



An Ethnobotanical Survey on Wild Edible Plants of Tumakuru District, Karnataka, India

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Abstract

Wild edible plants play an important role in the nutrition. The study conducted a survey to document the traditionally used wild edible plants from Tumakuru district. It was conducted during the year 2021-2023, through field visit; interview and group discussion with 120 people belonging to Bedar, Siddaru, Golla and Kuruba tribes. A total of 78 wild edible plants species information belonging to 43 families and 71 genera was reported, the herbs were prominent (38) followed by shrubs (14), climbers (13), and trees (13). It has recorded 78 cuisines prepared from wild edible plants species used frequently in their routine diet. All plants are tabulated alphabetically with scientific name, families, local names, parts used, habit, habitat, preparation method and use index is provided.

Keywords: Nutrition, Traditional knowledge, Tribes, Wild Edible Plants.

Introduction

The Tumakuru district lies between east longitudes 77° 06' 7.92" E and north latitudes 13° 20' 28.90" N and located in the south-east part of the Karnataka state. The principle tribes of this district are Nayaka, Lambani, Kuruba, Golla, Hakkipikki, Jogi Jangama, Bedaru, and Siddaru communities. They are basically nomadic and semi nomadic communities. It has dry deciduous type of forest with scrub vegetation. The Tumakuru district is surrounded by Andhra Pradesh at north, Chitradurga at north east, Chikkaballapura, Bangalore on east, Ramngara and Mandya in south, Hassan and Chikamangalore on west. The district shares a part of South Deccan peninsula. It has 10 talukas namely Chikkanayakanahalli, Gubbi, Koratagere, Madhugiri, Pavagada, Sira, Tiptur, Turvekere, Kunigal and Tumkur. The major rivers are Suvarnamukhi at north and Pinakini, Doddahalla and Jayamangali in east (Narayana and Prasanna, 2015).

Literature review show studies have been carried out across the globe on wild edible plants and revealed the importance of wild edible plants. In India the significant role of plants in dietary requirement was enumerated (Roy, *et al.*, 1998). Edible palms and their uses in the world were documented (Haynes and Laughlin, 2000). Under-utilized indigenous fruits and vegetables from Nigeria was documented (Aworh, 2015), Wild edible plants used by ethnic communities in Kalimpong district of West Bengal (Bhujel, *et al.*, 2018). Wild edible plants collected and consumed by the locals in Daqinggou, Inner Mongolia, China documented (Sachula, *et al.*, 2020).

From the study area few works was reported on Ethno botany of medicinal plants. The study was initiated (Buchanan, 1807). A survey on the flora of Devarayanadurga (Rao and Shastry, 1965), the documentation of

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medicinal plants from Tumkur district was reported (Yoganarashimhan, *et al.*, 1989) the information on phyto-antidotes of Tumkur district (Lakshmana and Sreenath, 2014), the ethnopharmacological study of medicinal plants at Siddarabetta (Chidanandamurthy, 2014), a survey on herbs used in ethno medicine for management of malaria documented 31 plant species for malarial treatment (Prakash and Unnikrishna, 2013). No work was reported on ethno botanical survey of wild edible plants from Tumakuru district; hence the survey was under taken in the study area to document wild edible plants.

Materials and Method

Data collection- The study was undertaken in tribal areas of Bedaru, Siddaur, Golla and Kuruba tribes from Tumakuru district during 2021-2023 [figure-1]. The information was collected from personal interviews and discussion. Information on plants with culinary uses were gathered and documented in questionnaire. The methodology adapted for interview as per standard procedure (Jain, 1991). Identification was done with the help of recent and relevant floras (Cooke, 1903, 1958; Gamble, 1967; Saldanha, 1984, 1996; Singh, 1988; Bhaskar and Kushalappa, 2018). The names of identified plants were updated (POWO, 2023). Wild edible plant species was collected for herbarium; the herbarium was

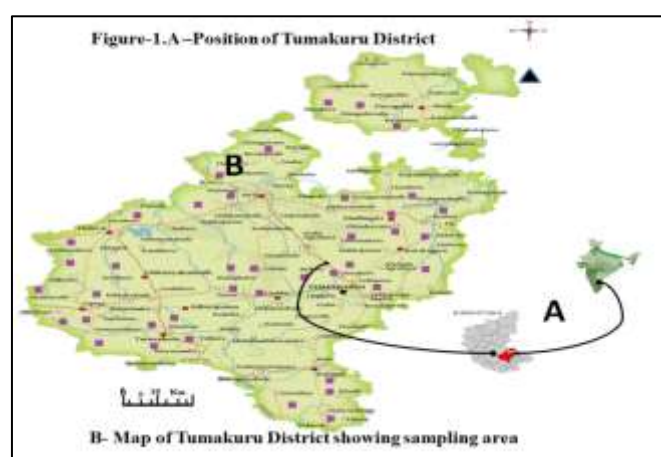
prepared for collected plant specimens followed (Jain and Rao, 1997). Herbariums were deposited in the department of botany, Karnatak science college, Dharwad. The collected wild edible plants are arranged alphabetically in the tabular form followed by botanical names, families, local name, habit, plant part(s) used, mode of consumption and use index is provided in Tabel-1

Plant inventory survey and utilization

During field survey the plants collected are scientifically identified further information according to respondents was documented and use index (UI) was calculated for each species using the equation $UI = U_s / N$, where U_s is the number of households which uses a particular species is 's' and N is the total number of house that were interviewed in the research (Phillips and Gentry, 1993)

Socioeconomic profile of respondents

The respondents profile such as person's occupation, education, family size, agricultural land, agricultural crops and traditional knowledge are also documented. The total interviewed 120 out of which House hold maximum women's were identified and interviewed. Major 10 respondents one from each taluk is considered as main respondent in study area guided to interview the tribal communities. The information of respondents is listed below in table-2.



Result and Discussion

The present survey documented traditional knowledge in using wild edible plants as primary source of food by listing total 78

plant species belonging to 43 families and 71 genera. The predominant family was Amaranthaceae with 9 species followed by

Fabaceae with 8 and Solanaceae 5 with species.

The plant parts used for preparation of food were flowers (5), fruits (18), leaf (35), rhizome (2), root (4), seeds (4), stem (4), and tuber (6) is given in figure 2. Based on habit the 38 herbs constituted the largest category followed by shrubs 14, climbers 13 and trees 13. It has provided information on 78 regional traditional foods completely depend on wild edible plants. The total number of respondents involved in interview was 120 out of which 80 were females and 40 were males. The method of preparation by using wild edible plants in Curry (36), Chutney (2), Tambuli (5), Sherbet (3), Salad (1) Ripe (11), Pickle (3), Raw (5), Roasted (2) Flavor (1), Fried (3) and Boiled (6) was reported.

The use value index varies widely (table -1), from 0.01 to 1.0, the UI value indicates the number of households actually used for particular plant species. Present study shows that UI result (0.01) such as *Agave americana*, *Cajanus scarabaeoides* were used by only 1% of sampled houses, other plants such as (1.0) *Celosia argentea*, *Centella asiatica*, *Commelina benghalensis* were all the sample houses used

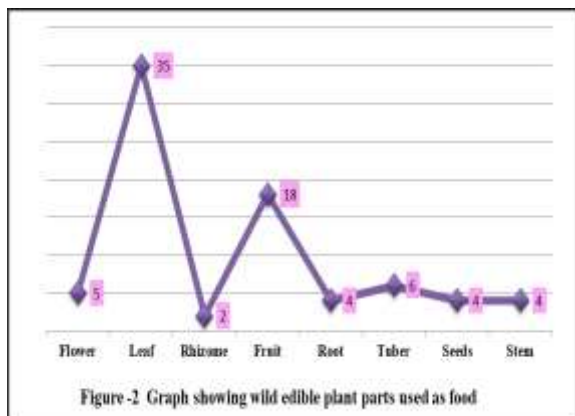


Figure-2 Graph showing wild edible plant parts used as food

for every alternate day, plants those who have a UI higher than 0.90 as like leafy wild vegetables such as *Oxalis corniculata*, *Hibiscus cannabinus*, *Boerhavia diffusa* are important and equal value with cultivated plants, the wild vegetables used in preparation of curry such as *Amaranthus spinosus*, *Portulaca oleracea*, *Solanum nigrum*, *Solanum torvum*, *Cocculus hirsutus* are abundantly found throughout the year, but the species like *Alternanthera sessilis*, *Chenopodium album*, *Ipomoea aquatica* have low UI which are available only during the rainy season.

Seasonal availability of wild edible plants: the usage of wild plants are directly depend on availability and their phonological status, the tribal communities eat more fruit and leafy vegetables during rainy season and tubers during summer season, the tribal women were capable of predicting the availability of plant species with season and place of collection, the tribal communities also use wild edible plants in variety of recipes by their ancestor and practical experience. The land less households depend completely on wild species for food.

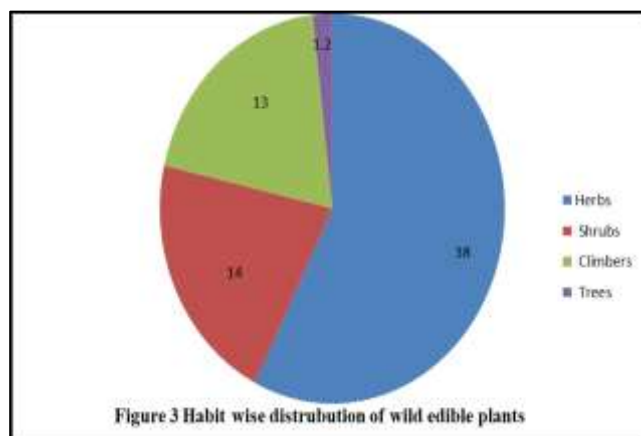


Figure 3 Habit wise distrubution of wild edible plants

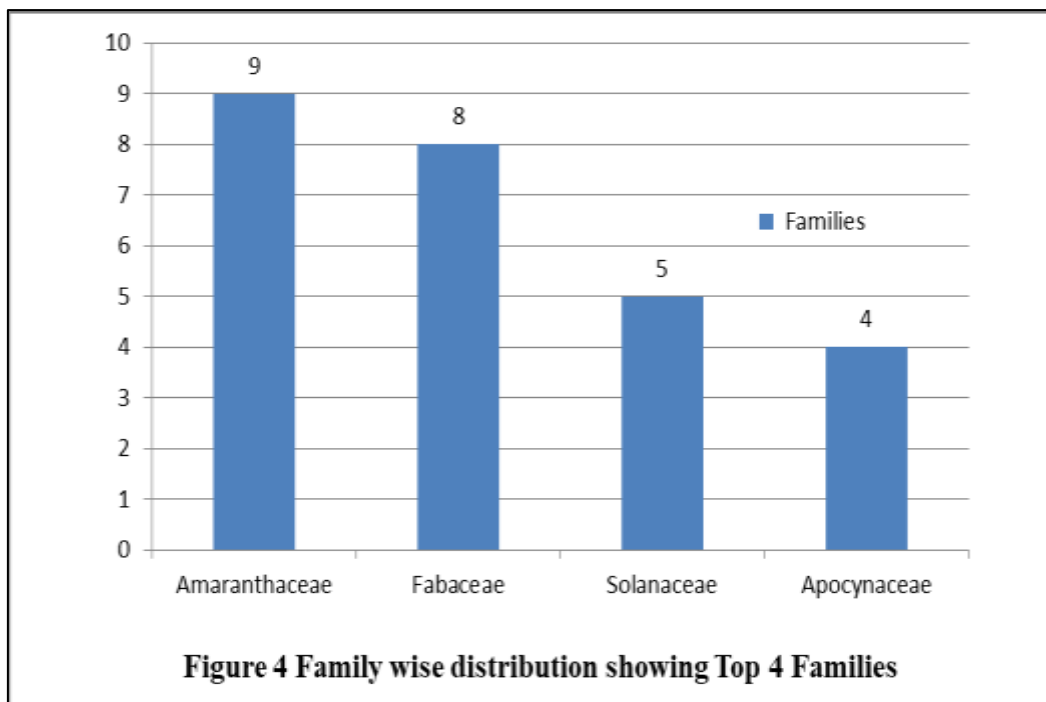


Plate -1: Photo of wild edible plants of Tumakuru district

Table-1: Wild edible plants of Tumakuru district, Karnataka, India

SN	Family/ Botanical name	Habit	Parts used	Use index	Local name	Culinary use	Habitat	Season
Aizoaceae								
1	<i>Trianthema portulacastrum</i> L.	H	L	0.48	Bilikomme	Curry	Wetland	Rainy
Amaranthaceae								
2	<i>Achyranthes aspera</i> L.	H	L	0.14	Uthrani	Curry	Waste land	Rainy
3	<i>Allmania nodiflora</i> (L.) R.Br. ex Wight	H	L	0.07	Buddae soppu	Curry	Farm land	Rainy
4	<i>Alternanthera sessilis</i> (L.) DC.	H	L	0.01	Honagone soppu	Curry	Wetland	Rainy
5	<i>Amaranthus spinosus</i> L.	H	L	0.20	Mulluharive	Curry	Waste land	All Time
6	<i>Amaranthus viridis</i> L.	H	L	0.07	Keresoppu	Curry	Open field	Rainy
7	<i>Digera muricata</i> subsp. <i>Muricata</i>	H	L	0.47	Gorajepalle	Curry	Waste land	Rainy
8	<i>Celosia argentea</i> L.	H	L	1.00	Annesoppu	Curry	Wetland	Rainy
9	<i>Gomphrena celosioides</i> Mart.	H	L	0.57	Bramhadande	Curry	Open field	Spring
10	<i>Chenopodium album</i> L.	H	L	0.04	Chakravarti	Curry	Open field	Rainy
Anacardiaceae								
11	<i>Buchanania lanzan</i> Spreng	T	Fr	0.14	Murkali	Ripe	Forest	Spring
Annonaceae								
12	<i>Annona squamosa</i> L.	S	Fr	0.28	Sitaphal	Ripe	Waste land	Rainy
Apiaceae								
13	<i>Centella asiatica</i> (L.) Urb.	H	L	1.00	Ondelaga	Tambuli	Wetland	Rainy
Apocynaceae								
14	<i>Hemidesmus indicus</i> (L.) R.Br.	Cl	R	0.93	Sogadeberu	Juice	Wetland	Rainy
15	<i>Decalepis hamiltonii</i> Wight & Arn.	S	R	0.28	Makaliberu	Pickled.	Waste land	Rainy
16	<i>Leptadenia reticulata</i> (Retz.) Wight & Arn.	Cl	R	0.45	Halleballi	Pickles	Waste land	Rainy
17	<i>Carissa carandas</i> L.	S	Fr	0.08	Kavali	Ripe	Waste land	Rainy
Araceae								
18	<i>Colocasia esculenta</i> (L.) Schott	H	T	1.00	Kesavanasoppu	Chutney	Waste land	Summer

Areaceae								
19	<i>Phoenix sylvestris</i> (L.)	T	Fr	0.19	Eechalu	Ripe	Open field	Summer
Asparagaceae								
20	<i>Agave americana</i> L.	H	Fl	0.01	Kattalale	Curry	Hedges	Summer
21	<i>Asparagus racemosus</i> Willd.	Cl	Tu	0.03	Shatavari	Boiled	Scrub forest	Summer
Asteraceae								
22	<i>Glossocardia bosvallia</i> (L.f.) DC.	H	L	0.06	Kadu sabsige	Curry	Scrub forest	Summer
23	<i>Eclipta prostrata</i> (L.) L.	H	L	0.30	Guruga	Tambuli	Wet land	Rainy
Basellaceae								
24	<i>Basella alba</i> L.	Cl	L	1.00	Basale soppu.	Tambuli	Wet land	Rainy
Boraginaceae								
25	<i>Cordia dichotoma</i> G.Forst	T	Fr	0.26	Challehanu	Pickles	Moist land	Summer
Brassicaceae								
26	<i>Mutarda nigra</i> (L.) Bernh.	H	L	0.06	Saasive soppu	Curry	Moist land	Rainy
Cleomaceae								
27	<i>Cleome gynandra</i> L.	H	L	1.00	Narom balli	Curry	Waste land	Rainy
Commelinaceae								
28	<i>Commelina benghalensis</i> L.	H	L	1.00	Kanne soppu	Curry	Waste land	Rainy
29	<i>Cyanotis cristata</i> (L.) D.Don	H	L	1.00	Kanne soppu	Curry	Moist soil	Rainy
30	<i>Cyanotis tuberosa</i> (Roxb.) Schult. & Schult.f.	H	Tu	1.00	Yemme gedde	Boiling	Scrub land	Rainy
Convolvulaceae								
31	<i>Ipomoea aquatica</i> Forssk	H	St	0.01	Neeruhambu	Chutney	Moist land	Rainy
Cucurbitaceae								
32	<i>Lagenaria siceraria</i> (Molina) Standl.	Cl	L	0.20	Kahisore soppu	Curry	Waste land	Summer
33	<i>Coccinia grandis</i> (L.) Voigt	Cl	Fr	0.28	Tondikai	Curry	Waste land	Summer
34	<i>Momordica dioica</i> Roxb. ex Willd.	Cl	Fr	0.25	Madihaagalu	Curry	Moist land	Summer
Cyperaceae								
35	<i>Cyperus rotundus</i> L.	H	Tu	1.00	Konnar igedde	Boiling	Waste land	Summer
Dioscoreaceae								

36	<i>Dioscorea bulbifera</i> L.	Cl	Tu	0.30	Halu genasu	Boiled	Farm land	Summer
Erythroxlaceae								
37	<i>Erythroxyllum monogynum</i> Roxb.	S	L	1.00	Deva daare	Sambar	Scrub region	All Time
Euphorbiaceae								
38	<i>Manihot esculenta</i> Crantz	S	Tu	0.04	Marage nasu	Boiled	Scrub	Summer
Fabaceae								
39	<i>Senna auriculata</i> (L.) Roxb	S	Fl	0.26	Tanga-dike	Curry	Open field	All Time
40	<i>Clitoria ternatea</i> L.	Cl	Fl	0.05	Shanka puspa	Curry	Hedges	Rainy
41	<i>Senegalia pennata</i> (L.) Maslin	S	L	1.00	Kaadu seege	Curry	Open fields	All Time
42	<i>Cajanus scarabaeoides</i> (L.) Thouars	Cl	L	0.01	Kadu thogari	Curry	Scrub	Summer
43	<i>Senna tora</i> (L.) Roxb.	S	L	0.10	Chaga che	Curry	Open fields	Rainy
44	<i>Mucuna pruriens</i> (L.) DC.	Cl	Fr	0.02	Nasu gunni	Curry	Scrub	Rainy
45	<i>Pithecellobium dulce</i> (Roxb.) Benth.	T	Fr	0.01	Sihi hunase	Ripe	Scrub	Summer
46	<i>Vigna aconitifolia</i> (Jacq.) Maréchal	H	Fr	0.05	Madaki hesaru	Curry	Farm land	Rainy
Lamiaceae								
47	<i>Coleus amboinicus</i> Lour.	H	L	0.25	Dodda patre	Tambuli	Wet land	Rainy
48	<i>Mentha arvensis</i> L.	H	L	0.30	Pudina	Flavour	Wet land	Rainy
Lythraceae								
49	<i>Trapa natans</i> L.	H	Fr	0.47	Neeru acrotu	Raw	Pond	Summer
Malvaceae								
50	<i>Bombax ceiba</i> L.	T	Fl	0.36	Baragina mara	Curry	Open field	Summer
51	<i>Hibiscus cannabinus</i> L.	S	L	0.90	Pundi soppu	Curry	Waste land	All Time
Menispermaceae								
52	<i>Cocculus hirsutus</i> (L.) W.Theob.	Cl	L	0.05	Daagadi balli	Curry	Waste land	All Time
Myrtaceae								
53	<i>Syzygium cumini</i> (L.) Skeels	T	Fr	0.26	Nerale	Ripe	Open field	Summer
Nelumbonaceae								
54	<i>Nelumbo nucifera</i> Gaertn.	Cl	R	0.15	Tavare	Roasted	Pond	Winter
Nyctaginaceae								

55	<i>Boerhavia diffusa</i> L.	H	L	0.90	Odakalu soppu.	Curry	Farm land	Winter
Nymphaeaceae								
56	<i>Nymphaea pubescens</i> Willd.	S	Se	0.12	Neelakamala	Roasted	Pond	Winter
Olacaceae								
57	<i>Ximenea americana</i> L.	S	Fr	0.01	Nagari gida	Ripe	Scrub	Rainy
Oxalidaceae								
58	<i>Oxalis corniculata</i> L.	H	L	0.90	Hulisoppu	Tambuli	Wet land	All Time
Plantaginaceae								
59	<i>Bacopa monnieri</i> (L.) Wettst.	H	L	0.44	Neerubrahmi	Curry	Wet land	Rainy
Portulacaceae								
60	<i>Portulaca oleracea</i> L.	H	L	0.37	Gonnisoppu	Curry.	Wet land	All Time
Rhamnaceae								
61	<i>Ziziphus oenopolia</i> (L.) Mill.	S	Fr	0.79	Karisurimullu	Ripe	Scrub	Winter
62	<i>Ziziphus mauritiana</i> Lam.	S	Fr	0.83	Barehannu	Ripe	Scrub	Winter
63	<i>Gardenia gummifera</i> L.f.	T	Fr	0.66	Kadubikke	Ripe	Scrub	Summer
Rutaceae								
64	<i>Bergera koenigii</i> L	T	L	0.73	Karibevu	Flavour.	Wet land	All Time
65	<i>Aegle marmelos</i> (L.) Corrêa	T	Fr	0.25	Bilvapatre	Sherbet.	Open field	Summer
66	<i>Limonia acidissima</i> L.	T	Fr	0.82	Bela	Chutney,	Open field	Summer
Salicaceae								
67	<i>Flacourtia indica</i> (Burm.f.) Merr.	T	Fr	0.07	Mulluthare	Ripe	Forest	Summer
Santalaceae								
68	<i>Santalum album</i> L.	T	L	1.00	Sri gandha.	Tambuli	Open land	All Time
Sapotaceae								
69	<i>Madhuca longifolia</i> var. <i>latifolia</i> (Roxb.)A.Chev.	T	Fl	0.23	Kaadu Hippe	Curry	Open field	Summer
Solanaceae								
70	<i>Solanum nigrum</i> L.	H	L	1.00	Ganikesoppu	Curry.	Wet land	All Time
71	<i>Solanum torvum</i> Sw.	S	Fr	1.00	Kadusonde	Curry	Waste land	All Time
72	<i>Solanum melongena</i> subsp. <i>cumingii</i> (Dunal) J.Samuel	H	Fr	0.78	Gulikayi	Curry	Waste land	Summer

73	<i>Solanum pimpinellifolium</i> L.	H	Fr	1.00	Naiyi Tomato	Ripe	Waste land	All Time
74	<i>Solanum virginianum</i> L.	H	Fr	0.34	Nela Gulla.	Curry	Open field	Summer
Talinaceae								
75	<i>Talinum fruticosum</i> (L.) Juss.	H	L	0.79	Nela basale	Curry.	Wet land	Rainy
Typhaceae								
76	<i>Typha domingensis</i> Pers.	H	St	0.61	Kere jundu	Curry.	Wet land	Rainy
Zingiberaceae								
77	<i>Curcuma neilgherrensis</i> Wight	H	Rh	0.01	Kadu harashina	Flavour	Wet land	Summer
78	<i>Zingiber montanum</i> (J.Koenig) Link ex A.Dietr.	H	Rh	0.27	Kadu shunti.	Pickles	Wet land	Summer

Note- H-Herbs, T-Trees, S-Shrubs, Cl-Climbers, P.U- Parts used, U.I-Use Index, L-Leaves, Fr-Fruits, R-Roots, Tu –Tubers, Fl- Flowers, St-Stem,Se-Seed.

Table 2: Socio-economic profile of tribal communities

Factors	Socio economic profile of Tribal communities, respondents are with age above 50 years			
	Bedaru/hunters	Siddaru	Golla	Kuruba
Occupation	Settled occupation as daily wage labor	Settled occupation as daily wage labor	Settled occupation cattle rearing	Settled occupation sheep rearing
Education	No	No	No	No
Family size	Medium family 4-6	Medium family 4-6	Medium family 4-6	Medium family 4-6
Agricultural land	No agricultural land	No agricultural land	No agricultural land	No agricultural land
Agricultural crops	No	No	No	No
Settled /nomadic	Nomadic	Nomadic	Semi-nomadic	Semi-nomadic
Follow Traditional knowledge	Yes	Yes	Yes	Yes
Diet system	Vegetarian and non-vegetarian food	Vegetarian and non-vegetarian food	Vegetarian and non-vegetarian food	Vegetarian and non-vegetarian food
State reservation	Scheduled cast	Scheduled tribe	Backward cast	Backward cast
Food schemes	Yes provided by government	Yes provided by government	Yes provided by government	Yes provided by government
Traditional occupation	Wandering hunters	Wandering saints -magic	Wandering cattle grazers	Wandering shepherding
Average income	5000-6000 per month	3000-6000 per month	8000-12000 per month	7000-30000 per month

Source of income	Migration/ local labor/NTPF collection	Migration/ local labor/NTPF collection	Migration/ local labor/NTPF collection	Migration/ local labor/NTPF collection
Economic status	More than 90% are below poverty line	More than 70% are below poverty line	More than 20% are below poverty line	More than 10% are below poverty line

Conclusion

It documents diverse traditional cuisines consumed based on regional plants. It explores in-depth unstated local knowledge transmitted through cultural and household contexts. Under this background the traditional knowledge identify potential resources in plants which should be known to future generation. They form a valuable source of food in the tribal community without agricultural land, all the 4 tribal community possess a rich knowledge on the usage of plants for food were evident in report during the present study. The study provides significant database on traditional knowledge which is not documented in study area, further investigation on cultivation and conservational practices can be developed for future use.

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