



## Ethno-medicinal wealth of Devi Patan division, Utter Pradesh

Akhilesh Kumar, D D Tewari, Arvind Mishra

<sup>1</sup> Department of Botany, Dayalbagh Educational Institute, Dayalbagh, Agra, Uttar Pradesh, India

<sup>2</sup> Department of Botany, Maharani Lal Kunwari Post Graduate College, Balrampur, Uttar Pradesh, India

<sup>3</sup> Department of Botany, M D P G College Pratapgarh, Uttar Pradesh, India

### Abstract

The Devi Patan division of Uttar Pradesh encompasses very rich phytodiversity and Tharu tribal population. The aim of the present revision study was to document and analyze the ethno-medicinal wealth of Devi Patan division of Uttar Pradesh. This study was conducted during 2000–2004 using semi-structured, open-ended questionnaires, informal interviews and group discussions with 230 informants living in 46 villages along Indo-Nepal border of Devi-Patan division. Present study revealed, 260 ethno-medicinal plant species and associated 728 ethno-medicinal folklore claims prevalent among the members of the Tharu tribal community for the treatment and prevention of 18 types of ailment categories. Study also revealed that 43 % ethno-medicines are not easily available in natural resources and 9% are hardly available, which shows the need of the conservation of this very important wealth. The study further reveals that the community is aware of this fact and involved in conservation of this wealth by the practice of phyto-worship and domestication of some culturally and medicinally important plant species. Study revealed that there is great agreement among informants for the tradition of ethno-medicine, and its conservation.

**Keywords:** Ethno-medicinal, Devi Patan, phyto-worship

### Introduction

India is the second most populous country of the world, with the population of over 1.35 billion, more than 50% of which lives in rural areas having low-income. Rural peoples specially scheduled tribes generally live in forested villages between flora and fauna of eco-friendly nature with peace and harmony (Kumar 2004)<sup>1</sup>.

The Tharu tribal community living along with Indo Nepal border is a treasurer of knowledge related to healthcare management of human beings and domesticated animals and other uses of plants. They are dependent upon the vegetation for their day-to-day requirements. These people have enormous knowledge about the medicinal usages of the plants (Kumar *et al.*, 2006; Pandey, 2008; Srivastava *et al.*, 2008; Uprety *et al.*, 2012; Viswakarma and Tripathi 2018)<sup>2-6</sup>. They have developed their own medical and healthcare system, which is mainly based upon plants. The knowledge about this medical and healthcare system is undocumented and transmitted through oral traditions from generation to generation. Recently due to unplanned developmental programs, increasing modern healthcare facilities, socio economic and cultural transformation and impact of so called modern civilization along the Indo Nepal border commonly known as Tharuhat (Tharu tribal areas), both natural resources (forest and vegetation) and indigenous knowledge are depleting rapidly at an alarming rate, therefore, it is demand of time to explore and document this unique, indigenous and traditional knowledge of Tharu tribal community, so that it may not be diminish with the person who knows about this knowledge (Kumar *et al.*, 2013; Singh *et al.*, 2012; 2018)<sup>7-9</sup>. Further documentation of indigenous and traditional knowledge is very important for further critical studies leading to sustainable utilization

of these natural resources, to face the challenges of bio-piracy and patenting of traditional knowledge by multinational companies and, planning of suitable management strategies etc. (Baidya *et al.*, 2020; Nadiroglu *et al.*, 2019 Thakur *et al.*, 2020)<sup>10-12</sup>. Keeping the above view in mind, present study was undertaken during 2000-2004 with the prime objective of identification and documentation of plant species used for diagnosis and cure of various diseases and ailments of human beings in Devi Patan division of Uttar Pradesh because Indo-Nepal border is potential in terms of ethno-medicinal knowledge due to rich phytodiversity and population of indigenous Tharu tribal community. The present study was conducted with the following objectives

1. Exploration and documentation of the ethno-medicinal wealth and associated folklores
2. Pattern of uses of medicinal plant
3. Availability of medicinal plant in natural resources and conservation needs
4. Conservation efforts made by the Tharu tribal community

### Materials and methods

Devi Patan division is situated along the Indo Nepal border in Uttar Pradesh (Figure 1). Soil of the study area is pleastoseen alluvium group and forest are subtropical deciduous type with some evergreen trees predominated by saal forests followed by teak, mixed and swamp forests. The climate is sub-tropical monsoon type with marked seasonal rhythm and diurnal differences in temperature. Year may be broadly divided into four seasons namely winter, summer, rain, and transition period from October to middle November. Temperature ranges from 2<sup>0</sup> C to 46<sup>0</sup> C (Kumar, 2004)<sup>11</sup>.



**Fig 1:** Location map of study site

According to census 2001 Tharu population in Uttar Pradesh was 83544. In Devi Patan population of the Tharu community is concentrated along the Indo-Nepal Boarder in Bahraich, Shravasti and Balrampur districts. Besides Devi-Patan division they dwell in Khiri, Siddharthnagar and Maharajganj district Uttar Pradesh Uttarakhand and Nepal. They are fond of liquor locally known as Jaad, which is prepared by rice and powdered root of *Nelsonia canescence* (Lamk.) Spreng. and *Asparagus racemosus* Willd. They speaks ‘‘Tharui’’ dialect, which is a mixture of ‘Awadhi’

and ‘Bhojpuri’ dialects. According to legends The Tharus were ruler of the whole Terai region (Hasan 1969)<sup>[13]</sup>.

**Ethno-medicinal surveys and data collection**

Extensive and intensive surveys were made in Tharuht (Tharu areas) of Uttar Pradesh during 2000–2004 to collect information regarding dermatological healthcare management practices and voucher specimens. Field works were conducted in randomly selected 46 villages (Table 1).

**Table 1:** Name of the Tharu villages selected for present study

<b>Balrampur district (27)</b>	<b>Bahraich district (12)</b>	<b>Shravasti district (7)</b>
Bhojpuri Tharu, Khakhara, Rajderwa, Kohargaddi, Motipur, Vishunpur	Semari malmala, Bejha, Phapheekpuri,	Raniyapur, Motipur, Bhachkahi,
Vishram, Vishunpur Kodar, Hadahwa, Narihawa, Bhukuruwa, Parbatia, Bhawanipurwa, Jarwa, Chandanpur, Sarni-Marni, Mokhampur, Betahani, Sagarapur, Kushahwa, Kanhaideeh, Navalgarha, Lohit, Jugunbharia, Pahalwanpur, Songarha, Mutehra, Akalgharwa	Amba Vishunpur, Murtiha, Rampurwa, Bichhia, Matera, Gulera, Ballera, Dhuskia, Bellapursuwa.	Ravalpur, Masaha, Katkuinya, Chhoti and Bari.

Authentic healers (Guruwa) and knowledgeable persons were identified with the help of local administrative officers and other persons working in tribal areas. Prior informed consent was obtained from the respondents before the interview. Semi structured open ended questionnaires, informal interviews and group discussions were made in local Awadhi language. Altogether 230 informants were interviewed during the field study.

### Preservation and identification of plant species

Voucher specimens of ethno-medicinal plants were collected with the help of informants in flowering stage and their botanical identity were reconfirmed by taxonomic expert (Dr. J. P. Tewari) at Botany department, MLK PG College, Balrampur. Collected and identified plant specimens were preserved in the form of herbarium following Jain and Rao (1978)<sup>[14]</sup> identified with the help of pertinent flora and other literatures (Duthie 1960; Jain 1968; Kanjilal 1933; Shukla 1994; Singh. 1991)<sup>[15-19]</sup> and deposited in the herbarium maintained at Botany

department, MLK PG College Balrampur for future reference.

### Data analysis

Ethno-medicinal data were analyzed and summarized by using Microsoft excel and statistics to determine various parameters.

### Result and discussion

#### Exploration and documentation of the ethno-medicinal wealth and associated folklores

During present study 260 ethno-medicinal plant species and associated 728 ethno-medicinal folklore claims were identified for treatment and prevention of various diseases and ailments prevalent among the members of the Tharu tribal community in the Devi Patan division (Table 2). Majority of the ethno-medicinal plants were herbs followed by tree (Figure 2a). In majority cases leaves are used as medicine followed by whole plant (Figure 2b).

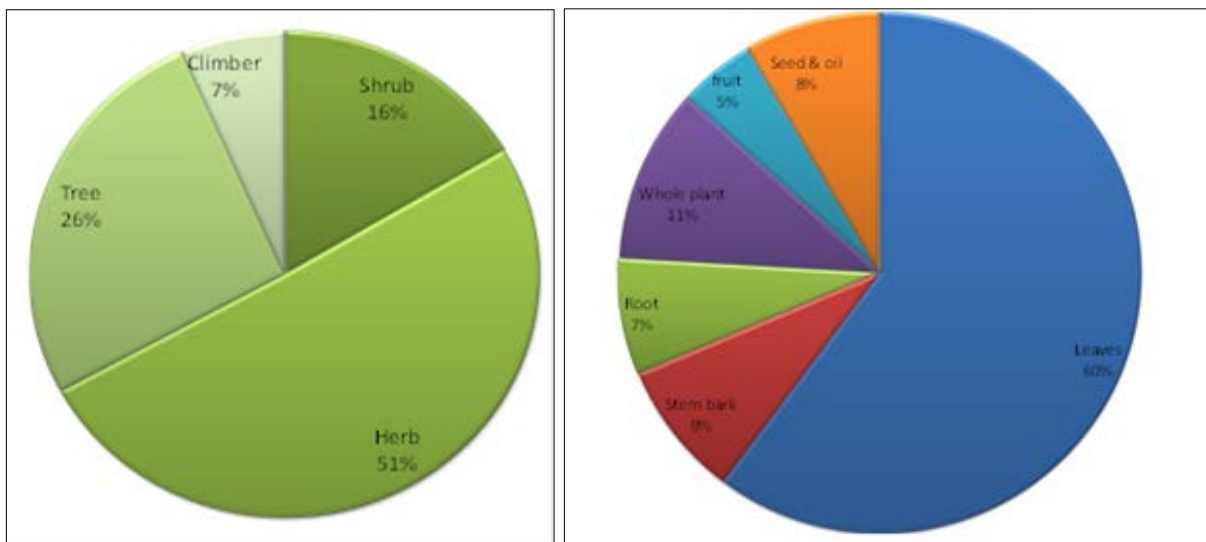


Fig 2: Ethno-medicines used by the Tharu tribal community of Devi Patan Division, Uttar Pradesh a) Life forms b) Plant parts used

### Pattern of uses of ethno-medicinal plants

As for as pattern of uses of ethno-medicinal plants are concerned, these plants are used for various disease and ailments prevalent in the study area. These diseases and ailments can be divided into seventeen ailment categories. Majority of the ethno-medicinal plants are used for the treatment of dermatological disorders followed by stomach disorders (Table 2).

### Availability of medicinal plant in natural resources and conservation needs

As for as availability of ethno-medicinal plants in study area is concerned 57% ethno-medicinal plants are easily available in the study area which shows that 43 % ethno-medicinal plants which are available with difficulty; needs to be conserve for future use (Figure 4). Some important ethno-medicinal species with conservation priority in the study area are *Helminthostachys zeylanica* (L) Hk (Helminthostachyaceae), *Rauvolfia serpentina* (L) Benth ex Kurz (Apocynaceae), *Chlorophytum arundinaceum* Baker (Liliaceae), *Curculigo orchoides* Gaertn (Hypoxydaceae), *Clitoria ternatea* L (Fabaceae), *Gloriosa superba* L

(Liliaceae), *Gymnema sylvestre* R.Br. (Asclpiadaceae), *Withania somnifera* (L) Dunal (Solanaceae) etc.

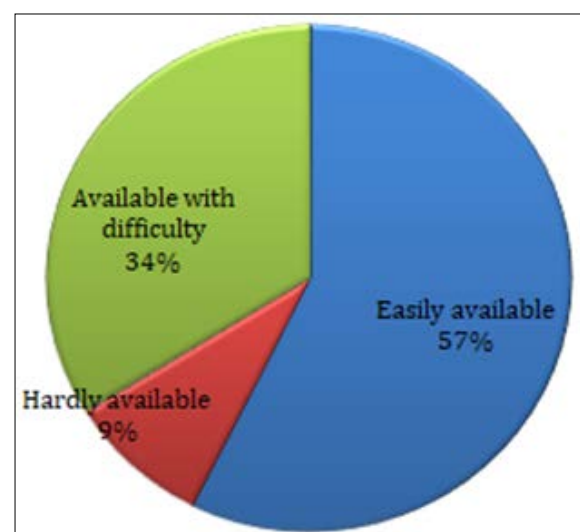


Fig 3: Availability of medicinal plants in study area

### Conservation efforts made by the Tharu tribal community

Members of the Tharu tribal community have strong folk-ecological concepts regarding conservation of culturally important and less available ethno-medicinal plants in natural habitats. Concept of phyto-worship and domestication of culturally and medicinally important plant species is the unique feature of the community. They worship some plants like *Ficus religiosa* L., *Musa*

*paradisiaca* L., and *Ocimum sanctum* L. etc. cutting of these species is prohibited due to their cultural importance (Table 3). Some Gurua (traditional herbal practitioners) are growing some ethno-medicinal plants like *Rauwolfia serpentina* (L) Benth ex Kurz, *Chlorophytum arundinaceum* Baker, *Curculigo orchoides* Gaertn and, *Clitoria ternatea* L. etc. around their dwelling places which are scarcely available in natural resources for conservation (Table 4).

**Table 2:** Number of medicinal plant species used in the study area for the management of various ailment categories and their biomedical terms

S. No.	Ailment categories	Biomedical terms	No of Species
1	Stomach disorders	Constipation, diarrhoea, dysentery, nausea, indigestion, vomiting, stomach-ache, gastric trouble, loss of appetite, colic pain, flatulence	57
2	Dermatological disorders and cosmetics	Cut, wounds, boils, pimples, skin rashes, ringworm, scabies, leprosy, skin burns, skin blemishes, ecto-parasites, skin diseases, body inflammation	92
3	Respiratory diseases	Common cold, cough, asthma, bronchitis, chest pain, lung disorders	27
4	Fevers	Ordinary fever, malaria, typhoid	18
5	Abortifacient and contraceptive	Abortifacient and contraceptive Abortifacient	13
6	Ureno-genital problems of women	Infertility, leucorrhoea, gonorrhoea, menstrual disorders	23
7	Urinary problems including kidney stone	Frequent urination, diuretic, aphrodisiac	16
8	Sexual debility and health tonic	Sexual debility, infertility and health tonic	27
9	Worm infestation	Anthelmintic	17
10	Antidotes	Dog bite, insect sting, scorpion sting and snake bite	21
11	Hair disorder	Hair fall, graying, hair tonic, ectoparasites	14
12	Piles	Piles	14
13	Ear, Nose, Throat problems	Earache, throat sore, sinusitis	11
14	Oral and dental disorders	Toothache, mouth sore,	18
15	Mental disorders	Mental tonic, memory tonic, epilepsy	7
16	Skelto-muscular pain and swelling	Body ache, muscular pain, sprain, strain, rheumatism, arthritis, head ache, joint pain, swelling	12
17	Cardio-vascular disorder	Cardiac, blood pressure	5
18	Other	Fracture, tumour, diabetes, cooling agent, hydrocele, allergy, anaemia, tuberculosis, tonsillitis, jaundice, cholera, paralysis, stimulant and small pox	64
	<b>Total</b>	*(Many plants are used for more than one ailment categories)	456*

**Table 3:** Practice of phyto-worship for conservation of culturally important ethno-medicinal plants

S. No.	Botanical Name and family	Local name	Cultural importance	Ethno-medicinal uses
1	<i>Azadirachta indica</i> A. Juss., Meliaceae	Neem	Tree is supposed to be home of various gods and goddesses	Skin diseases, Fever, Teeth problems
2	<i>Ficus religiosa</i> L., Moraceae	Peeepal	Tree is supposed to be home of various gods and goddesses	Urino-genital, mental, cardiac disorders and piles.
3	<i>Mangifera indica</i> L., Anacardiaceae	Aam	Cutting of living tree is considered as act of sin.	Sexual, respiratory disorder, anthelmintic and sun stroke.
4	<i>Musa paradisiaca</i> L., Musaceae	Kela	Plant is supposed to be home of various gods and goddesses	Tooth problems, peptic ulcer, and hydrocele
5	<i>Ocimum sanctum</i> L., Lamiaceae	Tulsi	Plant is supposed to be home of various gods and goddesses	Cough and cold, Fever, Skin diseases
6	<i>Shorea robusta</i> , Diptrocarpaceae	Sakhu	A piece of wood is worshiped	Chest & stomach ache and skin disease

**Table 4:** Trend of domestication of less available ethno-medicinal plants in the study area

S. No.	Botanical Name and family	Local name	Medicinal uses
1.	<i>Achyranthes aspera</i> L, Amranthaceae,	Lehchichira	Skin, stomach, tooth disorders, piles, antidote and contraceptive
2.	<i>Acorus calamus</i> L., Araceae	Vach	Mental disorder and anthelmintic
3.	<i>Andrographis paniculata</i> (Burm f) Wall ex Nees, Acanthaceae	Kiyata/ Kalmegh	Fever, skin diseases, worm infestation
4.	<i>Asparagus racemosus</i> Willd, Liliaceae	Satawar	Galectoguage, physical and sexual debility, and nervous disorders
5.	<i>Calotropis gigantea</i> (L.) Br., Asclepiadaceae	Akahua/ Mandar	Skin diseases, piles, fever and cholera

6.	<i>Chlorophytum arundinaceum</i> Baker, Liliaceae	Safed musali	Physical and sexual debility
7.	<i>Clitorea ternatea</i> L., Fabaceae	Koyalia/ Aparajita	Skin, urinary problems and headache
8.	<i>Curculigo orchiodes</i> Gaertn. Hypoxidaceae	Kali musali	Physical and sexual debility
9.	<i>Datura innoxia</i> Mill., Solanaceae	Kala dhatura	Skin, stomach, nervous disorders, and fever
10.	<i>Helminthostachys zeylanica</i> (L.) Hk, Helminthstachyaceae	Dheemraj/ Kamraj	Physical and sexual debility, jaundice and mouth ulcer
11.	<i>Mimosa pudica</i> L., Mimosaceae	Chhui-mui	Urino-genital disorder
12.	<i>Piper longum</i> L., Piperaceae	Pipari/ Pippali	Respiratory, stomach disorders and fever
13.	<i>Rouvolphia serpentina</i> (L) Benth ex Kurz., Apocynaceae	Dhamarbarua/ Sarpaganda	Mental, stomach disorders, fever and antidote
14.	<i>Swertia chirayita</i> (Roxb ex Flem) Karsten, Genitaceae	Chiraita	Skin diseases, fever, tonic and diabetes
15.	<i>Withania somnifera</i> (L.) Dunal, Solanaceae	Asgandh	Impotency, rheumatism and leucorrhoea.

### Conclusion

Study revealed that the Devi Patan division is bequeathed with very rich ethno-medicinal wealth and associated traditional knowledge. However, recently due to many reasons this wealth is deteriorating and need proper conservation. The Gurus of the community are aware of this fact and are engaged in conservation practices at their own level by the practice of phyto-worship and domestication of some ethno-medicines

### Acknowledgement

The author is thankful to Dr. and J.P. Tewari, Professor, Department of Botany, Maharani Lal Kunwari Post Graduate College, Balrampur for supervision of the present research work and identification of the many plant species and to Mr. Ravi Jyoti Mishra, Gaishari Block coordinator of the Beti Foundation for his help during the survey. Author is very grateful to all local informants of the study area for their valuable information on ethno-medicinal wealth.

### References

- Kumar A. Ethnobotanical Aspects of Pharmacological Flora Used by Tharu Tribes in Terai Belt of North-Eastern Uttar Pradesh. Dr. Ram Manohar Lohia Avadh University, Faizabad. Ph D Thesis, 2004.
- Kumar A, Tewari DD, Tewari, JP. Ethnomedicinal knowledge among Tharu tribe of Devipatan division. Indian Journal of Tradition Knowledge,2006:5:310-313.
- Pandey HP. Judiveera- An excellent remedy for malaria, Indian Journal of Traditional Knowledge,2008:7:565-567.
- Srivastava, SK, Tewari JP, Shukla DS. A folk dye from leaves and stem of *Jatropha curcas* L. used by Tharu tribes of Devipatan division, Indian Journal of Traditional Knowledge,2008:7:77-78.
- Uprety Y, Poudel RC, Shrestha KK, Rajbhandare S, Tiwari NN, Shrestha U B, Asselin H. Diversity of use and local knowledge of wild edible plant resources in Nepal. J Ethnobiology Ethnomedicine,2012:8:16. <https://doi.org/10.1186/1746-4269-8-16>
- Vishwakarma P, Tripathi NN. Ethnomacrofungi study of some wild macrofungi used by local peoples of Gorakhpur district, Uttar Pradesh, Indian Journal of Natural Product and Resources,2019:10:81-89
- Kumar A, Pandey VC, Singh AG, Tewari DD 2. Traditional uses of medicinal plants for dermatological healthcare management practices by the Tharu tribal community of Uttar Pradesh India. Genetic Resources and Crop Evaluation, 013:60: 203–224
- Singh AG, Kumar A, Tewari DD. An ethnobotanical survey of medicinal plants used in Terai forest of western Nepal. Journal of Ethnobiology and Ethnomedicine, 2012, 8. 19.DOI:10.1186/1746-4269-8-19
- Singh AG, Kumar A, Tewari DD, Bharati KA. New ethnomedicinal claims from Magar community of Palpa district, Nepal. Indian Journal of Traditional Knowledge,2018:17(3):499-511.
- Baidya S, Thakur B, Devi A. Ethno-medicinal plants of the sacred groves and their uses by Karbi tribe in Karbi Anglong district of Assam, Northwest India, Indian Journal of Traditional Knowledge,2020:19:277-287
- Nadiroglu M, Behcet L, Cakilcioglu U. An ethnobotanical survey of medicinal plant in Karliova (Bingol-Turkey), Indian Journal of Traditional Knowledge,2019:18:76-87
- Thakur S, Tashi N, Singh B, Dutta HC, Singh B. Ethnobotanical plants used for gastrointestinal ailments by the inhabitants of Kishtwar plateau North Western Himalaya India, Indian Journal of Traditional Knowledge,2020:19:288-298
- Hasan A. Asurvenior of the tribal people of Uttar Pradesh. Directorate of Harizon and Social Welfare,U.P., Lucknow, 1969
- Jain SK, RR Rao. A hand book of field and Herbarium Methods. Today and Tomorrows Printers and Publishers, New Delhi, 1978.
- Duthie, JF. Flora of the upper Gangetic plain and of the adjacent Siwalik and Sub-Himalayan tracts (Ed.). Calcutta, 3 Vols. (Rep. ed. 1960, Bot., Surv. Ind., Calcutta. 2 vols.), 1903.
- Jain SK. Medicinal plants. National Book Trust, India, 1968.
- Kanjilal. Forest flora of Pilibhit, Oudh, gorkhpur and Bundelkhand. Govt. Printing press. Allahabad, 1933.
- Shukla SC. A detail study on some new aspects of flora of Faizabad district. Ph.D. Thesis. Dr. R.M.L.A. University, Faizabad, U.P. India, 1991.
- Singh SV. Flora of Gonda district. Ph.D. Thesis, Dr.R.M.L.A. University, Faizabad, U.P., India, 1991.