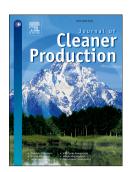
Accepted Manuscript

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

Sasmita Baliarsingh, Padma C. Behera, Jyotsnarani Jena, Trupti Das, Nalin B. Das



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.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

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.

Sasmita Baliarsingh, Padma C. Behera, Jyotsnarani Jena, Trupti Das and Nalin B. Das*

Institute of Minerals & Materials Technology, Council for Scientific and Industrial Research

(CSIR), Bhubaneswar – 751013, India.

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

*Corresponding author;

Tel: +91-674-2379330; Fax: +91-674-2581637

E-mail: nbdas@immt.res.in; nalinbihareedas@gmail.com

1

Download English Version:

https://daneshyari.com/en/article/8103889

Download Persian Version:

https://daneshyari.com/article/8103889

<u>Daneshyari.com</u>