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APPLICATION OF AYURVEDIC HERBS ON ORGANIC COTTON KNITTED FABRICS AND COMPARE ITS COOLING PROPERTIES

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***Abstract*-**Increasing global competition in textile has created many challenges for textile researcher and industrials. The rapid growth in technical textile and their end users have generate many opportunities for the application of innovation finishes. In the present study entitled, "**Application of ayurvedic herbs on organic cotton polyester blended knitted fabrics and compare its cooling properties"** in this an investigator were firstly determine the physical parameter properties of organic cotton blended fabric (thickness, weight, compactness, strength, pilling, shrinkage and crease recovery) and then treated with ayurvedic herbs at 10 % (sandal wood, aloe vera and peppermint) on organic cotton polyester blended knitted fabric and determine its cooling properties. After determining the cooling properties, researcher compares the cooling properties of sandal wood, aloevera and peppermint treated organic cotton blended fabric and find the suitable one.

***Index Terms* -** Organic cotton, ayurvedic herbs & blend

INTRODUCTION

After workout and exercise, person wants to prefer comfortable and suitable garment so that after wearing person feel good and mentally satisfied. So, designer need to plan perfect and suitable exercise wear according to consumer requirement. The present study was undertaken to adding cooling property of organic cotton polyester blend knitted fabric, for this Peppermint, Aloevera, and Sandalwood was applied and test its cooling properties. After find best one herb was applied on rest fabric and. Exercise wear were prepared for adolescence age group.

OBJECTIVES

- To determine the physical parameter properties of organic cotton polyester knitted fabric (thickness, weight, compactness, strength, pilling, shrinkage and crease recovery).
- To apply various ayurvedic herbs (sandal wood, aloevera and peppermint) on organic cotton blended fabrics and determine its cooling properties.
- To compare the cooling properties of sandal wood, aloevera and peppermint treated organic cotton blended fabric and find the suitable one.

- To collect and select designs of exercise wear from primary and secondary sources
- To develop 15 design sheets of exercise wear according to the length of the garment above knee, below knee, ankle length.
- To evaluate the developed design sheets by target sample on the basis of aesthetic appeal, uniqueness, color combination, cost of garment.
- To develop most preferred prototype designs and asses their marketability and acceptability in terms of cost & design by the potent consumer.

DELIMITATION

- The study will be limited to application of three herbs (sandal wood, aloevera and peppermint)
- Only one property (cooling property) will be compared.
- Sample size will be limited to fifty only.
- The study will be limited to Banasthali University

METHODOLGY

The experiment procedure has been explained under the following sub section:

Materials Used

- Fabric
- Natural Herbs
- Dye

Equipment Used

- Analytical balance
- Thickness tester
- Pick glass
- Drapemeter
- Eureka crease recovery tester
- Pilling tester
- Eureka stiffness tester
- Padding Mangle
- Light and heat cutting machine

Chemical Used: -

- Ethanol
- Citric acid

Methods

Phase I

Determination of the preliminary data of the fabric

- Determination of thickness
- Determination of fabric count
- Determination of GSM
- Drapability
- Crease Recovery
- Pilling
- Stiffness

Phase II

- Scouring
- Dyeing
- Application Ayurvedic Herbs
- Compare its cooling property

Phase III

- Collection of Design
- Development of design sheets for exercise wear
- Evaluation of the developed design sheets

Phase IV

Construction of selected design sheet

- Cutting of fabric in desired shape
- Stitching of exercise wear
- Analysis of exercise wear

RESULT AND DISCUSSION

1. Preliminary data of the organic cotton blended knitted fabric
2. Data of finishes used on the fabric
3. Effect of cooling property of the finish treated fabric and compare cooling property among finished fabric
4. Consumer preference and acceptance develop design of exercise wear for organic cotton knit fabric
5. Comparison among designed exercise wear on the basis of each criteria
6. Evaluation after construction

Fabric Name	**Thickness**	**Fabric count**		**Weight/ unit area**	**Drapability**	**Crease recovery**		**Pilling**		**Stiffness**
Organic cotton blend knit fabric		No of warp yarn	No of weft yarn			Warp	Weft	Warp	Weft	
				10.368	61.2%	97º	105º	11	9	43.1

Preliminary Data of Organic Cotton Blend Fabric

4.2Data of finishes used on the fabric

TABLE-4.2

Fabric	Herbs	Concentration of herbs (w/w)	% Add on
Organic cotton synthetic blend	Sandalwood	10%	6.4
	Aloevera	10%	4.5
	Peppermint	10%	4.1

Data of Finishes Application

In this table, the concentration of herbs application in percentage on the organic cotton blend, and also the "add on" % of finish.

4.3 Effect of cooling property on the finish treated fabric and comparison cooling property among finish fabric.

TABLE-4.3

S.No	Fabric	Time	Input Temperature	Output Temperature	Temperature difference
1.	Plain fabric	2 min	41°C	39°C	2°C
2.	Sandalwood treated fabric	2 min	41°C	38°C	3°C
3.	Aloevera treated fabric	2 min	41°C	36°C	6°C
4.	Peppermint treated fabric	2 min	41°C	30°C	11°C

Data of Comparison of Cooling Properties

It shows that the Sample-1 cut the heat temperature 2^{o}C, sample 2 cut the heat temp 3°C, the 3-sample cut the heat 6°C and in the last sample 4 cut the heat temp 11°C.So we find that peppermint treated fabric cut more heat temp in all. So, peppermint applies on rest of fabric for designing.

4.4 Consumer preference and acceptance develop design of exercise wear for organic cotton knit fabric

15 different design of exercise wear drawn on the basis of current trend and existing designs in organic cotton blended knit fabric on white sheet y varying length of garment above knee, below knee, ankle length. Respondent were asked to analysis each design on the basis of aesthetic appeal and give rank on 3 point scale. Result has been given in table no:

TABLE-4.4

ON THE BASIS OF LENGTH	DESIGN NO.	WEIGHTED MEAN	RANK
Above knee length	1	2.60	5
	2	2.63	3
	3	2.61	4
	4	2.71	2
	5	**2.88**	**1**
Below Knee Length	1	2.71	3
	2	2.68	5
	3	2.70	4
	4	**2.76**	**1**
	5	2.73	2
Ankle Length	1	2.70	2
	2	2.69	3
	3	**2.74**	**1**
	4	2.67	4
	5	2.61	5

Consumer Preference for Exercise Wear

The result shows that above knee length design no.5 got highest weighted mean score among all design, in below knee length design no.4 got highest weighted mean score and in ankle length design no.3 got highest mean score. These designs of exercise wear were most liked than all other design. These best 3 designs were therefore, selected on the basis of consumer preference and converted into prototype.

Liking and disliking for particular things is a subjective characteristic. Evaluation of colour combination of design design, fabric is affected by personal preference and physiological experience. There is a generally acceptable relationship between quality and aesthetic appeal. Visual analysis is an important component in assessment of designing garment. In addition of acceptability is very necessary to give direction for mass production/ Therefore subjective analysis was used as a tool for finding the preference of respondents and for selecting the design and also aesthetic appeal of exercise wear.

4.5 Comparison among designed exercise wear on the basis of each criteria

Comparative analysis of all three-exercise wear design was done on the basis of each criteria.

Length of exercise wear	Exercise Wear	Weighted Mean	Rank
Above knee length	1	2.96	1
Below knee length	2	2.78	2
Ankle length	3	2.76	3

Grading For Aesthetic Appeal Of Design

Aesthetic appeal of the design was also determined. Result in table shown that 1st design was found most appealing and beautiful by respondents. 2nd and 3rd were ranked next with respect to overall look of the exercise wear. These designs were appreciated by respondents. Overall look of the exercise wear was liked by the respondents.

TABLE-4.5.2

Length of the exercise wear	Exercise wear	Weighted mean	Rank
Above knee length	1	2.75	2
Below knee length	2	2.5	3
Ankle length	3	2.88	1

Grading For Uniqueness Of Design

Respondent were asked to give their opinion about the design of exercise wear whether they find design and design detail uniqueness for design. Result has been given in table no. It is evident that design of ankle length exercise wear design was found most uniqueness by the respondents. These designs were looking good to respondents. 1st and 2nd designs of exercise wear were rated last.

TABLE-4.5.3

Length of the exercise wear	Exercise wear	Weighted mean	Rank
Above knee length	1	2.84	2
Below knee length	2	3.6	1
Ankle length	3	2.56	3

Grading For Color Combination Of Design

Colour combination of the design was also determined. Responded were asked to give their view about the colour combination of design. Result has been given in table no. It is evident that design of below knee length was found best colour combination by the respondents.

TABLE-4.5.4

Length of the exercise wear	Exercise wear	Weighted mean	Rank
Above knee length	1	Yes	1
Below knee length	2	Yes	3
Ankle length	3	Yes	2

Grading For Cost

Cost of the exercise wear was also determined. Respondents were asked to give their view about the cost of the garment.

4.6 Evaluation after construction

Each and every prototype was evaluated by the respondents on the basis of all three criteria. Result in to gives weighted mean score obtained by each exercise wear.

TABLE-4.6.1

Criteria	**Weighted mean**
Design	2.79
Cost	3
Aesthetic appeal.	2.81

Above Knee Length Prototype-1

The source obtained for prototype 1 is shown in the table 4.6.1. The design was rated good to very good by the most of the respondents, and cost was also appreciated by the respondents, this exercise wear was looking quite costly to some of the respondents. They were appreciated the overall look of the dress.

TABLE-4.6.2

Criteria	Weighted mean
Design	2.82
Cost	3.1
Aesthetic appeal.	2.90

Below Knee Length Prototype-2

The result of prototype 2 is shown in the table no. 4.6.2. The design was appreciated by most of the respondents, it was rated very good to excellent and the costing was acceptable by most of the respondents. Overall look of the exercise wear was also rated good to very good.

TABLE-4.6.3

Criteria	Weighted mean
Design	3.1
Cost	3.5
Aesthetic appeal.	2.96

Ankle Length Prototype-3

The result of prototype 2 is shown in the table no. 4.6.3. The design was found very suitable by most of the respondents, it was rated to excellent and the costing was acceptable by most of the respondents. They appreciated the overall look of the exercise wear was also rated to excellent.

Conclusion:

It can be calculated form the result all the exercise wear treated with peppermint are like by respondents. After the developments of selected prototype, the evaluation was done on the basis of design, cost and aesthetic appeal of exercise wear.

The responses of the respondents were good and acceptable towards peppermint applied exercise wear. It was found that cooled exercise wear can be used in the market.

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