

Sensitizing Bamboo Fabric with Antimicrobial Turmeric Dye

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Abstract : Coating of fabrics with anti-microbial dyes is an adaptable technique of protection from various diseases. Natural dyes, which are known to possess antibacterial properties, can be used for antibacterial finishing of fibers like cotton, wool, bamboo and so many. Dyeing of fabrics with natural dyes normally requires the use of mordants so that dyes can stay on the fabric as well as into interstices of the fabric during multiple washings. In this study, the mordants used are alum and chitosan for ensuring a reasonable color fastness to light and washing. Chitosan is a natural polysaccharide having significant biological and chemical properties such as biodegradability, biocompatibility, bioactivity, microbial activity and polycationicity. The metal ion of alum mordant can act as electron acceptor for electron donor to form coordination bond with the dye molecule, making them insoluble in water. The dyeing of bamboo fabric using a natural dye extracted from turmeric has been studied using conventional dyeing method. Natural dye was extracted using water as solvent by Soxhlet extraction method. The extracted color was characterized by spectroscopic studies like UV/visible and further tested for antimicrobial activity. The effect of mordants on the dyeing outcome in terms of colour depth as well as fastness properties of the dyeing was investigated. It has been found that employing the conventional dyeing technique at 100 oC, the mordanted samples were deeper in depth than their unmordanted counterparts. The results of fastness properties of the dyed fabrics were fair to good. Turmeric extract was found to enhance microbial resistance of bamboo as well as was itself as a good cause of coloration. These textiles dyed with the turmeric as natural dye can be very useful in developing clothing for infants, elderly and infirm people to protect them against common infections. The outcome of this study will provide a new feature to the interface of dyeing and pharmaceutical industry.

Keywords : antimicrobial activity, bamboo fabric, natural dye, turmeric

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