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EVALUATION OF ANTI-FUNGAL ACTIVITY OF WOVEN FABRICS BY HERBAL METHOD

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ABSTRACT

An eco friendly natural antifungal finish has been prepared from the plant extract for the textile application. Herbal extracts have been applied to bamboo/ cotton fabric by pad, dry cure method. The antifungal property of fabrics is considered to be more important and inevitable finish for garments, which are in direct contact with human body. The fabrics which are in contact with the human body provide an ideal environment for the microbial growth. This paper consists of a detailed discussion of the herbal finish with antifungal effect on bamboo/ cotton fabrics. In this paper the investigators have find out the effect of Antifungal finish applied by herbal based method and the result were analyzed by wash durability test.

KEYWORDS: Antifungal, Herbal plants, bamboo/cotton fabric, wash durability test.

1. INTRODUCTION

Bamboo fabric is a natural textile that has been growing is popularity in recent years, both for its quality and its environmental friendliness. Cotton is the natural vegetable fiber of great economic importance as a raw material for cloth. The use of textile in medicine has a long tradition. An important field of application is wound care and prevention of chronic wounds, in particular pressure sores. Among the long list of textile materials bandages and wound dressing gained great popularity.

Medicinal plants are the gift of nature to cure limitless number of diseases among human beings. The abundance of plants on the earth surface has led to an increasing interest in the

investigation of different extracts obtained from the traditional medicinal plants as potential sources of new antimicrobial agents.

Some selective species of plants were identified and screened for their antifungal activities and applied on bamboo/cotton fabrics. As the fabric is subjected to washing, the wash durability of fungal finish are evaluated.

2. MATERIALS AND METHODS

2.1 Fabric selection

The fabric used as the textile substrates in the present research work was 50's combed bamboo/cotton blended woven fabrics.

2.2 Pretreatment

The material is treated with soap at 50^{o}C for 20 minutes to remove the dirt on the untreated fabric with water. The soap solution is added into water in the proportion of 3: 1.Then the material is given hot wash and cold wash. The M: L is 1:30.

2.3 Selection of the Medicinal Valuable Herbs

The herbal plants were identified and collected from the natural resources in a pure form. The following plant was chosen for the study *michelia* × *Alba*. The procedure begins with the selection of natural herb, which was screened and identified. The extract was tested for its Antifungal activity was done by *Aspergillus niger* method.

2.4 Assessment of the highest antifungal effect of herbal extract

The fresh leaves were collected from the suitable soil condition and then the leaves were dried under room temperature. Then the dried leaves were grinded in a powder form.

2.5 Methanol Extraction

For extraction, 6gms of dry powder (*michelia X Alba*) was taken and mixed into 50ml of 80% Methanol. The container was closed and kept for overnight. The extract was finished on the fabric by pad dry cure method and tested for its Antifungal activity.

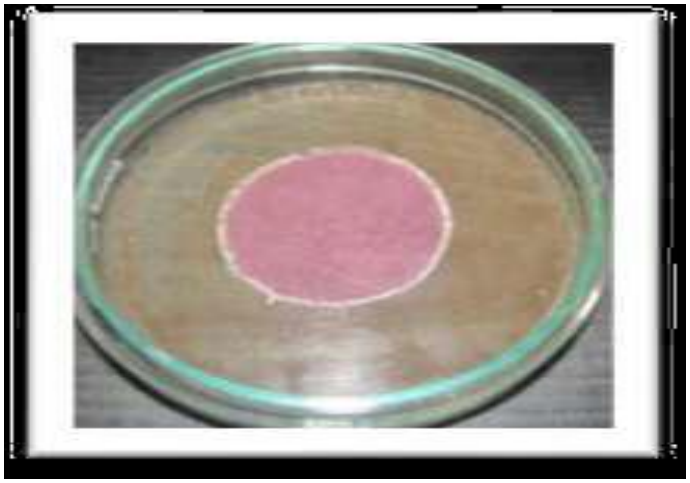
2.5 Analysis of Antifungal Activity by Qualitative Method

After testing the sample by qualitative method and the result for *Aspergillus niger zone* was analyzed. The herbal extract finished fabric shows good result.

2.6 Pad-dry-cure method

The extraction was finished on the bamboo/cotton fabric using padding mangle. Padded the fabric with the three roll padding machine for 5 minutes. After padding, the sample were dried and cured.

Antifungal activity of finished fabric– qualitative analysis (Herbal)



2.7 Wash durability test

The herbal extract finished sample shows better result in wash durability using Qualitative test method.

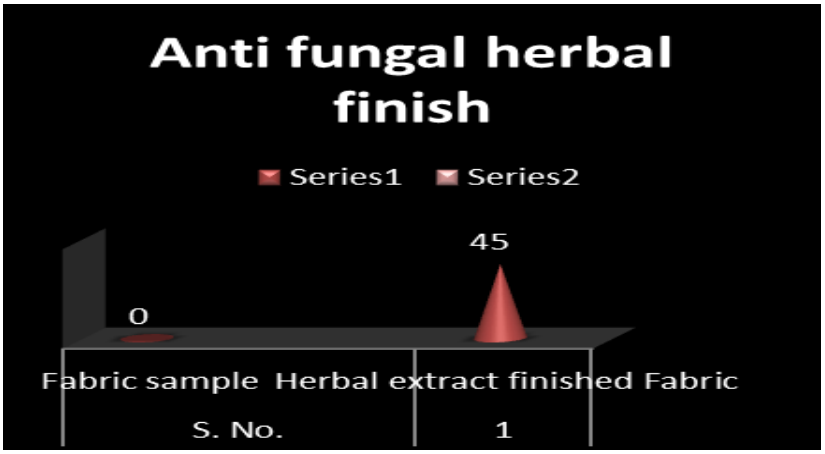
3. RESULTS AND DISCUSSION

The Antifungal test for Qualitative method was applied on herbal based method. The properties for Antifungal were tested by *Aspergillus niger*. Here the investigators find out that the bamboo/ cotton sample showed good result.

3.1 Antifungal activity of bamboo/cotton fabric finished with herbal extract fabrics against *Aspergillus niger* (AATCC 30 test method)Table-1

S. No.	Fabric sample	Antifungal activity against *Aspergillus niger* – Zone of mycostasis (mm)
1	Herbal extract finished Fabric	45

Figure-1

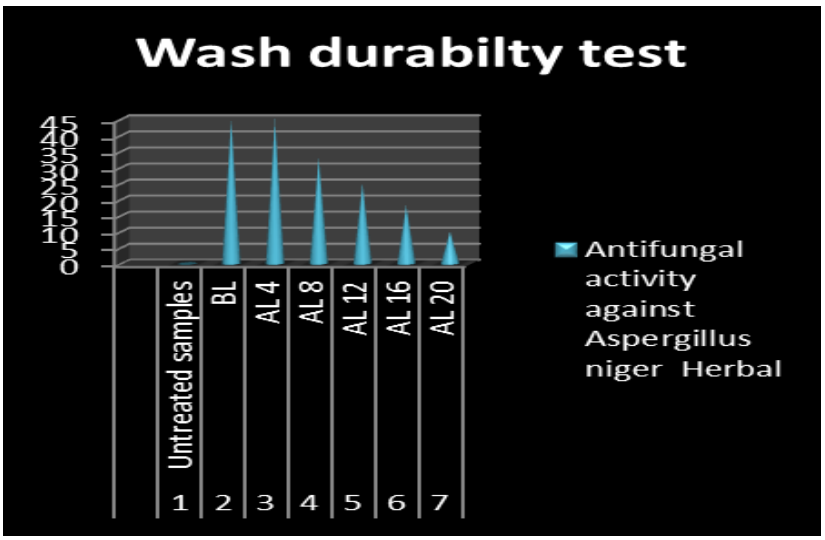


3.2 Wash durability tes

Table-2 and figure-2 Shows the laundering properties of herbal samples Here, BL is before laundering and AL is after laundering.

S.No	Samples	Antifungal activity against *Aspergillus niger*
		Herbal
1.	Untreated samples	0
2.	BL	45
3.	AL 4	45
4.	AL 8	33
5.	AL 12	25
6.	AL 16	18
7.	AL 20	10

Figure-2



CONCLUSION

From the study it was concluded that *michelia* × *Alba* herbal extracts treated fabrics eco-friendly, bio-degradable and non-toxic to the skin. The treated fabrics were found to be very hygienic with less fungi. This type of herbs can be used for medical textile also.

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