

Herbal Finishes: A move towards sustainability

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Abstract: “Sustainability” is the need of the hour today. And textiles and clothing industries are not an exception to it. Right from manufacturing process till the fabrics are finished; the processes are made eco-friendly. And not only that even researches are made to make the fabric disposable too eco-friendly by recycling, reusing the old textiles. When world is moving towards all the alternatives for sustainability; speciality finishes too are made using plants with their inherent properties for new finishes like antimicrobial, aroma, antibacterial, self-extinguishing or flame retardant, mosquito repellent, etc. These finishes have its application in apparel industries, furnishings, medical industries, automobile industries where textiles come in contact with us. The herbs used are available in abundance in India. This paper reviews about various herbs and its application on to the fabric and various utility products accordingly.

Date of Submission: 24-09-2018

Date of acceptance: 13-10-2018

I. DIFFERENT HERBAL FINISHES-

Many researches are working towards herbal finishes on textiles now-a-days. Usually specialised finishes are developed using natural plants and herbs where root, stem leaves, flowers and fruits are utilised and applied on to various textile material like viscose rayon, cotton and wool. The products made out of these textiles are such where human skin comes in contact with the material for the maximum time or when the human body is at rest at maximum. Studies have revealed that when these herbal treated fabrics come in contact with human skin, the body loses toxins and its metabolism is enhanced. So the main objectives of my study was to study and document various sources of natural herbs that can be used as finishes on textiles and report its suitability and sustainability on various textiles. It is also to examine its effective application for varied end uses. Some of the specialised finishes which are tried on to textile materials are summarised in this article.

Many plants like catechu, pomegranate rind, madder, castor oil, sweet basil, lime, wild turmeric, henna leaves, curry leaves, aloe vera, amla powder, peepal leaves, garlic, tulsi, neem, spinach leaves, piper betel leaves, lemon grass leaves, champa, jasmine, lavender, sandalwood, rose water, manjith, rubia cordifolia.

Many effective finishes like antimicrobial finish, antiseptic finish, self-extinguishing finish and mosquito repellent finish are newly researched and are eco-friendly which are tested on various textiles by microencapsulation method.

1. Antimicrobial finish-

Cotton fabrics were used and dyed with natural dyes using amla, myrobalan and garlic as mordants and then were treated with turmeric, neem, tulsi, aloe vera, banyan and henna herbs by micro-encapsulation method. The results shown the herbs used alone or in combination with each other imparted good antimicrobial property to the fabric. The fabric was tested against non-treated cotton sample. The durability of this finish was evaluated by the number of wash cycles which also showed good results on herbal treated fabric.

2. Antiseptic finish-

Chitosan derivatives namely guanidinium salts derivatives guanidine HCl has antimicrobial and antifungal property when applied on wool fabrics and its effectiveness was evaluated by microwave heating. The durability of this finish was observed on 40 washes of the wool fabrics and it is concluded that this derivative has good antimicrobial repellent against e-coli and e-aureus. Also microwave heating showed higher degree of crosslinking and antimicrobial properties without losing its strength.

3. Mosquito repellent finish-

Researches shown that lemon grass leaves and lemon grass oil known as cymbopogon species are natural insect or mosquito repellent. When researched it was seen that the extract of this herbal plant was applied on basket weave cotton fabric and its wash fastness property was evaluated. It was seen that the fabric when treated with

lemon grass leaf was excellent mosquito repellent than fabric treated with lemon grass oil extract without hindering the fabric strength, thickness, drapability, weight/square meter and abrasion properties.

4. Self-extinguishing finish-

Spinacia oleracea juice was applied on to the cotton fabric which were used for furnishing products like home window curtain, hospital curtain, table lamp, and as a covering material for non- permanent structure like in book fair, festival, religious purposes, etc. where there are chances of fire hazards. The results obtained were excellent without hindering the inherent properties of the fabric used for this purpose.

5. Aroma Finish-

This finish was applied on plain weave cotton fabrics. The purpose of this finish is to impart aroma and fragrance which has a soothing effect that helps in fighting stress. This finish is very much beneficial to cancer patients. The airtight hard-shell capsules containing a particular type of aroma have also been developed as a women's wellbeing for fighting against side effects of chemo and radiotherapy. Under suitable conditions aroma finished fabrics showed more durability to 50 wash cycles than thermal curing.

Uses and application of herbal finished fabrics-

These herbal finishes when applied on textile materials showed good results and accordingly products were made. Products like home furnishings like window curtains, bed linen, yoga mats, carpets, hospital curtain, table lamp, and as a covering material for non- permanent structure like in book fair, festival, religious purposes. Apart from these socks, lingerie, cotton eye pads are also developed where human skin comes in direct contact with the textiles.

II. CONCLUSION-

From the study it can be concluded that there are herbs which are available for imparting finishes on to the textile products. Many of the herbs are available in abundance and can be available easily. These finishes act as an anti- depressant and of antiseptic value too. Usage of herbs on textiles will help in releasing the body toxins and its metabolism is enhanced. According to the herbs various products can be made other than apparels which will benefit to mankind for a long term.

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Mrs. Trupti Dhoka." Herbal Finishes: A move towards sustainability." IOSR Journal Of Humanities And Social Science (IOSR-JHSS). vol. 23 no. 10, 2018, pp. 49-50