World Academy of Science, Engineering and Technology
International Journal of Materials and Textile Engineering
Vol:10, No:03, 2016

Colorful Textiles with Antimicrobial Property Using Natural Dyes as Effective Green Finishing Agents

Authors : Shahid-ul-Islam, Faqeer Mohammad

Abstract : The present study was conducted to investigate the effect of annatto, teak and flame of the forest natural dyes on color, fastness, and antimicrobial property of protein based textile substrate. The color strength (K/S) of wool samples at various concentrations of dyes were analysed using a Reflective Spectrophotometer. The antimicrobial activity of natural dyes before and after application on wool was tested against common human pathogens Escherichia coli, Staphylococcus aureus, and Candida albicans, by using micro-broth dilution method, disc diffusion assay and growth curve studies. The structural morphology of natural protein fibre (wool) was investigated by Scanning Electron Microscopy (SEM). Annatto and teak natural dyes proved very effective in inhibiting the microbial growth in solution phase and after application on wool and resulted in a broad beautiful spectrum of colors with exceptional fastness properties. The results encourage the search and exploitation of new plant species as source of dyes to replace toxic synthetic antimicrobial agents currently used in textile industry.

Keywords : annatto, antimicrobial agents, natural dyes, green textiles
Conference Title : ICTE 2016 : International Conference on Textile Engineering
Conference Location : Miami, United States
Conference Dates : March 24-25, 2016