

SHORT COMMUNICATION

Natural dye yielding plants and their ethnomedicinal value in Ratlam district, Madhya Pradesh

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ABSTRACT

The present paper provides information about 31 plant species for the dye yielding and their ethnomedicinal uses, which are practiced by the Bhil tribe of Ratlam district (M.P.). The botanical names followed by family, local names, dye yielding plant parts, colouring components, colour of the dye, and ethnomedicinal uses are mentioned in this study.

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INTRODUCTION

A dye can generally be described as a coloured substance with an affinity to the substrate to which it is being applied (Gaur, 2008; Gokhale *et al.*, 2004; Ramasamy *et al.*, 2020; Singh, 2006). Natural dyes obtained from different plant parts like roots, leaves, flowers, fruits, seeds, bark, rhizome, tuber, or wood have been used since ancient times. Fresh or dried plant parts are crushed and ground with water to prepare a dye. The majority of these natural dyes are used to colour or paint human bodies and color or print fabrics by primitive people. Later dyes are also used for colouring paints, ink, paper, cosmetics, wood, food, leather, beverages, and medicines.

Ratlam district lies in the western part of the Malwa Plateau in Madhya Pradesh. The mathematical limits of the community extend from 23° 05' North to 23° 55' North and from 74° 30' East to 75° 42' East. The district is bounded by Mandsaur district on the north, Jhabua, Dhar on the south, Ujjain on the east, and Chittorgarh and Banswara district of Rajasthan State on the west. Shajapur district of Madhya Pradesh and Jhalawar district

of Rajasthan also touches the northeastern boundary of Ratlam district. The elevation generally varies from 434 to 549 m above mean sea level. The district comprises an area of 4861 sq. km inhabited by 1,455,069 persons, living in 1080 villages covering eight tehsils Viz. Alot, Bajna, Jaora, Piploda, Ratlam, Rawti, Sailana and Tal. The forests, which occupy 499.92 sq km or 10.26 %, are of the dry deciduous type (Champion and Seth, 1968). The forests are dominated by Teak (*Tectona grandis* L.f.). Other notable wood species are Sajad [*Terminalia tomentosa* (DC.) Wt. & Arn.], Mahua (*Madhuca indica* Gmel.), Tendu (*Diospyros melanoxylon* Roxb.), Palas [*Butea monosperma* (Lam.) Taub.], Kalam [*Mitragyna parviflora* (Roxb.) Korth.], Dhaora [*Anogeissus latifolia* (Roxb.) Wall. ex Bedd.], Bel [*Aegle marmelos* (L.) Corr.], Bija (*Pterocarpus marsupium* Roxb.) and Bamboo (*Dendrocalamus strictus* Nees.), which constituted a significant chunk of the middle canopy of the forests. In Ratlam district, there are two important rivers, namely, the Chambal flowing north along with its tributaries and the Mahi flowing to the north-west. The climate of the State is generally sub-humid with an annual rainfall ranging

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from 700-1200 mm. The minimum and maximum temperatures range between 6^o C and 43 ^oC in January and May, respectively. The black cotton soil predominates the entire district.

Bhils are the principal inhabitants of different villages of the district. According to the 2001 census, the population of the Bhil tribe in the district was 2.26 lac constituting about 23.27% of the total population. They have inherited rich traditional knowledge of surrounding plants. Such knowledge of the economic and other properties of surrounding plants acquired by the tribal community by their experience and practice has been passed on from generation to generation as a part of their cultural heritage. The primary occupation of the Bhils in earlier times was hunting and fishing, however, but presently they are mainly engaged in agriculture. The great bulk of them constitutes servants and laborers. During extensive field trips in some tribal inhabited villages of the district, the author recorded some ethnomedicinal uses of plants used by the tribals. Ethnobotany has introduced numerous little-known or unknown services of plants (Jain 1981, 1991, 2002, 2004). The author is engaged in ethnobotanical investigations in this district, which have been published (Jadhav 2016, 2017, 2018, 2019) earlier. This paper is in a link of the same work. In the present investigation, the author recorded some ethnomedicinal uses of dye-yielding plants used by the tribe. The present paper provides information on ethnomedicinal services of dye-yielding plants traditionally used by the Bhil tribe of Ratlam district (M.P.).

MATERIALS AND METHODS

Taxonomical surveys were conducted in different tracks in the forest areas of Ratlam district during 2004-2020, and more than 500 Angiospermic taxa were recorded. First-hand data regarding various uses and local names of plants were collected through personal contacts established with many tribal informants and "Bhopa" (Traditional rural medicine men). During the survey, the Bhopa was contacted and taken to the field to collect information about ethnomedicinal plants, local names and parts used, method of preparation of the drug, and approximate dosage of administration. These data are to be recorded in the field book. Voucher specimens are collected for

authentication of information and future reference. With the help of local names and specimens, it is possible to verify the uses with other villagers. The data are considered valid if at least two informants provided similar services about the ethnomedicinal plants. In the present communication, an attempt has been made to enumerate the ethnobotanical uses of dye-yielding plant taxa of Ratlam district. Botanical names, family, local names, dye yielding plants parts, colouring components, colour of the dye, and ethnobotanical uses are presented in Table-1. Herbarium specimens prepared following the standard method (Jain and Rao, 1978) have been deposited in the herbarium of Botany department, Govt Arts & Science College, Ratlam (M.P.). Herbarium specimens were identified with the help of standard floras (Mudgal *et al.*, 1997; Singh *et al.*, 2001; Verma *et al.*, 1993).

ENUMERATION

Plant species are enumerated alphabetically with their botanical names, family, local names, dye yielding plant parts used, colouring components, colour of the dye, and ethnomedicinal uses (Table-1).

RESULTS AND DISCUSSIONS

The study provides ethnomedicinal uses of some dye yielding 31 plants species under 21 families and 29 genera used by the Bhil tribe of Ratlam district (M.P.). The majority of the species of dye-yielding plants are trees (17 species), followed by shrubs (6 species), herbaceous (5 species), and climbers (3 species). Most of the species (8 species) are belong to the family Fabaceae. The rest of the species are followed by Euphorbiaceae, Myrtaceae, Verbenaceae (2 species each), and the other 17 families (1 species each). The primitive people are well acquainted with the properties and uses of plants in their surroundings. They have inherited rich traditional knowledge of surrounding plants. Such knowledge of the economic and other properties of surrounding plants acquired by the tribal community through the experience of ages has been passed on word of mouth from generation to generation as a part of their cultural heritage. Therefore, it is urgent and essential to preserve and document adequately before the information is lost forever. The author felt the need for the present

Table 1: Dye-yielding plants with their ethnomedicinal uses of tribal pockets of Ratlam district (M.P.)

Botanical Name	Family	Local name	Parts used	Clouring components	Colour of the dye	Ethnomedicinal uses
<i>Abrus precatorius</i> L.	Fabaceae	Lal chermi	Flower/Seeds	-	Black	One teaspoonful of powder of seeds is taken with water after a menstruation period for 3 days early in the morning on an empty stomach to promote conception.
<i>Acacia catechu</i> Willd.	Fabaceae	Khario	Wood	Catechin	Reddish-brown	Gargles of stem bark decoction relieve in mouth ulcers.
<i>Acacia nilotica</i> ssp. <i>indica</i> (Benth.) Brenan	Fabaceae	Babul	Bark/Pods	Catechin	Yellowish-brown	Extract of stem bark is taken with water to cure diarrhea & dysentery.
<i>Achyranthes aspera</i> L.	Amaranthaceae	Andhijado	Flowers	-	Reddish-brown	*The twig is used as a toothbrush in cases of bad breath. *Powder of roasted seeds is taken with honey to cure asthma. *The paste of leaves and seeds is mixed with Haldi (<i>Curcuma longa</i>) and heated a bit with edible oil. This paste is tied in the case of corn.
<i>Adhatoda vasica</i> L.	Acanthaceae	Aduso	Leaves	2-pyridyl methyl amine	Yellow	The 2 leaves are boiled with a cup of tea and taken in a cough.
<i>Aegle marmelos</i> Correa ex Roxb.	Rutaceae	Billo	Fruit rind	Marmalosin	Reddish	The juice is extracted from boiled ripe fruit, and it is taken to cure a cold.
<i>Aloe vera</i> L.	Liliaceae	Gwarpatho	WP	-	Red	*The leaf pulp is heated with edible oil & turmeric powder. This paste is tied to the anus to cure piles. *Juice of leaves is applied externally to cure boils, minor burns & wounds, scratches. *Juice of leaves is mixed with honey and taken in cough cases.
<i>Ampelocissus latifolia</i> (Roxb.) Planch.	Vitaceae	Panibel	Root	-	Black	Extract of the root is given with water to cure Jaundice.
<i>Annona squamosa</i> L.	Annonaceae	Seetaphaal	Fruit	-	Yellow	*Extract of seeds is taken with water to cure diarrhea and dysentery. *Extract of seeds is taken with water to prevent conception.
<i>Artocarpus heterophyllus</i> Lam.	Moraceae	Kathal	Fruit/Wood	-	Yellow	Fruit is used as vegetable curries; it is used for strength and vigor.
<i>Azadirachta indica</i> A. Juss.	Meliaceae	Limdo	Bark	-	Brown	*Powder of stem bark is heated with coconut oil and applied to burnt skin. *Extract of inner-bark of the stem of <i>Acacia leucophloea</i> is mixed with the inner-bark of the stem of <i>Butea monosperma</i> and <i>Azadirachta indica</i> mixture is taken with water to cure dysentery.
<i>Bauhinia purpurea</i> L.	Fabaceae	Hetro	Bark	Chalcone, Butein	Purple colour	Extract of stem bark is taken with water to cure dysentery.
<i>Bauhinia racemosa</i> Lam.	Fabaceae	Hetri	Bark	-	Red	Extract of stem bark is taken with water to cure loose motion.
<i>Beta vulgaris</i> L.	Chenopodiaceae	Salgum	Root	-	Red	Extract of the root is used for anemia.
<i>Butea monosperma</i> (Lamk.) Taub.	Fabaceae	Khankhro	Dried flowers	Butin, Butein, Butrin, Isobutrin, Palasitrin, Coreopsin	Yellow	*Ladies use the decoction of flowers for washing the organ in gonorrhea. *Boiled flowers are tied on the stomach in the cases of burning in the urethra during micturition.
<i>Cassia tora</i> L.	Fabaceae	Phuario	Seeds	Rubrofusarin	Red	The seeds powder is used as coffee powder, and a teaspoonful of powder is taken with cow milk to cure skin itching.

<i>Curcuma longa</i> L.	Zingiberaceae	Hardi	Rhizome	Curcuminoids, Curcumin	Yellow	*Powder of dried rhizome is taken with cow milk to cure arthritis and body ache. *Powder of rhizome is mixed with salt and ajwain (<i>Trachyspermum ammi</i>). This mixture is taken with water to cure vomiting. *Powder of dried rhizome is mixed with salt. This mixture is heated on an iron frying pan. When it becomes red hot, a cup of water is added. Now filtered this mixture. The tribals give this filtered hot water to their children to cure cough. *Powder of dried rhizome is warmed a bit with edible oil and applied in injury and swelling. *Powder of dried rhizome is mixed with salt (3:1) and taken with water to cure stomach pain.
<i>Cuscuta reflexa</i> Roxb.	Convolvulaceae	Amalbel	WP	-	Yellow	*Extract of the stem is taken with water to cure epilepsy, body ache, arthritis, and jaundice. *Extract of the stem is used as an antidote in snakebite cases.
<i>Erythrina variegata</i> L.	Fabaceae	Parabda	Flower/ Bark	-	Dark brown	*Ash of stem bark is mixed with edible oil and applied on boils. *Ash of stem bark is mixed with edible oil and applied over the soles of the feet to prevent cracking. *The fume obtained from boiling stem bark with water is given through the nasal tract to cure headaches. *Extract of stem bark is mixed with the extract of Jambu (<i>Syzigium cumini</i>) and taken with water in the case of loose motion.
<i>Hibiscus rosa-sinensis</i> L.	Malvaceae	Jasul	Flower	-	Red	*Extract of flowers is taken with water to cure menorrhoea, leucorrhoea, and stomach pain during menses.
<i>Jatropha curcas</i> L.	Euphorbiaceae	Ratanjot	Bark/ Leaf	-	Blue	Leaves are heated a bit and tied on the boils.
<i>Lantana camara</i> L.	Verbenaceae	Baarmasi	Flowers	-	Red	Powder of dried flowers is taken with tea twice a day to cure jaundice.
<i>Lawsonia inermis</i> L.	Lythraceae	Mendi	Leaves	Lawsone	Red	*Paste of leaves is applied on the anus to cure piles. *Paste of leaves is applied over the soles of the feet to prevent cracking. *Extract of leaves is taken with water to cure diarrhea and vomiting. *The juice of leaves (Sugar may be added) is taken orally with water to check undesirable discharge of semen with urine.
<i>Madhuca Indica</i> Gmel.	Sapotaceae	Mawdo	Bark	Quercetin, Dihydroquercetin	Reddish yellow	Decoction of stem bark is helpful in diarrhea.
<i>Mangifera indica</i> L.	Anacardiaceae	Ambo	Bark/ Leaves	Mangiferin	Yellow	*Extract of stem bark is taken orally with water to cure diarrhea. *Gargles of leaves decoction relieves mouth ulcers, toothache, Pyorrhoea, and gums trouble.
<i>Phyllanthus emblica</i> L.	Euphorbiaceae	Amlo	Fruits/ Bark	-	Blue/ Black	Extract of stem bark is taken orally with water to cure diarrhea.
<i>Psidium guajava</i> L.	Myrtaceae	Jaamphal	Fruit	-	Black-brown	Ripe berry fruit is used after roasting to cure cough and cold.

<i>Santalum album</i> L.	Santalaceae	Sandan	Wp	-	Brown	The wood oil is applied in the case of muscular pain.
<i>Syzygium cumini</i> (L.) Skeels.	Myrtaceae	Jambu	Bark/Leaf	-	Red	*Extract of stem bark is taken orally with water to cure diarrhea and ascariasis. *Gargles of leaves decoction relieves in mouth ulcers.
<i>Tectona grandis</i> L. f.	Verbenaceae	Sagad	Leaves/Stem bark	Tectolea-fquinone	Yellow	*Extract of bark is taken with water to cure dysentery & vomiting. *1 gm. Ash of stem bark is taken with water on an empty stomach to cure menorrhoea. *Extract of seeds is taken with water to cure smallpox. *Extract of stem bark is taken with water to cure injury/wounds. This extract is also applied to wounds as an ointment.
<i>Terminalia arjuna</i> (Roxb.) Wt. & Arn.	Combretaceae	Kando	Bark	Arjunic acid	Light brown	*Extract of stem bark is taken with curd to cure leucorrhoea. *Extract of stem bark is taken with curd to cure diarrhea.

work to provide basic information to related industries and various other organizations working on the traditional knowledge. This will enrich our knowledge on the folklore uses and may lead to the opening up of ways for effective utilization of herbal drugs in the future because it is safe compared to synthetic drugs.

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