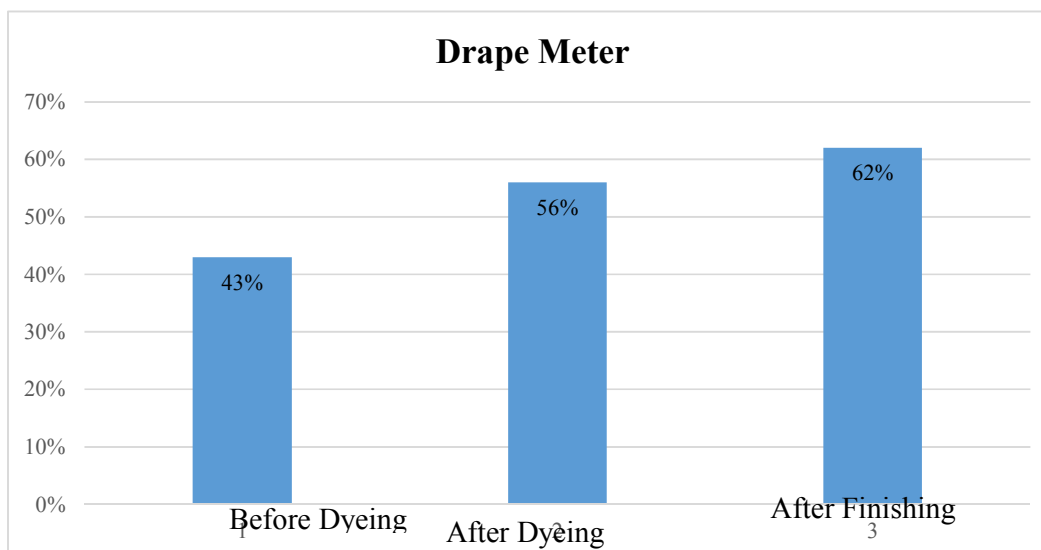
Sample	Before dyeing	After dyeing	After finishing
Average weight loss%	1.543	2.39	3.56



The Abrasion Resistance of the sample has increased during dyeing & finishing.

DRAPE METER

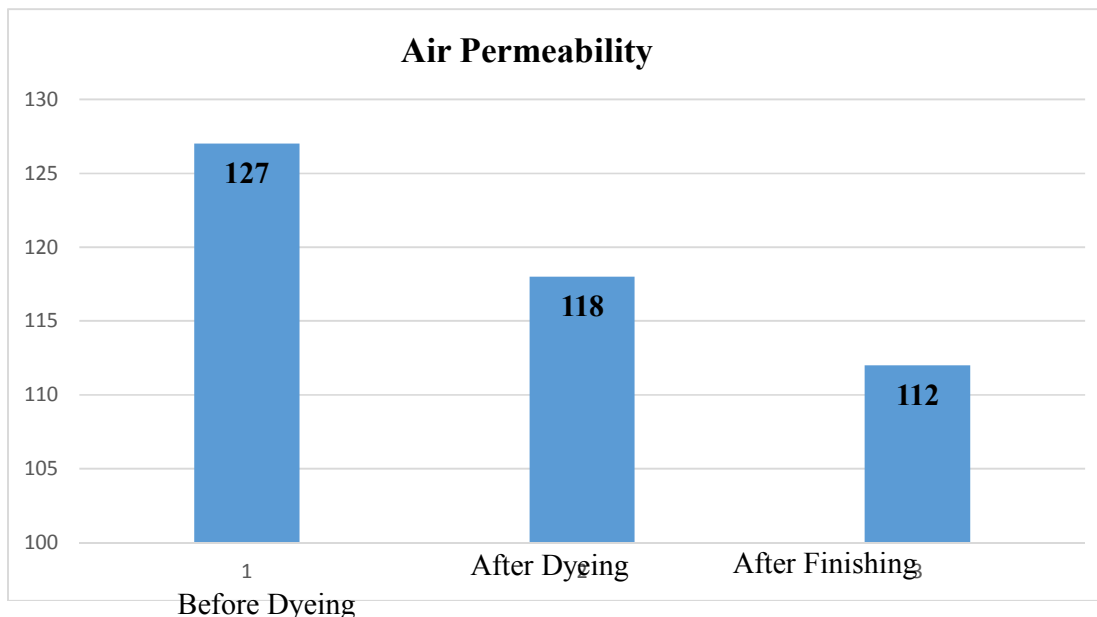
Sample	Before dyeing	After dyeing	After finishing
Drape coefficient	43%	56%	62%



The graceful appearance of the sample has increased after finishing.

AIR PERMEABILITY

Sample	Before dyeing	After dyeing	After finishing
Average rate of air flow	127	118	112



The average rate of air flow of the sample has decreased due to the Structural changes of the sample after finishing.

COLOURFASTNESS TO WASHING

1-VERY POOR; 2- POOR;3-MEDIUM;4-GOOD;5-EXCELLENT

The cotton knitted sample dyed with *Cocos Nucifera* shows good colorfastness during washing . The colorfastness stands upto 4 washes.

COLOURFASTNESS TO RUBBING

1-VERY POOR; 2- POOR; 3-MEDIUM;4-GOOD;5-EXCELLENT

The cotton knitted sample dyed with *Cocos Nucifera* shows good colorfastness during Rubbing at wet stage & shows excellent colourfastness during dry stage . The colorfastness stands upto 4 washes.

WASH DURABILITY

1-VERY POOR; 2- POOR; 3-MEDIUM;4-GOOD;5-EXCELLENT

The cotton knitted sample finished with *Madhuca Longifolia* shows good durability during washing. The wash durability stands upto 4 washes.

CONCLUSION

Clothing and textiles play an important role in human history by keeping infectious and toxic material away from the body. So, there is a necessity and expectation for a wide range of textile products finished with herbs. So, *Madhuca longifolia* is selected to give Antibacterial finish on cotton knitted to enhance the quality of human life through protection against various pathogens. The main aim of this study is to prevent the bacterial attack on consumers and to prolong their useful life.

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