

Ethno-botany and uses of non-graminaceous forage species of Chitrakoot region of Madhya Pradesh

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Received 6 September 2012; Accepted 23 September 2013

An ethno-botanical survey was conducted to assess the multipurpose utilization of available non-graminaceous forage species by the tribal of Chitrakoot region of Madhya Pradesh. Fifty two such species belonging to 39 genera of 8 families were collected, identified and preserved in herbarium section of Agriculture Botany Unit, MGCGV, Chitrakoot. The species are mainly utilized for forage purpose. Besides, these are also used as medicines (100 %) and food (40 %). Major uses of these species are green manure (27 %), fuel wood (23 %) and ornamental plants (23 %). Some species are used as famine food (14 %) and timber (10 %). Minor uses of the species are for fiber (6 %), cosmetics (6 %), natural dye (4%), flavour & fragrance (2 %) and basket making (2 %). Medicinal properties of the collected species revealed that these 52 species are frequently used to treat about 109 various diseases of human beings and 5 diseases of livestock. Leaves are the most (62 %) utilized part whereas aerial roots and cladode (2 %) are least utilized part to treat ailments. Tribes and indigenous people of Chitrakoot have conserved these economically important plant species in various ways for their daily needs, health and aesthetic values.

Keywords: Ethnobotany, Legumes, Medicinal uses, Forage plants, Tribal people.

IPC code; Int. cl. (2011.01)–A61K 36/00.

Introduction

Chitrakoot is situated in the northern region of Satna district of M.P., India. It lies between 80°52' to 80° 73' N latitude and 25°10' to 25°52'E longitude, covering an area of 1,584SqKm. Chitrakoot, the 'hill of many wonders' is a religious pilgrim center as well as a historical place. The forest of Chitrakoot predominantly consists of tropical dry mixed deciduous type, which harbors' different species of plants and animals. The area is rich in flora and fauna and one of the most biodiversity rich regions for medicinal plants in India. Chitrakoot Parvat Mala includes Kamad Giri, Hanuman Dhara, Janki Kund, Lakshman pahari and Devangana, famous religious mountains. Since time immemorial, it is famous for its religious importance, elegant environment and spiritual peace¹. Most of the tribal villagers in this region are *Gond*, *Mawasi* and *Kol* who depend for their livelihood on forest-based products. These forest dwellers live in forests and possess vast knowledge of

various aspects of plants. They move around the forest for their day to day requirements, cultural activities and performing rituals. Forest resources are the only means of livelihood for them to cater the need of food, fodder, fuel, medicines, dye, gum, tannin, thatching, house hold and farming implements, etc. These resources are under threat due to over exploitation of forest land for agriculture purpose by the local people. Besides, urbanization and heavy grazing pressure are other important reasons for removal of medicinal flora from the region. If strategies and steps for conservation and management of plants are not taken these precious resources may be lost forever. Ethnic and indigenous people are playing a vital role in conserving the species and their traditional knowledge as these are very useful in Eco-restoration². Some of the non-graminaceous species of the region are edible and endowed with medicinal properties that generate a variety of bioactive compounds for health and industrial importance, such type of plants needs protection in view of cultural and traditional heritage of tribal inhabitants and landscape. Hence, the present study was planned to enlist and

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document the wealth of non-graminaceous species and related indigenous knowledge about their medicinal and other uses.

Materials and Methods

Several planned field trips were arranged for survey work to collect the information related to non-graminaceous species available in the forest of Chitrakoot region. During the field trips, personal interviews were made with tribes, Vaidyas, Ayurvedic doctors and botanists of that particular area. To match the collected information, literature based information on each plant was also reviewed. The plants which are used by the tribal and indigenous people for the treatment of various diseases and other purposes

were collected from different study sites of Chitrakoot district during June 2007 to May 2008. Data regarding herbal remedies were collected as per plan suggested by earlier workers³⁻⁶. Voucher specimens were collected from different study sites and preserved at Agriculture botany unit, Department of Crop Sciences, Faculty of Agriculture, Mahatma Gandhi Chitrakoot Gramodaya Vishwavidyalaya, Chitrakoot, Satna, M.P. as herbarium⁷. Identification of the specimens were made with the help of floristic literature^{8, 9}. Direct discussions/ conversations between the authors and different informants regarding the uses of the plants were recorded during the study period are mentioned in Table 1.

Table 1—Medicinal, edible and other uses of non-graminaceous forage species of Chitrakoot region, M.P.

S. No.	Botanical Name	Common name	Family	Growth habit	Parts used	Medicinal value	Other uses
1.	<i>Aloe vera</i> L.	Ghritkumari	Liliaceae	Shrub	Leaves	Wound, Burn, Skin, Digestive problems, Blood related disorders	Food, fodder, hedge, ornamental and soil binder
2.	<i>Acacia nilotica</i> (L.) Delile	Babul	Mimosaceae	Tree	Leaves, Gum	Diarrhoea and dysentery	Edible & nutritious gum, fuel wood
3.	<i>Aeschynomene indica</i> L.	Joint vetch	Fabaceae	Herb	Stem, Leaves	Spermicidal and snake bite	Floater for fish nets and fish lines, green manuring
4.	<i>Alysicarpus longifolius</i> Wight & Arn.	Shevari	Fabaceae	Herb	Leaves, roots	Skin eruptions	Famine food, soil improver
5.	<i>Alysicarpus rugosus</i> DC.	Shevari	Fabaceae	Herb	Leaves, roots	Infections/Infestations, fever, respiratory system disorders, coughs	Famine food, beverages, soil improver
6.	<i>Asparagus racemosus</i> Willd.	Satavari	Liliaceae	Herb	Root	Cooling	Food, syrup
7.	<i>Atylosia scarabaeoides</i> Benth.	Ban herba	Fabaceae	Climber	Roots, leaves	Rheumatism, throat pain reliever, cures dysentery in cattles	Famine food, Soil binder
8.	<i>Bauhinia purpurea</i> L.	Lal Kachnar	Caesalpiniaceae	Tree	Bark, leaves, flowers	Throat disorders, worm infestation,	Fuel wood, Ornamental
9.	<i>Bauhinia variegata</i> L.	Kachnar	Fabaceae	Tree	Bark, leaves, flowers	Gall bladder & kidney stone, piles	Ornamental, fuel wood
10.	<i>Cajanus cajan</i> (L.) Millsp.	Rahari	Fabaceae	Herb	Leaves, flowers, seeds	Fever, blood disorders	Food, fuel wood, basket making
11.	<i>Cassia occidentalis</i> L.	Kasaundi	Caesalpiniaceae	Under shrub	Seeds	Purgative, diuretic, in sores, dysentery and stomach problems	Nitrogen fixing
12.	<i>Cassia pumila</i> Lamk.	Sarmal	Caesalpiniaceae	Herb	Leaves	Improve the appetite, and treat diarrhoea	Nitrogen fixing

(Contd.)

Table 1—Medicinal, edible and other uses of non-graminaceous forage species of Chitrakoot region, M.P. (*Contd.*)

S. No.	Botanical Name	Common name	Family	Growth habit	Parts used	Medicinal value	Other uses
13.	<i>Clitoria ternatea</i> L. (Blue flowered)	Nili Aparajita	Fabaceae	Climber	Roots, leaves, flower and seeds	Migraine, psoriasis, hemorrhoids, jaundice, piles, constipation	Famine food, dye, green manure, ornamental, hedge
14.	<i>Clitoria ternatea</i> L. (White flowered)	Shwet Aparajita	Fabaceae	Climber	Roots, leaves, flower and seeds	Laxative, diuretic, brain tonic, enhancing memory & intelligence, cobra bite	Famine food, food dye, live fence, green manure, ornamental,
15.	<i>Dalbergia sissoo</i> Roxb.	Shisham	Fabaceae	Tree	Leaves and young shoots	Skin diseases, blood diseases, syphilis, stomach problems, dysentery, eye & nose disorders, gynaecological problems	Fuel wood, timber, Farm implements
16.	<i>Dalbergia latifolia</i> Roxb.	Shisham	Fabaceae	Tree	Bark	Diarrhoea, worms, indigestion, and leprosy, appetizer	Fuel wood & timber
17.	<i>Desmodium gangeticum</i> DC.	Shalparni	Fabaceae	Herb	Root and leaves	Fever, piles, asthma, inflammation, bronchitis and dysentery, snake bites, scorpion stings	Green manuring
18.	<i>Erythrina suberosa</i> Roxb.	Paladhua	Fabaceae	Tree	Bark	Sedative, antiepileptic, astringent, antiasthmatic toothache, dysentery, rheumatism, shoulder swelling of bullock	Shade, fibre, live fence, liquor, green manure, food, wood, ornamental
19.	<i>Erythrina stricta</i> Roxb.	Flame tree	Fabaceae	Tree	Bark & flowers	Leucorrhoea, and excessive thirst, narcotic and antihelminthic	Live fence, green manure, food(sweets), wood, ornamental
20.	<i>Erythrina indica</i> Lam.	Flame tree	Fabaceae	Tree	Bark & leaves	Insomnia, malaria fever, venereal disease, asthma and toothache	Live fence, green manure, food, wood, ornamental
21.	<i>Ficus benghalensis</i> L.	Bargad	Moraceae	Tree	Aerial root, bark, leaves, buds, fruits, latex	Piles, syphilis, spermatorrhoea, gonorrhoea, bone fracture, piles, to make semen thick and regain sexual potentiality	Fragrance, dye, religious tree
22.	<i>Ficus glomerata</i> Roxb.	Gular	Moraceae	Tree	Root, root-bark, leaves, latex, fruits & galls	Sexual debility, nocturnal ejaculation, dysentery, menorrhagiahaemoptysis etc.	Fruit for food, religious tree
23.	<i>Ficus racemosa</i> L.	Pakar	Moraceae	Tree	Bark, root, leaves and fruit	Astringent, Dysentery, Stomachache, Piles, to check spermatogenesis and oogenesis	Fruit

(Contd.)

Table 1—Medicinal, edible and other uses of non-graminaceous forage species of Chitrakoot region, M.P. (Contd.)

S. No.	Botanical Name	Common name	Family	Growth habit	Parts used	Medicinal value	Other uses
24.	<i>Ficus religiosa</i> L.	Peepal	Moraceae	Tree	Fruit leaves bark latex	Astringent, antidiarrhoeal, antidysenteric, laxative, antiasthmatic, antifungal	Fruit, religious tree
25.	<i>Ficus hispida</i> L.f	Kathumer	Moraceae	Tree	Bark, latex	Leucoderma, psoriasis, hemorrhoids, vitiated pitta	Fuel wood
26.	<i>Gliricidia sepium</i> (Jacq.) Walp.		Fabaceae	Tree	Leaves	Skin diseases, rheumatic pain	Food, shade, fuel wood, timber
27.	<i>Hardwickia binata</i> Roxb.	Anjan	Caesalpiaceae	Tree	Leaves	Skin and eye infections, as purgative, headache	Fuel Wood, timber, farm implements, rope from bark fibre
28.	<i>Indigofera hirsuta</i> L.	Lal barik phul	Fabaceae	Herb	Stem, leaves, flowers, fruits	Skin diseases, chest and backache	Famine food, soil conservation, N ₂ fixing
29.	<i>Lablab purpureus</i> L.	Sem	Fabaceae	Climber	Leaves, Seeds	Vitiated vata, pitta, inflammation, colic, and urinary retention, Skin disease and skin infection	Food, live fence, soil improver, ornamental
30.	<i>Lathyrus sativus</i> L.	Chatari	Fabaceae	Herb	Seed oil	Powerful cathartic	Food
31.	<i>Lens culinaris</i> L.	Masuri	Fabaceae	Herb	Seeds	Skin diseases, tonic and for blood enrichment	Food
32.	<i>Macrotyloma uniflorum</i> (Lam.) Verd.	Gahath	Fabaceae	Herb	Stem, leaves, flower and seeds	Chest & heart problems, kidney stone and intestinal problems	Food, soil conservation
33.	<i>Madhuca latifolia</i> L.	Mahua	Sapotaceae	Tree	Fruits and seeds	Stomach worms to calf	Food, liquor, soil amelioration
34.	<i>Melilotus indica</i> All.	Gorhadat	Fabaceae	Herb	Aerial parts	Hypertension, colic, painful diarrhoea	Flavouring agent
35.	<i>Mimosa pudica</i> L.	Lajvanti	Mimosaceae	Herb	Root and seeds	Wound healing, snake bite	Ornamental, soil binder
36.	<i>Moringa oleifera</i> L.	Sahjen	Moringaceae	Tree	Leaves, flower, fruits, seeds	Scorpion sting, antidote, small pox, semen viscosity, acute cold	Food, paper making
37.	<i>Morus alba</i> L.	Sahtut	Moraceae	Tree	Leaves, fruits, flower	Digestion, wound healing	Food, fuel wood, farm implements
38.	<i>Mucuna pruriens</i> DC.	Kevanch	Fabaceae	Climber	Seeds	Anti-cancerous, worm infestation, Parkinson's disease, improve sexual functions	Food, ornamentals, live fence, soil binder, green manure
39.	<i>Opuntia ficus- indica</i> (L.) Mill.	Thuhar	Cactaceae	Shrub	Cladode, flower, fruits	Irritable bowel relief, prostate reducer	Food, cosmetics

(Contd.)

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S. No.	Botanical Name	Common name	Family	Growth habit	Parts used	Medicinal value	Other uses
40.	<i>Psoralea corylifolia</i> L.	Bakuchi	Fabaceae	Herb	Fruits and seeds	Feverish ailments, premature ejaculation, impotence, lower back pains, leucoderma, birth control	Cosmetics, green manure
41.	<i>Rhynchosia minima</i> DC.	Ban arhar	Fabaceae	Climber	Leaves	Helminthes infection, wounds, asthma, piles and abortificients	Green manure
42.	<i>Sesbania sesban</i> Merrill	Jayanti	Fabaceae	Shrub	Root bark, leaves	Arthritis, rheumatism,	Green manure
43.	<i>Tamarindus indica</i> L.	Imli	Fabaceae	Tree	Leaves, pulp of the fruit	Fever, digestion, reduce swelling of joints and ankle	Food, fuel wood
44.	<i>Tephrosia purpurea</i> Pers.	Sarphunka	Fabaceae	Shrub	Whole plant	Abdominal pain, eczema, kidney disorders	Green manure
45.	<i>Tephrosia villosa</i> Pers.	Kulthia	Fabaceae	Shrub	Whole plant	Scrotum pain, skin diseases	Green manure
46.	<i>Vicia faba</i> L.	Bagdi	Fabaceae	Herb	Seeds	Cough, tonsils, bronchitis,	Food
47.	<i>Vigna aconitifolia</i> (Jacq.) Marechal	Mothi	Fabaceae	Herb	Root, seeds and Aerial parts	Fever, for cooling effect during summer	Food, soil improver
48.	<i>Vigna trilobata</i> (L.) Verd.	Banmung	Fabaceae	Herb	Leaves, seeds	Cough, as astringent, diet in fever	Food, green manure
49.	<i>Woodfordia fruticosa</i> Kurz	Dhatki	Lythraceae	Shrub	Flowers and tender leaves	Intestinal worms menorrhage, dysentery	Dye, soil binder
50.	<i>Ziziphus nummularia</i> (Burm. f.) Wight & Arn.	Jharberi	Rhamnaceae	Shrub	Fruits, seeds	Formation of ovum	Food, fuel wood
51.	<i>Ziziphus mauritiana</i> Lam.	Bair	Rhamnaceae	Small tree	Leaves, Fruits, seeds	Scabies, dysentery, nausea, vomiting, cough, as appetizer, skin diseases	Food, fuel wood
52.	<i>Zornia diphylla</i> Pers.	Chari ban	Fabaceae	Herb	Root, leaves and seeds	Dysentery, induce sleeping in children and sick cattles & pregnant cows	Soil improver

Results and Discussion

During survey 52 non-graminaceous species were identified and collected with the help of local people particularly tribes. The details of the same are presented in Table 1. These species, on the basis of their characters, have been identified and categorized in 8 families and 39 genera. It is revealed from the table that most of the collected flora is dominated by family Fabaceae followed by Moraceae, Rhamnaceae, Sapotaceae, Cactaceae, Asparagaceae, Liliaceae and Lythraceae. Fabaceae is the most important family as

most of the legumes comes under this family and it is well known fact that legumes play a critical role in natural ecosystems, agriculture and agroforestry because of their ability to fix nitrogen in soils from environment. The large and diverse legume family has given the world an abundance of crops for food, forage, fiber, wood and ornamental. It was observed that all the non-graminaceous species have some medicinal importance and tribal people exploit them to treat one or many ailments in the crude form. Modes of utilization were plant extract, decoction,

paste, smokes, powder, oil, fresh or dry tablets, etc. Multipurpose uses of non-graminaceous species was reported primarily for food (21 sp.), famine food (7), fuel wood (12), shade (7), timber (5), farm implements (5), basket making (1), green manure (14), flavoring agent (1), cosmetics (4), fiber (3), paper making (1), live fence (8), ornamental (12), dye (5), gum (1), fragrance (1), religious trees (3) and beverages and liquor (2 sp.).

Table 1 also revealed that 5 species [*Erythrina suberosa* Roxb., *E. stricta* Roxb., *E. indica* Lam., *Clitoria ternatea* L. and *Mucuna deeringiana* (Bort.) Merrill.] of the collected 52 non-graminaceous species have been highly utilized by tribal and indigenous people of that region. Genus *Erythrina* L. found to be most suitable for various house hold purposes. *E. suberosa* has been highest (8 purposes) utilized species followed by *E. stricta* and *E. indica*. *C. ternatea*, commonly known as butterfly pea was found to be promising for famine food, food dye, live fence, ornamental and green manuring. *M. deeringiana* (velvet bean) is an underutilized vegetable for food, ornamental, green manuring, live fence and cover crop. It is good source of L-dopa, an important drug for Parkinson's disease¹⁰. *Lablab purpureus* (L.) Sweet, sem is used for food, live fence, soil improver and ornamental plant. Tribal and indigenous people utilize *Hardwickia binata* Roxb. (*Anjan*) for making rope from bark fibre, as fuel wood for its high calorific value, timber and farm implements because of its straight pole. *Gliricidia sepium* (Jacq.) Walp. is used for food, shade, fuel wood, timber and as an ornamental plant for its beautiful flowers. However, *Ficus racemosa* L., *F. hispida* L., *Vicia faba* L., *Lathyrus sativus* L. and *Lens culinaris* Medic. are utilized only for food, while *T. purpurea* (L.) Pers., *T. villosa* (L.) Pers., *Zornia diphylla* (L.) Pers., *Rhynchosia minima* DC., *Cassia pumila* Lamk. and *C. occidentalis* L. are used for green manuring whereas *Melilotus indica* (Mill.) All., senji is used to add flavour in the food. Ethno botanical aspects of plant species have been well studied by earlier workers^{3, 5, 11, 12}.

Among medicinal importance of these species, it was recorded that maximum species are used to treat stomach and digestion (38%) related problems followed by cold, cough and respiratory diseases (21%), skin diseases (21%) and sex related problems (21%). Dwivedi³ and Sinha⁴ have collected similar kind of information in Tribal dominated region of

M.P. Moderate number of forage species are used for fever (19%), pain reliever (16%) and gynaec problems (19%), joints and bone problems (12%), blood related problems (12%) and for wound healing (12%). Some minor uses of species are in colic & piles problems (8%), kidney stone (6%), cattle health (6%), urinary diseases (6%), brain and memory (4%), eyes & nose disorders (4%), birth control (4%), tooth related disorder (4%), small pox (2%), jaundice & hypertension (2%). Further, it was found that leaves of the collected species are highest (62%) utilized in treatment of ailments followed by seeds (35%), root (23%), fruit (23%) and bark (21%) whereas flower (20%), latex (8%), stem (6%) and aerial parts (4%) are moderately used and aerial roots (2%), buds (2%), gum (2%), root bark (2%), whole plant (2%) and cladode (2%) are least utilized. The plant based traditional healthcare systems of tribal and indigenous people of Chitrakoot and Vindhya region have also been reported by few workers^{1, 11}.

Conclusion

It may be concluded that the tribal of Chitrakoot area of M.P. have huge traditional knowledge about the uses of non-graminaceous species particularly for medicines and food purposes that is of prime importance among other uses. Further, a detail and more scientific and analytical floristic studies are needed to establish and maintain a database of traditional uses of these species.

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