

HERBAL ANTIMICROBIAL FINISHING OF COTTON AND KHADI FABRIC USING MORINGA (*MORINGA OLEIFERA*) LEAVES EXTRACT

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ABSTRACT

*Microbes can be found almost everywhere in the environment including in textile materials. Natural fibres are especially prone to attack by microorganisms that cause staining and bad odor along with deterioration of strength and other mechanical properties. Consumers are now increasingly aware of healthy and hygienic lifestyles, and there is an expectation for a wide range of textile products with antimicrobial properties. In the present study, the antimicrobial finish was imparted to cotton and Khadi fabrics using Moringa leaf (*Moringa oleifera*) extract through direct and microencapsulation methods to improve the antimicrobial properties of the fabric. Microcapsules were prepared by using *Moringa oleifera* extract as core material and chitosan as wall material and these were applied on fabric using pad dry cure method. Both treated and untreated samples were subjected to various tests including SEM, FTIR, and antimicrobial efficacy carried out by quantitative and qualitative methods in terms of bacterial reduction and durability of antimicrobial activity to washing. Treated samples were showed satisfactory antimicrobial activity against gram positive (*Staphylococcus aureus*) and gram negative (*Klebsiella pneumoniae*) bacteria. The deposition of microcapsules was observed in the SEM analysis, and the active compounds of Moringa leaves (*Moringa oleifera*) extract were also confirmed by FTIR spectroscopy. Microencapsulated herbal samples showed higher resistance to microbes even after 10 wash cycles than directly treated samples.*

KEYWORDS: Antimicrobial finish, chitosan, FTIR, Moringa, Microencapsulation, SEM

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