

## Functional Finishing of Organic Cotton Fabric Using Vetiver Root Extract

**Authors :** Sakeena Naikwadi, K. Jagaluraiah Sannapapamma

**Abstract :** Vetiveria zizanioides is an aromatic grass and traditionally been used in aromatherapy and ayurvedic medicine. Vetiver root is multi-functional biopolymer and has highly aromatic, antimicrobial, UV blocking, antioxidant properties suitable for textile finishing. The vetiver root (Gulabi) powder of different concentration (2, 4, 6,8 percent) were extracted by aqueous and solvent methods subjected to bioassay for antimicrobial efficiency and GCMS spectral analysis. The organic cotton fabric was finished with vetiver root extract (8 percent) by exhaust and pad dry cure methods. The finished fabric was assessed for functional properties viz., UV protective factor, antimicrobial efficiency and aroma intensity. The results revealed that Ethanol extraction showed a greater zone of inhibition compared to aqueous extract in root powder. Among the concentrations, 8 percent root extract in ethanol showed a greater zone of inhibition against gram-positive organism *S. aureus* and gram-negative organism *E. coli*. The major compounds present in vetiver root extracts were diethyl pathalate with greater percentage (87.73 %) followed by 7- Isopropyl dimethyl carboxylic acid (4.05 %), 2-butanone 4-trimethyle cyclohexen (1.21 %), phenanthrene carboxylic acid (1.03 %), naphthalene pentanoic acid (0.99 %), 1-phenanthrene carboxylic acid and 1 cyclohexenone 2-methyl oxobuty (0.89 %). The sample finished by pad dry cure method exhibited better UV protection even after 10th wash as compared to exhaust method. Vetiver extract treated samples exhibited maximum zone of inhibition against *S. aureus* than the *E. coli* organism. The vetiver root extract treated organic cotton fabric through pad dry cure method possessed good antimicrobial activity against *S. aureus* and *E. coli* even after 20th washes compared to vetiver root extract treated by exhaust method. The olfactory analysis was carried out by 30 panels of members and opined that vetiver root extract treated fabric has very good and pleasant aroma with better tactile properties that provide cooling, soothing effect and enhances the mood of the wearer. Vetiver root extract finished organic cotton fabric possessed aroma, antimicrobial and UV properties which are aptly suitable for medical and healthcare textiles viz., wound dressing, bandage gauze, surgical cloths, baby diapers and sanitary napkins. It can be used as after finishing agent for variegated garments and made-ups and can be replaced with commercial after finishing agents.

**Keywords :** antimicrobial, olfactory analysis, UV protection factor, vetiver root extract

**Conference Title :** ICMTH 2018 : International Conference on Medical Textiles for Healthcare

**Conference Location :** Paris, France

**Conference Dates :** February 19-20, 2018