DESIGNING OF KID SPORTS WEAR AND THE APPLICATION OF ANTIBACTERIAL FINISH USING *ARTEMISIA PALLENS*

P.Jeya keerthana [1] -PG and Dr.P.Karpagam[2]

[1&2] Department of Costume Design and Fashion, PSG College of Arts and Science

ABSTRACT

Kids' sportswear is clothing for children who have not yet grown to full height. Children's clothing is often more casual than adult one. More recently, however, a lot of children's wear is heavily influenced by trends there is no specific garment for their sportswear. The right sportswear can improve their sports performance, can help prevent injury during exercise and can help the recovery process in-between workouts. *Artemisia pallens* is a medicinal plant that has the antibacterial activity. In the present study the leaf extraction of *Artemisia pallens* was tested for the antibacterial activity among which ethanolic extraction showed good antibacterial activity, and hence it was coated onto the cotton knitted fabric. The antibacterial activity of coated fabric showed better results against E.Coli, Staphylococcus aureus and Pseudomonas aeruginosa.

KEY WORDS: Antibacterial finishing, Well diffusion method, Bursting strength, Antibacterial resistance.

INTRODUCTION

A textile is a flexible material made by creating an interlacing or interloping yarns or threads, which are produced by spinning raw fibers (from either natural or synthetic sources) into long and twisted lengths. Cotton being more available that has available as it has better odor management compared to other materials as it is breathable and does not hold on to the stretch. As the cotton quickly absorb the sweat. It gives the place for bacterial growth and hence antibacterial finishing as necessary in today's era. This antibacterial finishing when it is done conventionally using synthetic antibacterial drugs. It may result in undesirable side effects and antibacterial problems. *Artemisia pallens*, is an aromatic herb which belongs to the family Asteraceae. *Artemisia pallens* commonly known as "Marikozhundhu" has been traditionally used in Indian folk medicine. It has been used for the treatment of diabetes mellitus, wound healing, immunomodulating, anthelmintic, antipyretic and wound healing (Bjork.l et al, 2002).*Artemisia* species that has rich sources of various biologically active compounds that are responsible for their pharmacological activity. Conventionally available synthetic antibacterial drugs are associated with undesirable side effects and resistance problem. There were no reports about the antibacterial activity of these medicinal plants (Suresh J, et al).The antibacterial agents' acts as coagulation of protein by leaching the microbes and poison then by moving. But such antimicrobial agents are short term durability. Hence, in the present study

the ethanolic extracts of *Artemisia pallens* were screened for their antibacterial activities was selected and tested for their antibacterial activity (Suresh J, et al).

MATERIALS AND METHODS

Collection of plant materials

Artemisia pallens was selected for the current study and it was collected in and around Coimbatore, Tamil Nadu.

Preparation of herb extract

The collected *Artemisia pallens* leaf was dried at the room temperature. This is done to dry the herb in order to avoid breakdown of the important compounds. The dried herbs were kept in a dark room so that the breakdown of important compounds by sunlight will be prevented. After drying, those selected portions of the plant were separated from dirt and other extraneous matter manually. The separated herbal parts were shadow dried and powdered by using dry grinding machine. The obtained powder was sieved by a sieve then the fine powder was stored for further study.

Herbal extraction method

Aqueous extraction

Five grams of dry leaves mixed with 20ml of distilled water and stored in a conical flask was kept in a shaker for about 24 hours and it was done filtered using filter paper. After evaporation of water the extract was stored in a screw cap container.

Ethanol extraction

Five grams of dry leaves mixed with 20ml of ethanol and stored in a conical flask was kept in a shaker for about 24 hours and it was done filtered using filter paper. After evaporation of water the extract was stored in a screw cap container.

Preliminary Assessment of Antibacterial susceptibility Testing

The reference gram positive and gram-negative bacterial strains were inoculated for 1hr culture into nutrient both and incubated for the growth at 37C. Wells of 6mm diameter was punctured on the agar medium. About 150u0pl of the extract was added to the wells. After which the plates were incubated at 37 C for 24 hrs in an incubator. Later on, the zone of inhibition was measured and recorded. The best activity herb and the solvent were selected based on the maximum inhibition rate.

Antibacterial finishing on cotton knitted fabric

Both the aqueous and ethanol extraction was treated on cotton knitted fabric. It was done using dip dry method.

RESULT AND DISCUSSION

ANTIBACTERIAL ACTIVITY OF HERBAL EXTRACT

S.NO	Bacteria	Extraction method	
		Aqueous extraction	Ethanolic extraction
1	E.Coli	0.5cm	1.6cm
2	Staphylococcus aureus	0.0cm	2.6cm
3	Pseudomonas aeruginosa	0.5cm	1.5cm

The *Artemisia pallens* treated showed of inhibition about 1.6cm under ethanol method where as 0.5cm zone of inhibition found in aqueous extraction. The antibacterial activity in herb extraction showed no zone of inhibition against staphylococcus in the aqueous extract method were as found to be 1.5cm zone of inhibition of ethanol extract. The test bacteria pseudomonas aeruginosa were showed 0.5 zone in inhibition as 1.2cm were found in ethanol extraction.

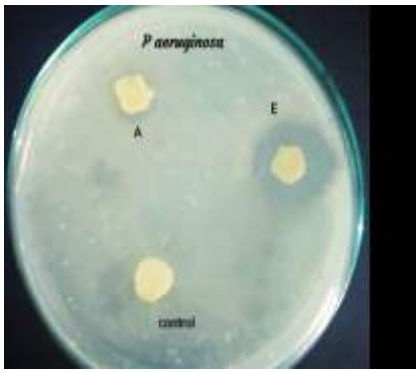
E.Coli **Pseudomonas aeruginosa** **Staphylococcus aureus**

ANTIBACTERIAL ACTIVITY OF TREATED AND UNTREATED FABRIC

S.NO	Bacteria	Extraction method	
		Aqueous extraction	**Ethanolic extraction**
1	E.Coli	1.8cm	2.2cm
2	Staphylococcus aureus	0.0cm	2.8cm
3	Pseudomonas aeruginosa	0.0cm	1.2cm

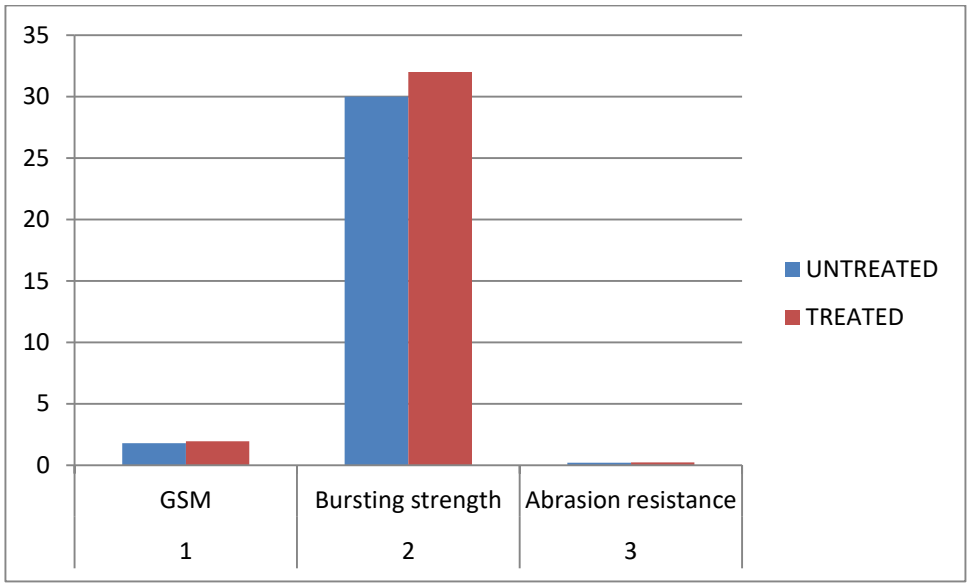
The *Artemisia pallens* treated showed of inhibition about 2.2cm under ethanol method where as 1.1cm zone of inhibition found in aqueous extraction. The antibacterial activity of treated fabric showed no zone of inhibition against staphylococcus in the aqueous extract method were as found to be 2.8cm zone of inhibition of ethanol extract. The test bacteria pseudomonas aeruginosa were showed no zone in inhibition as 1.2cm were found in ethanol extraction.

E.Coli **Pseudomonas aeruginosa** **Staphylococcus aureus**



Fabric testing

S.NO	TESTING	UNTREATED	TREATED
1	GSM	1.805	1.952
2	Bursting strength	30 lb	32 lb
3	Abrasion resistance	0.210	0.240



CONCLUSION

In the present study the use of herbs mainly focused on herb in order to give that the eco friendly fabric *Artemisia pallens* the herb that used for the study showed good antibacterial activity with the result shown in the study the use of *Artemisia pallens* can be promoted for the production from bacterial infection. This application on fabric can be more feasible and it is not expensive one. On during such antibacterial finishing garment children can protect themselves on their entire play time.

REFERENCE

1. Bjork L, Hedner T, Remberg P, Sterner O. Ethno botanical use of southern wormwood, Artemisia abrotanum L. in Europe, A critical review of its therapeutic use from ancient to modern medicine. Ethnopharmacologia 2 002b.
2. Suresh J, Vasavi Reddy.A, Dhanya Rajan, Ihsanullah.M, Mohd. Nayeemmullah Khan.antimicrobial activity of Artemisia abrotanum and Artemisia pallens . Department of Pharmacognosy, JSS College of Pharmacy, S.S. Nagra, Mysore -570015, Karnataka.
3. D. Radhika, Review Study on Antimicrobial Finishes on Textiles – Plant Extracts and Their Application , Assistant Professor, Department of Apparel and Textiles, College of Community Science, PJTSAU, Saifabad, Hyderabad, Telangana, India.
4. A.El-Shafei1 , S.Shaarawy1, F.H.Motawe2 and R.Refaei1, Herbal Extract as an Ecofriendly Antimicrobial Finishing of Cotton Fabric, Department Genetic Engineering and Biotechnology Research Division, 33ElBehouth St. (former El-Tahrir str.), Dokki, P.O. 12622, Giza, Egypt.

5. Anjali D. Ruikar 1+, Gayatri S.Kamble , Vedavati G. Puranik 2, Nirmala R. Deshpande 1 Antimicrobial Screening of Medicinal Plant – Artemisia pallens, 1Dr. T. R. Ingle Research Laboratory, Department of Chemistry, S. P. College, Pune , India.411030
6. M. Maheshwari† and P. Vijayarengan Department of Botany, Annamalai University, Annamalai Nagar, Chidambaram, Tamil Nadu, India.