

OBSERVATION ON NATURAL DYE YIELDING PLANTS OF CENTRAL NARMADA VALLEY INDIA

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Abstract: The present study mainly focuses on the Some Dyes yielding plants from central Narmada valley of Central India. As many as 150 species were screened for dye, out of these 34 species belonging to 29 genera and 22 families are presented in this research article. The botanical name, family, vernacular name and parts from which dye is obtained are described in this paper.

Keywords: Dyes, Plants, Central Narmada Region, Hoshangabad, India

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. In the past, at dawn of the civilization, the people tried to ornament their surroundings similar to that of natural colors observed in the plant, soil, sky and other sources. This gave birth to a new science of colors from natural origin. A dye can generally be described as a coloured substance that has an affinity to the substrate to which it is being applied. 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. In our country 500 plant species, which have been identified as useful sources of dyes? Several plants from central Narmada region have been studied to obtain the Natural dyes.

Central Narmada valley is situated between Vidhya and Satpura hills of Central India. This region lies between 21⁰54 to 22⁰59E longitudes and 76⁰46 to 78⁰42 N latitude The average height of this region is ±331 meters form sea level. This region has rich biodiversity and four tribal communities residing therein. These tribal communities are Bhil, Bhilala, Gond and Korku. These communities have some traditional methods of dyeing the cotton fabrics. Apart from these communities some tradional dyers known as 'Rangreja' community does the work of dyeing the clothes. These people use several plant materials for obtaining natural colors used for dyeing. The present paper provides an account of the dyes-yielding plants found in central Narmada Valley.

MATERIALS AND METHODS

The present study is the outcome of exhaustive field survey under taken for the period of two year from 2008 to 2010. About 150 plants were collected from different places of central Narmada region in central India. This material was collect from Pilikarar, Pandadoh, Khandawar, Joshipur, Barkheda, Basapur, Goradia, Mahukala, Patalkhoh, Shahpura, in Sehore district and Malakhedi, Raipur, Jasalpur Bandhrawan, Randhar, Hashalpur, Baduba in Hoshangabad district in various seasons. Some important information was gathered from the local and tribal people. Descriptions of species and identification were done with the help of various flora and available literature, especially Cooke, 1901-1936; Oommachan, 1977; Maheshwari 1963; Randhva, 1983; Flora of Madhya Pradesh Vol.-I

Verma *et al.* (1993) and Dictionary of Indian folk medicine and ethnobotany. The species were identified and classified mainly as per the Benthum & Hookers system of classification. The voucher specimens were deposited in the Herbarium of Botany Department, Government Narmada Post-Graduate College, Hoshangabad, (M.P.)

The leaves, barks, fruits and seeds of Dyes yielding plants were collected and dried under shade. The

plant material was used for phyto-chemical studies. Natural dyes of the plant materials were prepared by boiling of plant parts with water then added the mordant and the mercerized cotton fabrics coloured with this dye also by boiling on 100⁰ C temperatures for 30 minute. Some mordant like, Alum, Ferrous Sulphate, Copper Sulphate and etc were used of fixation of colors and development.

Table 1.

S.No.	Botanical Name	Family	Local Name	Mordant	Parts	Dye
1	<i>Abutilon graveolens</i> W&A	Malveceae	Kanghi , Mahabala	Allum	Leafs	Cream
2	<i>Acacia leucophloea</i> (Roxb.) Willd.	Mimosaceae	Rinjha	Allum	Bark	Brown
3	<i>Acacia nilotica</i> (L.) Del.	Mimosaceae	Babool	Allum	Bark	Pink
4	<i>Bauhinia purpurea</i> L.	Caesalpinaeae	Kachnar	Allum	Bark	Red
5	<i>Bauhinia Variegata</i> L.	Caesalpinaeae	Kachnar	Allum	Flower	Parrot green
6	<i>Buchannania lanzan</i> Roxb.	Anacardiaceae	Chiroji	Allum	Bark	Red
7	<i>Butea monosperma</i> (Lamk.) Taub.	Papilionaceae	Palash	Allum	Dried Flowers	Yellow
8	<i>Bombax ceiba</i> L.	Bombaceae	Semal	Copper Sulphate	Dried Flowers	Reddish Khaki
9	<i>Cassia tora</i> L.	Caesalpinaeae	Puvar / Chrota	Allum	Seeds	Red
10	<i>Chloroxylon switinia</i> DC.	Flindersiaceae	Dhiriya	Allum	Bark	Yellow
11	<i>Datura metel</i> L.	Solanaceae	Kala dhatura	Alum	Flower	Light green
12	<i>Depteracanthus suffruticosus</i> (Roxb.)	Acanthaceae	....	Allum	Flower	Light pink
13	<i>Diospyros malenoxylon</i> Roxb.	Ebenaceae	Tandu	Allum	Bark	Pink

14	<i>Eugenia jambolana</i> Lam.	Myrtaceae	Jamun	Allum	Bark	Pink
15	<i>Ficus cupulata</i> L.	Moraceae	Bargad	Allum	Brak	Light Pink
16	<i>Ficus glumerota</i> Wall. Ex. Roxb.	Moraceae	Gular	Allum	Bark	Red
17	<i>Ficus retusa</i> L.	Moraceae	.....	Allum	Bark	Light pink
18	<i>Ficcus ruffa</i> L.	Moraceae	Jangli Gooler	Allum	Bark	Pink
19	<i>Hibiscus rosa-sinensis</i> L.	Malveceae	Gudhal	Allum	Flower	Blue
20	<i>Ipomoea Carnea</i> Jacq.	Convolvulac eae	Besram	Allum	Flower	Light green
21	<i>Lowsonia inermis</i> L.	Lythraceae	Henna	Copper Sulphate	Leafs	Blues Khaki / Pink
22	<i>Parthenium hysterophorus</i> L.	Asteraceae	Gajarghas	Allum	Leaf	Light green
23	<i>Pterocarpus marsupium</i> Roxb.	Fabaceae	Bijasal	Allum	Bark	Red
24	<i>Poinciana regia</i> L.	Caesalpinac eae	Gulmohar	Allum	Flower	Bluish Grey
25	<i>Punica granatum</i> L.	Punicaceae	Annar	Allum	Fruit rind	Yellow
26	<i>Randia dumetorum</i> (Retz.) Poir.	Rubiaceae	Menhar	Allum	Bark	Pink
27	<i>Ruellia tuburosa</i> L.	Acanthaceae	.....	Allum	Flower	Blues Grey
28	<i>Sphaeranthus indicus</i> L.	Asteraceae	Gorakhmundi	Allum	Flower	Light green
29	<i>Solanum xanthocarpum</i> Schrad. & Wendl.	Solanaceae	Bhatkatiya	Allum	Flower	Light green
30	<i>Tectona grandis</i> L.	Verbenaceae	Sagon	Allum	Leafs	Pink
31	<i>Terminalia arjuna</i> (Roxb. Ex DC.)	Combratace ae	Arjun	Allum	Bark	Reddish Khaki
32	<i>Terminalia bellerica</i> (Gairth.) Roxb.	Combratace ae	Bahera	Allum	Fruit	Brown
33	<i>Ventilago denticulata</i> Willd.	Rhamnaceae	Kavti	Ferrous sulphate	Bark	Red
34	<i>Wrightia tictoria</i> R.Br.	Apocynacea e	Dhudhi	Copper Sulphate	Bark	Pumice

RESULT AND DISCUSSION

Central Narmada valley is one of the floristically richest regions in Central India and provides an excellent piece of rich biodiversity. In present work Dyes found in 34 Angiosperm plants species belonging to 29 genera and 22 families (Table-1). Pink and Red colors are found to be dominant with 5 families followed by Light green and yellow colors with 3 families, Blues grey, Brown, light pink and Reddish Khaki with 2 families, Blue, Blues Khaki, Cream and Parrot green and Pumice with 1 families each (Table-1). These plants colors have been used for dyeing of cotton, silk and fiber. Today people needs of natural dyed fabrics. Due to their non toxic properties low pollution and less side effect.

Natural dyes work best with natural fibers such as cotton, linen, wool silk, jute, and sisal [Gulrajani *et al.*, 1992]. 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]. Dyes are classified based on their chemical structure, sources, method of application, colour, etc. As a model study here we explain the chemistry as described by [Vanker, P. S., 2000, Chandramouli, K. V. 1995]. Many of the plants used for dye extraction are classified as medicinal and some of these have recently been shown to possess antimicrobial activity [Hussein, S. A. M. *et al.*, 1997]. *Punica granatum* L. and many other common natural dyes are reported as potent antimicrobial agents owing to the presence of a large amount of tannins. Several other sources of plant dyes rich in naphthoquinones such as lawsone from *Lawsonia inermis* L. (Henna), Juglone from Walnut and Lapachol from alkanet are reported to exhibit antibacterial and antifungal activity [Gerson, H., 1975, Schuerch, A. R. *et al.*, 1978 & Wagner, H., 1989]. studied the antimicrobial activity of some natural dyes. Optimized natural dye powders of *Acacia catechu* (L.f.) Willd, *Kerria lacca*, *Rubia cordifolia* L. and *Rumex maritimus* were obtained from commercial industries and they showed antimicrobial activities by [Singh, R.V., 2001 and Singh *et al.*, 2005]. This is clear evidence that some natural dyes by themselves have medicinal properties. Parts from dye-yielding property, some plants are also used traditionally for medicinal purposes [Singh, R., 2005].

Mahanta and Tiwari, 2005 identified a few rare, endangered and endemic dye-yielding plant species during their study in Arunachal Pradesh. [Siva and Krishnamurthy 2005] studied an important dye-yielding plant, *B. orellena*, for understanding the relationship between degree of genetic diversity (using isozymes) of various populations and their pigment content. [Siva R., 2007]. Given status of natural dyes and dyes yielding plants in India

In the present study people of the central Narmada region in terms of economically important plants need to be documented to prevent them from being lost forever. Commercialization of dyes can be successful in the central Narmada region with systematic and scientific approach for identification of resources, extraction, purification, chemical structure elucidation and promotion of use of dyes, there by enhancing the economy of the local people. As a whole, systematic approaches with scientific attitude would help in conserving the economically important plant resources, in addition to the rich indigenous knowledge base available in central Narmada region.

ACKNOWLEDGMENTS

We thank MPCOST, Bhopal for providing financial support. We are grateful to the Head of the botany department, Dr. K. W. Shah Government Narmada P.G. College Hoshangabad for providing Laboratory facilities. Our thanks are due to Smt. Sharad Trivedi Upadhyay, Mr. B.P. Singh and Mr. Manish Choudhary, for helping in this work.

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