



STUDY OF SOME COMMON PLANTS FOR NATURAL DYES

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Abstract

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A dye can generally be described as a coloured substance that has an affinity to the substrate to which it is being applied. The present study mainly focuses on some common plants having dye yielding potential. As many as 100 species were screened for dye, out of these 15 species belonging to 12 genera and 12 families are presented in this paper. The botanical names, family, vernacular name and parts from which dye is obtained and the colours fixed after treating with mordents are described.

INTRODUCTION

Color is one of the elements of nature that made the human living more aesthetic and fascinating in the world. They are supposed to be associated with emotions, human qualities, seasons, festivals and passion in our life. A dye can generally be described as a coloured substance that has an affinity to the substrate to which it is being applied. A substance, which is resistance to light, water and soap, called dye. So it is a fundamental requirement that colored textile should withstand the conditions encountered during processing following coloration and during their subsequent useful life [Gulrajani *et al.*, 2001]. The art of dyeing is as old as human civilization. From the historical records, it is learnt that natural colorants were available to people during Greco-Roman periods. Our Vedas, the Atharveda carries description of natural dyes. The use of natural dyeing materials is evident with the wall paintings of Ajanta, Ellora and Sithannvasal and they still demonstrate the efficacy of dyeing craft that had been inherited from ancient times in India. Ancient Egyptian hieroglyphs contain a thorough description of the extraction of natural dyes and their

application in dyeing. Natural dyes have been used since ancient times for coloring and printing fabrics. Natural dyes comprise those colorants (dye and pigments) that are obtained from animal and vegetable matter without chemical processing. Colorants derived from root, leaf, bark, trunk, fruit and flowers of plants. Study of available literature shows that several studies were carried out on dye yielding plants in the recent past. (A. Rashmi *et al.*, 2004, Debajit and Tiwari 2005, Shiva 2007, Purohit *et al.*, 2007, Gour 2008 and Garg *et al.*, 2010) Dye yielding plants are not properly studied with reference to Madhya Pradesh, (Tiwari and Bharat 2008), (Choudhary and Upadhyay 2011) Present work is undertaken to study the dyes yielding plants of Sehore district. The present paper provides an account some common plants and dyes fixed on cloth after treating with mordents.

MATERIALS & METHODS

About 150 plants were collected from different places of Hoshangabad district in Madhya Pradesh. Some information on traditional methods of dye making was

gathered from the local and tribal people.

The Herbarium of plants was prepared and voucher specimens were identified using local herbarium of college and various floras like Maheshwari 1963 and the Flora of Madhya Pradesh Vol.-I Verma *et al.*, (1993). The voucher specimens were deposited in the Herbarium of Botany Department, Government Post-Graduate College, Pipariya Hoshangabad (M.P.).

The leaves, barks, fruits and seeds of plants were collected and dried under shade. The plant material was used for phyto-chemical studies. The plant material was boiled in water various mordents were added to it. Some mordant like, Alum, Ferrous Sulphate, Copper Sulphate, Calcium carbonate and Tin etc were used of fixation of colors and development. The mercerized cotton cloth was dipped in boiling dye solution and kept in it for 15 to 20 minute. The shades of colours obtained after fixing with mordents are given on plate no.1. An account of fifteen plants and parts used in dyeing along with the colour of dyes fixed on the fabric using various mordents are presented in the Table no.1.

RESULTS AND DISCUSSION

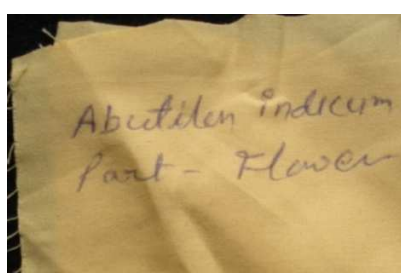
In present work Dyes found in 15 Angiosperm plants species belonging to 12 genera and 12 families are described (Table-1). In the present observation Fabaceae, Mimosaceae and Myrtaceae are found to be dominating with 2 species each and other families having one species each (fig.2). In the present observation most of the dyes are obtained from barks. The plants colors have been found to be used for dyeing of cotton, silk and fiber. Now a day's natural dye are more preferred over chemical dyes, due to their non toxic properties low pollution and less side effects. The people of Assam have been using herbs to dye their cotton, silk and woolen yarns (Kar and Borthakur 2008). Natural colourants from roots of *Morinda angustifolia* Roxb. And other plants used for dye extraction are classified as medicinal and some of these have recently been shown to possess antimicrobial activity [Husseini, S. A. M. *et al.*, 1997]. Several shades of brown, olive green and green shade are obtained in *Acacia catechu* Linn. (A. Rashmi *et al.* 2004).

Commercialization of dyes can be successful with systematic and scientific approach for identification of resources, extraction, purification, chemical structure elucidation and promotion of use of dyes, thereby enhancing the economy of the local people.

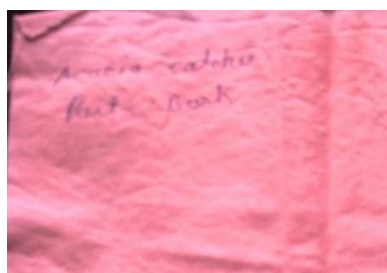
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Plate No. 1 Shades of colour observed on the fabrics



Abutilon indicum (Linn)



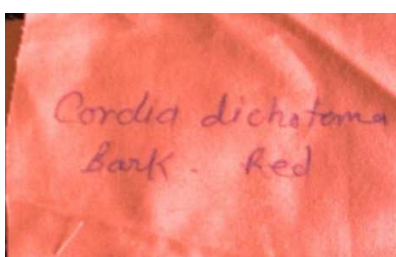
Acacia catechu Willd



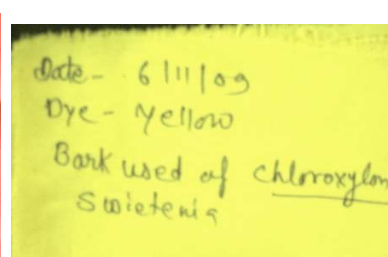
Butea monosperma (Lamk)



Butea Superba Roxb.



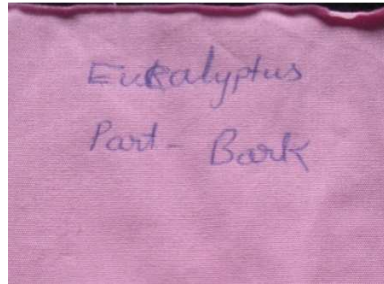
Cordia dichotoma Forst.



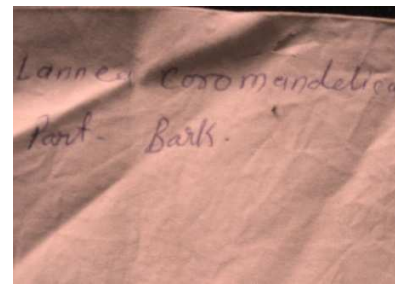
Chloroxylon Swietenia DC.



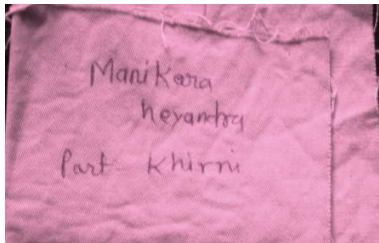
Delonix Regia (Boj)



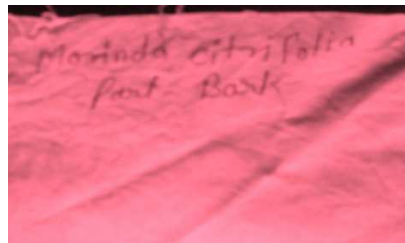
Eucalyptus globules Labill



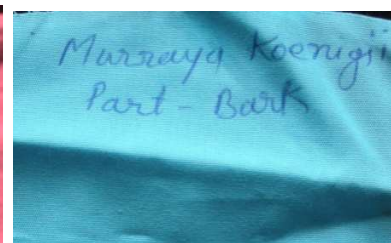
Lannea coromandelica (Houtt)



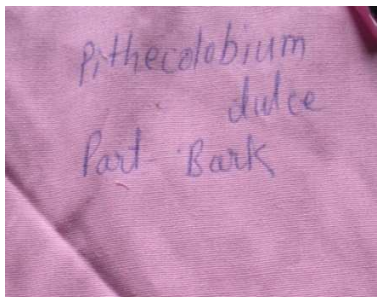
Manikara hexandra (Roxb)



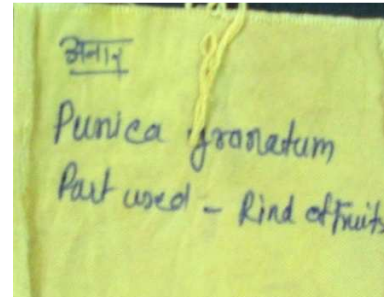
Morinda citrifolia L.



Murraya koenigii (Linn)



Pithecolobium dulce (Roxb)



Punica granatum Linn



Syzygium heyneana (Dathie)

Table 1

Observations on various dyes fixed on fabrics using various mordents

S. No.	Botanical Name	Family	Local Name	Part used	Mordant	Dyes
1	<i>Abutia indicum</i> (Linn.)	Malvaceae	Khanghi	Flower	Alum	Brown
2	<i>Acacia catechu</i> Willd.	Mimosaceae	Khair	Bark	Alum	Pink
3	<i>Butea monosperma</i> (Lamk.)	Fabaceae	Palas and Khakara	Flower	Alum	yellow
4	<i>Butea Superba</i> Roxb.	Fabaceae	Bel Palash	Flower	Ferrous sulphate	yellow
5	<i>Cordia dichotoma</i> Forst.	Boraginaceae	Lasora	Bark	Alum	Red
6	<i>Chloroxylon Swietenia</i> DC.	Flindersiaceae	Bhirra, Ghiriya	Bark	Alum	Light yellow
7	<i>Delonix Regia</i> (Boj.)	Caesalpiniaceae	Gul-Mohor	bark	Alum	khaki
8	<i>Eucalyptus globules</i> Labill.	Myrtaceae	Neelgiri	Bark	Tin (stannous chloride)	Blues pink
9	<i>Lanea coromandelica</i> (Houtt.)	Anacardiaceae	Gurjan	Bark	Tin (stannous chloride)	Light Red
10	<i>Maninkara hexandra</i> (Roxb.)	Sapontaceae	Khirni	Bark	Alum	Pink
11	<i>Morinda citrifolia</i> L.	Rubiaceae	Noni	Bark	copper sulphate	Red
12	<i>Murraya koenigii</i> (Linn.)	Rutaceae	Mitha neem	Bark	Alum	Blue

13	<i>Pithecolobium dulce</i> (Roxb.)	Mimosaceae	Vilayati imli	Bark	Calcium carbonate	Light Pink
14	<i>Punica granatum</i> Linn.	Punicaceae	Anar	Rind of fruit	Alum	yellow
15	<i>Syzygium heyneana</i> (Dathie)	Myrtaceae	Khat-jamun	Bark	Ferrous sulphate	Blue

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