RESEARCH PAPER:

Effect of neem as an eco-friendly antimicrobial finishing agent on naturally dyed and hand woven carpets

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SUMMARY

In today's era of eco-friendly operations, it is necessary that chemicals used for finishing must be biodegradable and nontoxic to the manufacturer, user and the environment. The natural products inhibit or destroy pathogens without toxic impact on the host cells and hence there is an exciting opportunity for the use of such antimicrobial finishes to clothing and to textiles. The study revealed that, more than 2.0 mm inhibition zone was observed in all treated yarns at 10 gpl concentration of neem for *Staphylococcus aureus* Gram +ve bacterium. The untreated samples of yarns showed more growth of *E.coli.* Highly significant difference at 1 per cent level of significance was found between the treatments and also between the different types of yarns for antimicrobial test for the growth of *Staphylococcus aureus* and *E.coli* bacteriae.

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Key Words :
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Using plant products as antimicrobial agents is an ancient idea. The relatively lower incidence of adverse reactions of herbal products as compared to modern synthetic pharmaceuticals, coupled with their reduced cost, can be exploited as an attractive eco-friendly alternative to synthetic antimicrobial agents for textile applications (Joshi, *et al.*, 2009). In today's era of eco-friendly operations, it is necessary that these finishes be biodegradable and nontoxic to the manufacturer, user and the environment. Natural herbal products can be used for antimicrobial finishes, as there is a tremendous source of medicinal plants with antimicrobial composition. These natural products inhibit or destroy pathogens without toxic impact on the host cells and hence there is an exciting opportunity for the use of such antimicrobial finishes to clothing and to textiles. Besides adding charm and grace to the floor, the carpet should exude a sense of warmth and character and not just become another appendage to the furniture.

Hygiene has acquired importance in recent years. Consumers are looking for solutions to odour and microbial problem and the unique benefits provided by antimicrobial finish (Gopalkrishnan, 2006).The greater incidence and awareness of allergy related complaints have stimulated interest in household textiles and furnishings, which minimize exposure to possible aggravating agents such as dust, mites, water and oil etc. This has stimulated an all-round protection of textiles against microbial infestation and the effects of dirt, water and/or oil.

The neem tree has been venerated through the ages in the Indian countryside as it provided hope in any situation and the faith in the miraculous healing powers of this amazing tree led patients with incurable diseases to adopt neem as way of life. The most important quality of neem compound is that it is less toxic to warm blooded animals like human beings. Thus, considering its less toxicity and effectiveness against micro-organism, neem is expected to be one of the safest and most effective colourant and antimicrobial agents for finishing of textiles. Hence, the study on effect of neem as antimicrobial finishing agent on naturally dyed carpet yarns was taken up.