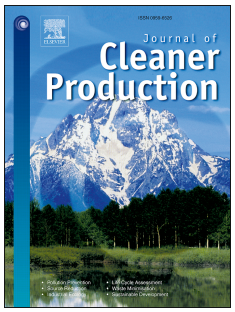
Accepted Manuscript



UV reflectance attributed direct correlation to colour strength and absorbance of natural dyed yarn with respect to mordant use and their potential antimicrobial efficacy

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PII: S0959-6526(15)00487-4

DOI: 10.1016/j.jclepro.2015.04.112

Reference: JCLP 5481

To appear in: *Journal of Cleaner Production*

Received Date: 28 July 2014

Revised Date: 17 April 2015

Accepted Date: 25 April 2015

Please cite this article as: Baliarsingh S, Behera PC, Jena J, Das T, Das NB, UV reflectance attributed direct correlation to colour strength and absorbance of natural dyed yarn with respect to mordant use and their potential antimicrobial efficacy, *Journal of Cleaner Production* (2015), doi: 10.1016/j.jclepro.2015.04.112.

UV reflectance attributed direct correlation to colour strength and absorbance of natural dyed yarn with respect to mordant use and their potential antimicrobial efficacy.

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Abstract

In this study, an attempt has made to investigate the impact of UV reflectance of un-dyed and dyed cotton yarn on the quantity of natural dyes absorbed by the fiber and observed its colour intensity. The study also provides evidence of the relationship between the UV reflectance and the colour strength of the dyed cotton with respect to mordant. The absorption of dyes on cotton yarns ranged from 5.06 to 34.09% in 5% dye solution of different plant extracts. Experimental data revealed that the higher colour intensity (K/S) corresponded to lower UV-reflectance and higher dye absorption of the dyed yarns. It was demonstrated that the dyed cotton yarns displayed excellent antimicrobial activity against bacterial strain *Streptococous pyogenes* (reduction rate: 52 – 61%) and the fungal strain *Aspergillus niger* (reduction rate: 35 – 63%) for developing protective clothing. The current findings clearly demonstrate that the extraction of natural colourants from waste leaves and superficial barks of the plants could be a sustainable technology for waste utilization of bio-resources by the small-scale segments as well as the rural weaver's societies for their socio-economic growth.

Key words: Natural dyestuff; Yarn; Dyeing; Mordant; UV-reflectance; Human pathogens

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