

Ethno medicinal and wild edible plants collected and consumed by the Santhal tribe of Sahibganj district in Jharkhand, India.

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Abstract

Knowledge of wild edible plants is an important part of traditional knowledge. It is closely related to traditional human agriculture, as well as biodiversity. This study aimed to conduct a detailed investigation an evaluation of wild ethnomedicinal edible plants that are collected and consumed by the santhal tribe of district sahibganj. and to provide valuable data for the development and utilization of plant resources. A total of 46 edible wild plant species belonging to 30 families and 38 genera were recorded as wild ethnomedicinal edible plants edible resources from the aboriginal santhal tribe.

key words: ethnomedicinal, wild edible, Sahibganj.

Introduction

“Ethnobotany” word was coined firstly by John W. Harshberger, in 1895 a botany Professor at the University of Pennsylvania to designate plants used by primitive and aboriginal people¹. “Ethno” means – studying about the people and “botany” means studying about the plants. Stephan Powers, (1875) invented the word “aboriginal botany” for the study of plant usage in traditional groups². Few important definitions are cited underneath:

- I. The study of the interlinkage between plants and primitive humans³.
- II. The connection which exists between people of primitive societies and their plant environment is called as ethnobotany⁴.
- III. The direct interactivity amongst human and plants⁵.
- IV. All traditional systems of medicine have their roots in ethnobotany⁶.
- V. It is the science of people’s association with plants⁷.
- VI. All studies which describe the interaction between local people and natural environment, regarding plants⁸.
- VII. The study of the effect of plants on human culture including the interactions of plants and people⁹.
- VIII. The mutual relationship between traditional peoples and plants is known as ethnobotany¹⁰.

The above research and documentation will greatly help in updating the database of Traditional Knowledge Database Library (TKDL) as in 1992 the Convention on Biological Biodiversity (CBD) highlighted the need to promote and preserve traditional knowledge under article 8(j)¹¹.

International community’s sought to recognize and protect traditional knowledge. Therefore, in 1981 World Intellectual Property Right Organization (WIPO) and United Nations Educational, Scientific and Cultural Organization (UNESCO) adopted a model law on folklore which first emphasizes protecting traditional knowledge as a form of cultural heritage. The seconds looks at the protection of traditional knowledge as a collective human right. The third, taken by the World Trade Organization and World intellectual property Organization (WIPO) investigate the use of existing or novel measures to protect traditional knowledge¹².

In India, several steps have been taken to improve quality of Ayurvedic medicines. Medicinal plant boards have been constituted at state and centre level to inspire people, particularly the farmers for adopting cultivation of medicinal plants¹³.

Recently, the World Health Organization (W.H.O.) introduced CAM (Complementary and Alternative) health practices in various parts of the world¹⁴.

MATERIALS AND METHODS

STUDY AREA

The district of Sahibganj lies approximately between 24°42' north and 25°21' north latitude and between 87°25' and 87°54' east longitude. Sahibganj is the administrative headquarter of the district and situated on the bank of the river Ganges at 25°15' north latitude and 87°38' east longitude. The geographical area of the district is 1599.00 sq. km. It is bounded on north by the river Ganges and district of Katihar, on the south by the district Godda, on the east by Maldah and Murshidabad districts of the state of West Bengal, and on the west by Bhagalpur and Godda districts.

This survey work is the output of personal observation made after careful and planned field work among the Santhals of Sahibganj District during June, 2018 to December 2019. Survey was done only after getting written permission vide memo no. 1170 Dated 09/09/2015 issued from the office of PCCF, Wild Life cum Chief Wild Life Warden, Ranchi, Jharkhand, Department of Forest, Van Bhawan, Ranchi.

Table 1 : The district of Sahibganj showing division and total blocks

Divisions	Total Blocks
Sahibganj	1. Sahibganj
	2. Mandro
	3. Borio
	4. Barhait
Rajmahal	5. Taljhari
	6. Rajmahal
	7. Udhwa
	8. Pathna
	9. Barharwa

Source: Ministry of MSME, Government of India

Table 2 : Geographical Details of District

Longitude	87°25' East to 87°54' East
Latitude	24°42' North to 25°21' North
Height from sea level	37.185 m.
Total Area	1702.10 sq. kms.

Source: Ministry of MSME, Government of India

Eleven (5) field trips were conducted, taking consideration of the varied climatic conditions, seasons and access to the places. The period/number of days were different for each and every survey.

Table 3 : Duration of trips

Trip	From	To
Trip 1	01-06-2018	02-07-2018
Trip 2	02-10-2018	03-11-2018
Trip 3	03-02-2019	04-03-2019
Trip 4	04-05-2019	05-06-2019
Trip 5	05-09-2019	06-10-2019

- ❖ Ethnomedicinal survey was conducted in villages of Sahibganj district of Jharkhand.
- ❖ Survey was conducted in different seasons, as the flora varies according to seasonal variation of the environment.
- ❖ The herbal practitioners in the study area were interviewed and information on medicinal plants, their local names, habitat and their seasonal availability was recorded.
- ❖ Information on medicinal plants with their parts used, mode of preparation and mode of administration were also carefully recorded.
- ❖ Collection of plants specimen, preparation of herbarium and identification of plants with the help of Flora were done.
- ❖ Photograph of plants were taken.
- ❖ Photograph of traditional medicine-men 'Vaidyas' were taken.

A questionnaire (Appendix-I) was adopted from from some of the earlier workers like^{15,16,17,18,19,20}. The questionnaire and voucher specimens formed the basis for interviews with some selected medicine men.

Authentication of Data

Once the information on a particular plant was obtained repeated verification about its local name and uses were cross-checked not only in the same block where the information was collected but also in other block also. Since each plant was used in the preparation of medicine for more than one disease, the disease for which a plant was used in greater frequencies was taken as the final. Weekly village markets were visited to confirm the recorded plant products and their combinations.

Table 4 : Tabulation of ethnomedicinal and edible plants showing disease cured, parts used and form of medicine

1.	Name of medicinal plants		Disease cured	Part used	Form of medicine
2.	<i>Artocarpus heterophyllus</i> Lam.	Moraceae	Skin diseases, sores, gonorrhoea, barrenness of women	Fruits, timber, root and leaf, bark	Paste, juice
3.	<i>Andrographis paniculata</i> (Burm.f.) Wall. Ex	Acanthaceae	Malaria, stomach pain	Leaf ,whole plant	Juice, decoction

	Nees				
4.	<i>Asparagus racemosus</i> Willd.	Asparagaceae	Enhance breast milk, nerves and rheumatic problems	Leaf and root.	Juice, paste, powder
5.	<i>Achyranthes aspera</i> L.	<u>Amaranthaceae</u>	Stomach pain	Root and Seeds.	Paste
6.	<i>Aegle marmelos</i> (L.) Correa	<u>Rutaceae</u>	Stomach pain, brain tonic, bites and fever, cooling effect	Ripe fruits and leaf bark.	Pills, juice
7.	<i>Amaranthus spinosus</i> L.	<u>Amaranthaceae</u>	Migraine	Leaves and root	Paste
8.	<i>Artocarpus lakucha</i> Roxb.	<u>Moraceae</u>	Cold, cough, congestion in children, spleen disorder	Seeds and bark.	Paste, powder, juice
9.	<i>Azadirachta indica</i> A. Juss.	<u>Meliaceae</u>	Smallpox, worms, septic wounds, skin diseases, Anthelmintic	Flower, fruit, leaves, seed	Paste, oil
10.	<i>Bauhinia purpurea</i> L.	Fabaceae	Convulsions, hemorrhages, pain	Leaves, flowers and bark	Paste, powder
11.	<i>Bauhinia variegata</i> L.	Fabaceae	Menstruation, diarrhoea, intestinal worms	Flower, bud	Powder
12.	<i>Basella alba</i> L.	<u>Basellaceae</u>	Diarrhoea, tumours	Herb and leaf	Decoction, juice
13.	<i>Brassica campestris</i> L.	<u>Brassicaceae</u>	Scabies, boils	Stem leaves and seed	Oil
14.	<i>Carica papaya</i> L.	<u>Caricaceae</u>	Menstruation, abortion, amoebic dysentery, bone fracture, abortifacient, jaundice	Fruit, latex and seed	Paste, juice
15.	<i>Cajanas cajan</i> (L.) Millsp.	Fabaceae	Sores in mouth ulcer, tongue, skin burn and sores around the neck	Seeds and leaves	Paste
16.	<i>Commelina benghalensis</i> L.	<u>Commelinaceae</u>	Indigestion, diuretic	Root, leaves	Paste, powder
17.	<i>Citrus medica</i> L.	<u>Rutaceae</u>	Diarrhea, antiseptic	Fruit and root	Juice, powder
18.	<i>Curcuma aromatica</i> Salisb	<u>Zingiberaceae</u>	Joint pain, treat fever	Rhizome	Paste
19.	<i>Diospyros melanoxylon</i> Roxb.	<u>Ebenaceae</u>	dry cough, dysentery	Seed oil and fruit	Oil, unripe fruit eaten
20.	<i>Dioscorea pentaphylla</i> L.	<u>Dioscoreaceae</u>	Post delivery, abdominal pain,	Plant and tuber	Paste

			dropsy and oedema		
21.	<i>Euphorbia neriflora</i>	<u>Euphorbiaceae</u>	Asthma, haemorrhoids, antiseptic, fevers, coughs and colds, and diabetes	Bark, root, leaves	Juice, paste, powder, pills
22.	<i>Ficus benghalensis</i> L.	<u>Moraceae</u>	Hydrocele, burn wounds, dislocated joints	Bark and leaf	Juice, paste
23.	<i>Ficus religiosa</i> L.	<u>Moraceae</u>	Ear-ache with pus, leucorrhoea	Bark	Paste
24.	<i>Ficus racemosa</i> L.	<u>Moraceae</u>	Gonorrhoea, septic wounds	Bark and leaf	Decoction, paste
25.	<i>Hygrophila auriculata</i> Heine.	<u>Acanthaceae</u>	Liver problems, enhancing sexual performance, rheumatism	entire plant, roots	Ashes, paste
26.	<i>Hibiscus sabdariffa</i> L.	<u>Malvaceae</u>	Gastric ulcer, bone fracture, dislocated joints	Leaf and seed	Decoction, paste
27.	<i>Madhuca indica</i> J.F. Gmel.	<u>Sapotaceae</u>	Gonorrhoea, eye disease rheumatism, scorpion sting	Heart-wood, flowers, fruits, Bark, seeds, roots	Paste
28.	<i>Marsilea quadrifolia</i> L.	<u>Marsileaceae</u>	Stomach ailments	Whole plant	Paste juice
29.	<i>Macrotyloma uniflorum</i> (Lam.) Verde.	Fabaceae	Painful menstruation, kidney stone	Seed	Powder, paste
30.	<i>Mangifera indica</i> L.	<u>Anacardiaceae</u>	Gonorrhoea, hemorrhage of uterus, diarrhoea, dysentery	Roots, bark, leaves, flowers, fruits	Decoction, paste, juice
31.	<i>Mentha arvensis</i> L.	<u>Lamiaceae</u>	Stomach problem, sore throat	Whole plant	Juice
32.	<i>Mesua ferrea</i>	Calophyllaceae	Treats migraine headache, skin disease	Fruit, bark, flower	Paste, decoction, pills, powder
33.	<i>Moringa oleifera</i> Lam.	<u>Moringaceae</u>	Treat rickets, cholera, epilepsy, body or chest pain, cold and fever, snake bite	Roots, bark, leaves, seeds	Paste, decoction
34.	<i>Musa paradisiaca</i> L.	<u>Musaceae</u>	Leucorrhoea, dysentery	Roots, leaves, fruits, stem	Juice
35.	<i>Nyctanthes arbor-tristis</i> L.	<u>Oleaceae</u>	Stomach pain, dysentery, cough, cold	Whole plant	Decoction, paste, juice
36.	<i>Ocimum sanctum</i>	<u>Lamiaceae</u>	Ulcer in throat,	Whole	Infusion,

			malaria, epilepsy, liver problems, cough, cold and fever	plant/Leaves	decoction, powder
37.	<i>Plumbago zeylanica</i> L.	<u>Plumbaginaceae</u>	Sprain, liver problems, influenza, rheumatism	Whole plant	Paste, decoction
38.	<i>Phyllanthus emblica</i> L.	<u>Phyllanthaceae</u>	Washing hair, dysentery and anemia	Root bark, bark, leaves, fruits	Powder, paste
39.	<i>Polygonum plebeium</i> R.Br.	<u>Polygonaceae</u>	Pain in ears, dyspepsia, pneumonia	Whole plant	Decoction, powder
40.	<i>Pueraria tuberosa</i>	Fabaceae	Increasing sexual behaviour, hypertension, wound healing	Tuberous root	Paste, powder, juice, pills
41.	<i>Shorea robusta</i> Gaertn.f.	<u>Dipterocarpaceae</u>	Stomach pain, dysentery, cool down the body	Latex, fruit and seed	Resine powder, paste, decoction, powder
42.	<i>Semecarpus anacardium</i> L.f.	Anacardiaceae	Epilepsy, wounds	Seed oil and fruit	Oil
43.	<i>Spermacoce alata</i>	<u>Rubiaceae</u>	Malaria, skin disease, digestive problem	Leaves, root	Juice, paste
44.	<i>Tamarindus indica</i> L.	Fabaceae	Indigestion, menstruation problems, diarrhoea, dysentery	Seed, fruit and leaf	Powder, pills, paste juice
45.	<i>Zingiber officinale</i> Roscoe	<u>Zingiberaceae</u>	Back pain, bone fracture, increase potency	Rhizomes	Paste, powder
46.	<i>Zizyphus jujuba</i> Mill.	<u>Rhamnaceae</u>	Stomach ailments, dysentery, diarrhoea	Fruit, Root	Powder, paste juice with water

Table 5 : List of Families with Higher Number of Genus and Species

	FAMILY	No.of sp.	s.no	FAMILY	No.of sp.
1.	Acanthaceae	2	16.	<u>Malvaceae</u>	1
2.	Asparagaceae	3	17.	<u>Sapotaceae</u>	1
3.	<u>Amaranthaceae</u>	2	18.	<u>Marsileaceae</u>	1
4.	<u>Meliaceae</u>	1	19.	Calophyllaceae	1
5.	Fabaceae	6	20.	<u>Moringaceae</u>	1
6.	<u>Basellaceae</u>	1	21.	<u>Oleaceae</u>	1

7.	<u>Caricaceae</u>	1	22.	<u>Plumbaginaceae</u>	1
8.	<u>Commelinaceae</u>	1	23.	<u>Polygonaceae</u>	1
9.	<u>Zingiberaceae</u>	2	24.	<u>Dipterocarpaceae</u>	1
10.	<u>Dioscoreaceae</u>	1	25.	<u>Rubiaceae</u>	1
11.	Moraceae	5	26.	<u>Rhamnaceae</u>	1
12.	Rutaceae	2	27.	<u>Brassicaceae</u>	1
13.	<u>Ebenaceae</u>	1	28.	<u>Euphorbiaceae</u>	1
14.	<u>Anacardiaceae</u>	2	29.	<u>Lamiaceae</u>	2
15.	<u>Musaceae</u>	1	30.	<u>Phyllanthaceae</u>	1

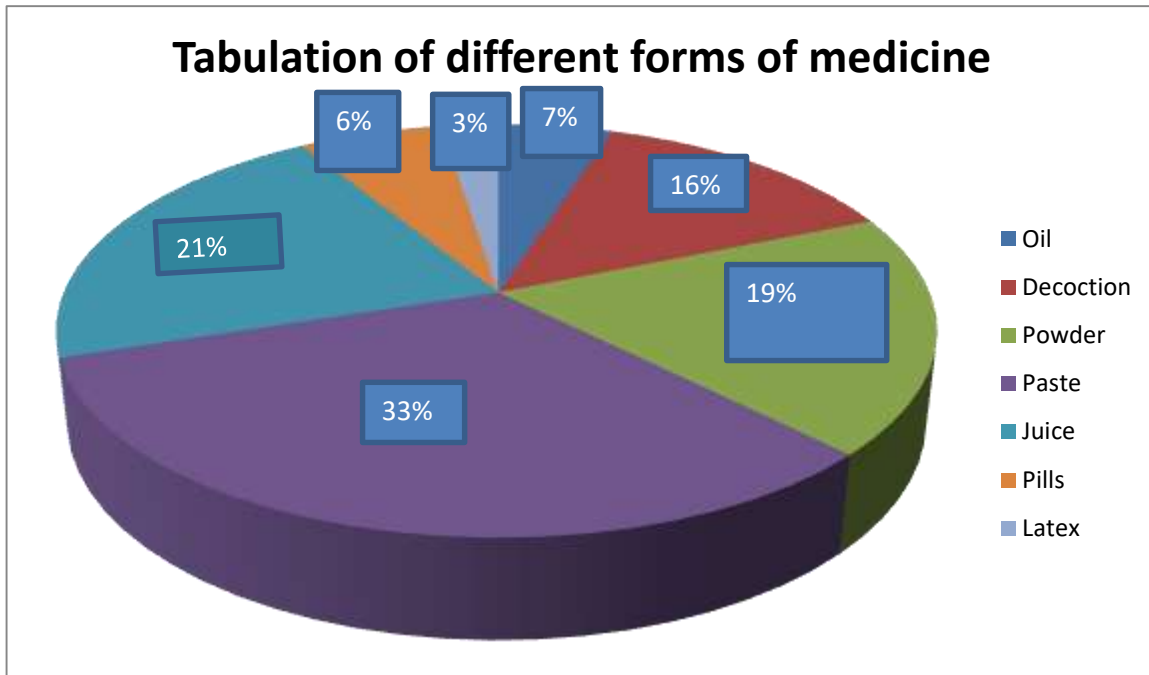
Table 6 : Tabulation of Plant Parts and Number of Species used

Sl. No.	Plant Parts	Number of Species
1.	Root	11
2.	Leaf	18
3.	Bark	12
4.	Seed	14
5.	Whole Plant	6
6.	Fruit	15
7.	Stem	2
8.	Flower	6
9.	Rhizome	2
10.	Latex	2

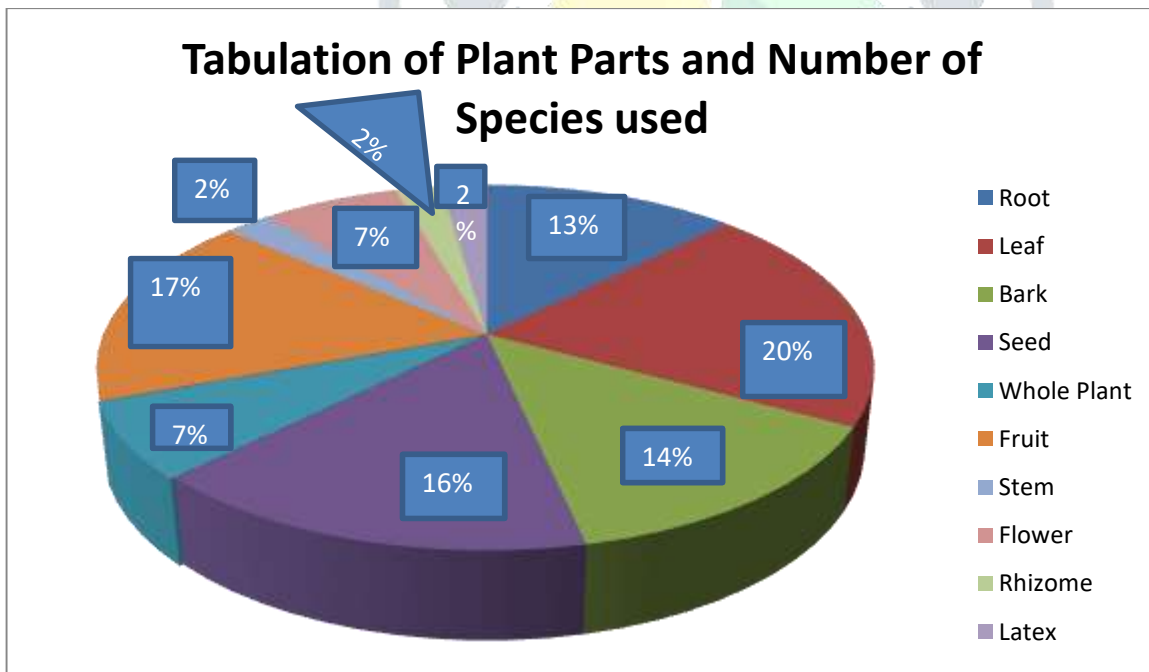
Table 7 : Tabulation of different forms of medicine

Sl. No.	Form of medicine	Number of time used
1.	Oil	4
2.	Decoction	11
3.	Powder	15
4.	Paste	26
5.	Juice	17
6.	Pills	5
7.	Latex	2

Graph 1:



Graph 2



RESULTS AND DISCUSSION

The ethnobotanical surveys were undertaken in the Sahibganj district and in the forest of Rajmahal hills of the state Jharkhand, in different seasons from 01-06-2018 to 12-02-2019. For this, the people of Santhal tribe were interviewed and the ethnomedicinal plants were documented with the help of concerned people. The ethnomedicine plant documented and recorded with the help of local Santhal people belonged to different taxonomic categories, family and genera. Extensive survey and entire documentation were done in Sahibganj district among all total nine block where santhal tribes were dominated.

In this indigenous ethnomedicinal study of santhal tribe of district Sahibganj, a total of 46 species belonging to 38 genera and 30 families were recorded from different part of the district. The different ethnomedicinal plants which were found belong to both Dicots as well as Monocots. If we talk about the largest number of plants found during the survey work, it was from the Fabaceae family with the highest number having 6 species with 13.04% of the entire ethnomedicinal plant. Moraceae family was recorded second in the position with 5 ethnomedicinal plants having 10.85% of the total. Asparagaceae family being in the third position with 3 ethnomedicinal species carries 6.5% of the proportion.

Acanthaceae family adjusted itself in the fourth position with 5% and in decreasing order of frequencies this are the remaining families which were recorded Amaranthaceae, Zingiberaceae, Rutaceae, Anacardiaceae with the same 5% and remaining all species eith family make a proportion of 2.2%.

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