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# DEVELOPMENT AND ANALYSIS OF OIL FINISH ON COTTON FABRIC

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## ABSTRACT

**Aim:** In the present scenario of environmental consciousness the requirement of environment friendly textiles is increased. Plant extracts and oils demonstrating antifungal properties may provide protection for textile application.

**Methodology:** This study was to evaluate the antifungal properties of natural plant extracts, such as essential oils, for se on wood. Three essential oils were evaluated for their ability to inhibit growth of *Aspergillus Niger*, *Trichoderma Reesis*. Lemon grass oil, pepper mint oil and pine oil inhibited growth of fungi. Cotton fabric is chosen for the study and the selected oils are applied on to the fabric by dip dry method.

**Result:** The treated fabric is tested with two fungal pathogens(*Aspergillus niger*, *Trichoderma reesis*). It shows the better anti-fungal properties. Also the fabric show better result for physical test.

**Conclusion:** These findings support the application of essential oils for surface treatment or vapour exposure of textile to prevent fungal infection and fungal growth.

**Key Words:** Cotton – woven, Natural oils, Antifungal finish, Microbe resistant

## INTRODUCTION

Textile finishing is an important process in the textile industry to obtain good properties of finished fabrics such as wrinkle resistance, flame retardant, water-and-oil repellent finishing, etc. Antimicrobial textiles with improved functionality find a variety of applications such as health and hygiene products, specially the garments worn close to the skin and several medical applications, such as infection control and barrier material. Cotton is a cellulosic fiber and it has a Comfortable Soft hand, Good absorbency, Color retention, Prints well, Good strength. Lemon oil, Pine oil, Peppermint oil having antifungal properties and also having many medicinal properties.

## METHODOLOGY

### SELECTION OF FABRIC

Cotton is a cellulosic fiber and it has a Comfortable Soft hand, Good absorbency, Color retention, Prints well, Good strength. Woven cotton fabric is selected for this study.

### DESIZING

Desizing is the process of removing the size material from the warp yarns in woven fabrics. Sizing agents are selected on the basis of type of fabric, environmental friendliness, ease of removal, cost considerations, effluent treatment, etc.

### SELECTION OF LEMON GRASS OIL

Lemongrass oil is extracted from the leaves of the plant. It has a thin consistency, and a pale or bright yellow color. It has a strong, fresh, lemony, and earthy scent. Lemongrass (*Cymbopogon*) is a tall perennial plant from the Poaceae grass family, which thrives in tropical and subtropical regions.

**Extraction:** Get two lemongrass stalks and remove the leaves. Crush the stalks using a mortar and pestle to release the oil. Fill a jar with your carrier oil of choice and put the crushed stalk in it. Leave the jar for two days in a place where it can get plenty of heat and sunshine. After two days, strain the oil using the cheesecloth and transfer it into another jar. Make sure to press and squeeze the stalks until they're completely dry. You may need to repeat the

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process using fresh new stalks to achieve the desired lemon-grass fragrance.



Plate I : Lemon Grass Oil

### SELECTION OF PEPPERMINT OIL

Peppermint oil is derived from the leaves of the peppermint plant or *Mentha pipertita*, a hybrid of the water mint and spearmint plants, and *M. arvensis* var. *piperascensa*, a plant from the Labiatae family. The essential oil is often used as a home remedy for stomach problems, muscle pain, and headaches. Aside from being available in its oil form, peppermint oil can be found in supplemental capsule form.

#### Extraction

Wash the peppermint leaves, then crush or chop them. This will release their natural oil. Place them in the jar and pour the carrier oil. Make sure the oil covers the leaves completely. Afterward, seal the jar tightly and wait 24 hours. Next, strain the oil and add more chopped peppermint leaves and carrier oil, then reseal. Repeat this process for five days. Remove the peppermint leaves by straining and pour the oil into another container. Store in a cool place.



Plate II : Peppermint Oil

### SELECTION OF PINE OIL

Pine oil is extracted from scotch pine (*Pinus sylvestris*). This high, evergreen tree has a reddish-brown and deeply fissured bark that grows pair of long, stiff needles. Largely produced in the Baltic states, the essential oil from this species is a hypertensive, tonic stimulant.

### EXTRACTION

Pine oil is extracted by steam distillation of fresh twigs, buds and yield about 0.1 – 0.5%, although another type of oil can also be extracted by steam distilling the needle.



Plate III : Pine Oil

### FINISHING ON COTTON FABRIC WITH OIL BY USING EXHAUST METHOD

The fabric sample was finished with the prepared herbal extracts microcapsules according to the following recipe with 8% binder. One liter of solution containing 700 grams of capsules is used to finish one meter of fabric. The fabric was immersed in the solution with 8% binder for 30 mins under 50°C in oven. After 30 mins, the fabric was removed from the tub and air dried in shade.

## RESULTS AND DISCUSSION

### ANTIFUNGAL ASSESSMENT BY AATCC 30 – 2003 TEST METHOD

The antifungal activity of the finished fabric (100% cotton woven finished with LG, PM and PI) was performed using the fungal strains of *Aspergillus niger* and *Trichoderma reesei*. Zone of inhibition was seen on both the plates. The activity was found according to ATCC 30 – 2003 test method.

S. No	Type of Solution	Sample	Zone of Inhibition (mm)
<b>A. NIGER</b>			
1.	Aqueous Extraction	LG	75
2.	Aqueous Extraction	PM	71
3.	Aqueous Extraction	PI	74

S. No	Type of Solution	Sample	Zone of Inhibition (mm)
<b>T. REESEI</b>			
1.	Aqueous Extraction	LG	81
2.	Aqueous Extraction	PM	73
3.	Aqueous Extraction	PI	77

From the above Table I and Table II indicate that the, *Trichoderma reesei* (81) zone of inhibition shows a higher range of zone than *Aspergillus niger* (75) and lemon grass show the better antifungal result than peppermint and pine oil.

### CONCLUSION

The above study interprets that the natural ailing herbs can be used in the recent trends to cure many skin problems. The recent approaches that are dealing with English medicines are taking a back step leaving the herbal medicines forward. Herbal medicines are the naturally produced products that are used in the treatment of many skin problems with no chemical thus no side effects.

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