

HERBAL FINISHED GARMENT FOR SKIN ALLERGIES PATIENTS

Sadheeshkumar. A¹, Dr. M.Sumithra², A.Lavanya³, Aishwarya.R⁴

¹ Research Scholar, Textiles and Apparel Design, Bharathiar University, Coimbatore.

² Assistant Professor, Textiles and Apparel Design, Bharathiar University, Coimbatore

³ Asst. Professor, Dept. of Home Science, Seethalakshmi Ramaswami College (Autonomous) Tiruchirappalli.

⁴ Research Scholar, Textiles and Apparel Design, Bharathiar University, Coimbatore

ABSTRACT

In this study cotton fabrics were given eco-friendly finish to impart medicinal property for psoriasis patients. The textile product remains most essential for human being and now it is developed towards the value addition function. Medicines for psoriasis remain ineffective in controlling the symptoms. But still some herbs are used to treat psoriasis. Hence neem and Wrightia tentoria leaves were used to finish the cotton fabrics. The finished fabrics were converted into garment for psoriasis patient. The fabrics were tested for its mechanical properties namely tensile strength, elongation and abrasion resistance. Antibacterial test was also performed for the finished fabrics.

Keywords: Neem, Wrightia tinctoria, finish, cotton fabric, antibacterial.

INTRODUCTION

Currently the textile industry is fronting a radical transformation which centers on the value addition of the product. Hence the textile materials were used for performance properties rather than aesthetic purpose which pays a major role for curative garment. Curative garment are supportive to the environment by avoiding the use of noneco-friendly substances thus results in zero effluent discharge.

Psoriasis is an immune based mediated disease that affects the skin. There is no permanent cure existing for this disease Goldminzetal., (2013). But several treatments were done to control the symptoms. These curative garment protects the patients from allergies, septic condition, bad transpiration, etc., Chandrasekaran etal., (2012).

METHODOLOGY

Selection of fabric

Cotton fabric causes no skin irritation, less overheating and also no heat retention when compared to synthetic fabrics (www.fibre2fashion.com). Hence 100% plain woven cotton fabrics were used for the development of curative fabrics.

Selection of finishing agent

Neem and *Wrightia tinctoria* are the most effective herbs to treat the psoriasis. These extract have good anti-fungal, anti-bacterial and anti-viral properties Ferlow (2013). Therefore the leaves of neem and *Wrightia tinctoria* were used as a finishing agent.

Preparation of herbal extract

The leaves of neem and *Wrightia tinctoria* were collected from the farms in palakad, Kerala. The collected leaves were shadow dried for 15days and grind into fine powder. The powdered herbs were boiled for one hour in three different combinations namely 100% neem, 100% *Wrightia tinctoria* and 50:50 neem: *Wrightia tinctoria*.

Pretreatment of the fabrics

Desizing were done by boiling the fabric in plain water for 2hours. Following this bleaching is done in sun light for 5days.

Selection of mordant

Alum is double sulfate salt, which act as a good natural mordant using for dyeing. Hence alum is selected as the mordant for the herbal finishing.

Procedure for fabric finishing

The finishing of the fabric was done by pad-dry method. The mordanting technique adopted in this process was pre mordanting. The material liquor ratio for this study was 1:20.

End product

Thefinished fabrics were converted into kurta using standard body measurement for women between the age group of 35 – 40.

Evaluation of finished fabric

The finished and unfinished fabrics were evaluated for its mechanical properties namely strength, elongation and abrasion. Antimicrobial activity of the finished fabric was tested using EN ISO 20645 against staphylococcus aureus and Escherichia coli.

Nomenclature

The nomenclature for the unfinished and finished samples were given in the table 1 below.

Table. 1
Nomenclature of the samples

S. No	Sample	Nomenclature
1.	Unfinished	UF
2.	Neem finished	NF
3.	Wrightia finished	WF
4.	Neem and wrightia finished	NWF

RESULT AND DISCUSSION

The result and discussion pertaining to this study were analyzed under the following headings.

Assessment of Mechanical properties

The mechanical properties namely fabric strength, elongation and abrasion were assessed using ASTM standards.

Fabric Strength

The fabric strength of the finished and unfinished samples of cotton were discussed below.

Table. 2
Fabric Strength

S. No	Sample	Mean (lb)	
		Warp	Weft

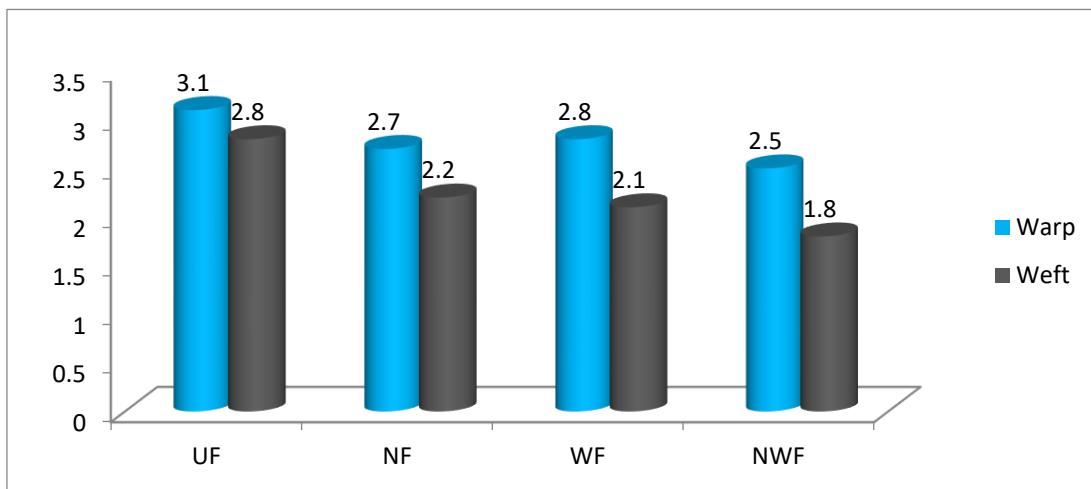
1.	UF	44	38
2.	NF	41	34
3.	WF	39	30
4.	NWF	42	36

From the table. 2 it was noted that the fabric strength have reduced in both warp and weft direction of the finished fabric when compared to the unfinished fabric. The neem finished fabric has reduced its warp and weft strength of about 6.81% and 10.52% when compared to original fabric. In the case of *Wrightia tinctoria* finished fabric the reduction of warp and weft strength was about 11.36% and 21.05% respectively. The Neem and *Wrightia* finished fabric has reduced its warp and weft strength of about 4.54% and 5.26% respectively. Over all among the finished fabrics Neem and *wrightia* finished samples has good strength.

Fabric Elongation

The fabric elongation of the finished and unfinished samples were given below.

Figure. 1
Fabric Elongation



The figure. 1 clearly depicts that the fabric elongation have reduced in both warp and weft direction of the finished fabrics when compared to unfinished fabric. The neem finished fabric has reduced its warp and weft elongation of about 12.9% and 21.4% respectively. The *Wrightia tinctoria* finished fabric has reduced its warp and weft elongation of about 9.6% and 25% respectively. The Neem and *Wrightia* finished fabric has reduced its warp and weft elongation of

about 19.35% and 35.71% respectively. Among all the samples Neem and Wrightia finished fabric has low elongation.

Abrasion Resistance

The abrasion resistance of the unfinished and finished samples were shown below.

Table. 3
Abrasion Resistance

S. No	Sample	Mean (gm)	Grain / loss over original	% Grain / loss over original
1.	UF	0.02	-	-
2.	NF	0.025	0.004	20
3.	WF	0.025	0.004	20
4.	NWF	0.024	0.005	25

Table. 3 shows that all the finished fabric has less weight loss due to the finish applied on the fabric when compared to unfinished fabric. The neem and Wrightia finished fabric has less weight loss of about 25 per cent. The neem finished and wrightia tinctoria finished fabric has the weight loss of 20 per cent.

Antibacterial Property

The antimicrobial properties of the finished fabrics were discussed below.

Table. 4
Antibacterial Property

S. No.	Sample	Zone of Bacteriostasis (mm)			
		<i>Staphylococcus aureus</i>		<i>Escherichia coli</i>	
		Unwashed	After 10 washes	Unwashed	After 10 washes
1	NF	31	25	34	25
2	WF	26	21	32	28

3	NWF	34	29	37	30
---	-----	----	----	----	----

Table. 4 shows the antibacterial activity of the finished fabric according to EN ISO 20645 against *Staphylococcus aureus* and *Escherichia coli*. The neem and *Wrightia* fabric shows good antibacterial property of about 34mm and 37mm against *Staphylococcus aureus* and *Escherichia coli* bacteria respectively. The neem finished fabric has the antibacterial value of 31mm and 34mm against *Staphylococcus* and e-coli bacteria. The *wrightia tinctoria* finished fabric has comparatively less antibacterial property of about 26mm and 32mm against *Staphylococcus* and e-coli respectively. This finish has good stability on the fabric ever after 10 washes figure 2.

Figure. 2

Antibacterial Activity of Finished Fabric After 10 Washes



Staphylococcus aureus



Escherichia coli

Conclusion

For this study neem and *Wrightia tinctoria* leaves were used as the natural finishing agent which was applied on the cotton fabric using pad- dry-cure method. These finishing agents were ecofriendly, non-toxic and non-irritant to the skin. Natural metallic mordant namely alum was used as a fixing agent following pre mordanting technique. The finished materials were converted in to kurta. The results showan increase in the value of abrasion resistance and

decrease in fabric elongation and strength when compared to raw fabric. The antibacterial property was higher in neem and Wrightia tinctoria combinely finished fabric when compared to the individually finished fabric of neem and Wrightia tinctoria.

References

1. Goldminz, A.M., Au, S.C., Kim, N., Gottlieb, A.B. and Lizzul, P.F., 2013. NF- κ B: an essential transcription factor in psoriasis. *Journal of dermatological science*, 69(2), pp.89-94.
2. Chandrasekaran, K., Ramachandran, T. and Vigneswaran, C., 2012. Effect of medicinal herb extracts treated garments on selected diseases. *Indian Journal of Traditional Knowledge*, 11(3), pp.493-498.
3. Ferlow K,2013. Psoriasis and Neem, positive health.com.
www.fibre2fashion.com