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Medicinal Herbs used by Indigenous people of Tinsukia District, Assam, India

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ABSTRACT

The present investigation is an effort of a field survey of the medicinal herbs used by the indigenous people of Tinsukia District in Assam, North East India. Indigenous people like Assamese, Tea tribe, Singpho and Nepali inhabit in this region. A total of 56 species belonging to 34 families and 52 genera were included. Different plant parts are used to cure various ailments like stomach disorders, gynecological problems, cough, fistula, kidney stone, urinary infection, etc. Out of 34 families, Lamiaceae represented the highest number and percentage of medicinal plants (7 species, 12.96 %). The highest number of medicinal herbs are used by Assamese people (47 plants). The study thus, highlights the potentials of the ethnobotanical research and the need for the documentation of traditional knowledge relating to the medicinal plant utilization for the better benefit of mankind.

Key words: Medicinal herbs, Indigenous people, Lamiaceae, Tinsukia district, Assam, North East India

Introduction

The North-eastern region of India is one of the richest biodiversity with many other rare and endemic species and such a rich biodiversity needs to be conserved (Mao *et al.*, 2000). A rich diversity of both of population and flora in the state has provided an initial advantage to its inhabitants since times immemorial. Traditional knowledge has a significant role in conservation of resources, mostly of indigenous plant species important for indigenous communities (Kayani *et al.*, 2015; Cox, 2000). Various ethno-therapeutic investigations among different ethnic tribes

have been carried out in various parts of NE India (Sarma *et al.*, 2013; Nath, 2014). Assam, is part of the Indo-Burma Global Biodiversity Hotspot a significant state of North Eastern India and different indigenous communities including Bodo, Rabha, Mishing, Dimasha, Karbi, Tiwa, Sonowal Kachari, Tai Turung, Tai Khamyang, Ahom, Deori, Singpho, Nepali, Tea-tribe, Koch, Chutia, Motok and Moran (Buragohain, 2011). One of the largest indigenous communities of Assam is "Assamese" which inhabited throughout the Brahmaputra River valley (Mittermeier *et al.*, 2011). Several authors in various parts of Assam carried out different Studies on me-

dicinal herbs (Borah *et al.*, 2006; Buragohain, 2008; Talukdar *et al.*, 2018; Gogoi and Nath, 2021). Tinsukia District is one of the diverse lands of Northeast India and is occupied by some indigenous people (viz. Assamese, Tea tribe, Singpho and Nepali). They are dependent on medicinal plants for various traditional health-care practices through the traditional knowledge system that has been handed down from generation to generation (Talukdar *et al.*, 2018). The utilization of the plants is alarmingly decreasing as there is a lack of awareness among people in following their tradition and cultural practices due to some factors like modern lifestyle and development in medical facilities. To overcome this problem, proper documentation and preservation of traditional knowledge of indigenous people before getting lost by modern medical facilities is necessary (Gogoi and Nath, 2021). Hence, an attempt has been made to document the medicinal herbs used by the indigenous communities in Tinsukia District, Assam and to assess properly their traditional knowledge on the ethnomedicinal plants with regard to gender, age and knowledgeso that they can be protected and conserved for future use and broader study.

Materials and Methods

The present study was undertaken in various places (Digboi, Ulup and Pengari) of Tinsukia District, Assam following standard ethnobotanical methods using semi-structured questionnaire and field walk method (Jain, 1987, Martin, 1995). The information was procured after consultation with village local healers (kobiraj), senior person (Gaoburhas) and some person of village with different age groups (Table 2) who has knowledge on medicinal plants. Several questions related to their knowledge were asked. Frequent trips were planned to collect medicinal herbs their uses in different cuisines and medicinal purposes. The collection and identification of medicinal plants were further proceeded with literature and by following earlier works of Kanjilal *et al.*, (1934-1940); Jain and Rao (1977).

Results and Discussion

In the study site, a total of 140 informants of the age group ranging from 31-80 years, of which 56 (40%) were male and 84 (60%) were female (Table 2). The illiteracy rate was found to be 22.1% whereas the literacy rate at the primary level was 18.6%, middle

level was 12.8%, secondary level was 30.7% and university level was 15.7% (Table 3). The collected data are arranged in alphabetical order of their scientific name along with vernacular name followed by family, plant parts used and medicinal uses commonly used by the people of that study area (Table 1).

Out of 34 families, Lamiaceae represented the highest number of medicinal plants (7 species) and was followed by Asteraceae (5 species; Apiaceae and Amaranthaceae (4 species) and Brassicaceae, Oxalidaceae, Polygonaceae, Rubiaceae and Zingiberaceae (2 species). According to different research works. Asteraceae to be the major family with the higher number of medicinal plants. Gogoi and Nath (2021) reported out of 78 families from Dibrugarh District, Euphorbiaceae has the highest number of medicinal plants (10 species). During the investigation 56 medicinal herbs were recorded to be used in various traditional health care practices which belong to 34 families and 52 genera. The plants were found to be used to cure several human diseases by the local people of Tinsukia. The present work can be considered as an extension of the field surveys conducted earlier by various researchers. The local people have strong traditional system of using various parts of a plant species and their healing properties that each of the parts. The Apatami, Mongpa, Singpho and Tanga tribe of Arunachal Pradesh use about 28 medicinal plants to cure diseases and shows that herbs are the common plants used for medicine (Khongsai *et al.*, 2011). It is found that among the 8 different plant parts used, leaves are the highest used part in different cuisines as well as in medicinal purposes whereas the least plant part used is bark which is only used from *Zanthoxylum indicum*. In contrast to the other plant parts the use of leaves causes fewer harm to the plants and ensures sustainability and its further conservation (Panmei *et al.*, 2019). Bark of *Oroxylonindicum* and *Oldenlandiacorymbosa* are used to treat hydrophilis and urinary tract infection respectively (Acharyya and Sharma, 2004). Leaf was found to be the most used part out of 175 plants collected from Tinsukia District (Buragohain, 2011). Figure 1.1 reveals that out of 34 families, Lamiaceae represented the highest number of medicinal plants (7 species, 12.96 %), which was followed by Asteraceae (5 species, 9.24%), Amaranthaceae and Apiaceae (4species, 7.40 %), and Brassicaceae, Polygonaceae, Oxalidaceae, Rubiaceae and Zingiberaceae (2 species, 3.70 %).

Table 1. Documentation of medicinal herbs used by indigenous people of Tinsukia District, Assam

Sl. No.	Scientific Name	Vernacular Name	Family	Part (s) USED	MEDICINAL USES
1	<i>Alternanthera sessilis</i> (L.) R. Br. ex-DC.	Mati kaduri (A), Mati kanduri (T), Sumbungpang (S)	Amaranthaceae	Leaf	Hepatitis, bronchitis, asthma
2	<i>Amaranthus spinosus</i> L.	Kata Khutura (A), Kande lundo (N), Salaw pa (S)	Amaranthaceae	Leaf,stem	Leprosy
3	<i>Amaranthus viridis</i> L.	Khutura (A), Latte sag (N)	Amaranthaceae	Whole plant	Fever, Body pain, asthma
4	<i>Acmella uliginosa</i> (Sw.) Cass	Huhoni-bon (A), Uimpic (S)	Asteraceae	Flower	Boby pain, mouth ulcer
5	<i>Acorus calamus</i> L.	Bos (A)	Acoraceae	Leaf,root	Rheumatism
6	<i>Ageratum conizoides</i> L.	Gendhalibon (A), Chinmut (S), Ilamey (N)	Asteraceae	Flower	Dysentery, diarrhoea
7	<i>Andrographis paniculata</i> (Burm.f.) Nees	Kalmegh (A), Kalamegha (N)	Acanthaceae	Whole plant	Stomach disorder, Worm infection
8	<i>Brassica juncea</i> (L.) Czern.	Horiyoh (A), Sarso saag (T)	Brassicaceae	Flower, leaf	Rheumatism
9	<i>Blumealanceolaria</i> (Roxb.) Druce	Sunpaiclay (S)	Asteraceae	Flower, leaf	Bronchitis, asthma, rheumatism
10	<i>Bryophyllumpinnatum</i> (Lam.) Kurz	DuporTenga (A)	Crassulaceae	Leaf	Hypertension, kidney stones
11	<i>Bacopa monnieri</i> (L.) Wettst.	Brahmi (A), Medha giree (N)	Lamiaceae	Whole plant	High blood pressure
12	<i>Boehmeria cylindrica</i> (L.) Sw.	Janglijhar (T)	Urticaceae	Whole plant	Wounds and anxiety
13	<i>Cannabis sativa</i> L.	Bhang (A)	Cannabaceae	Flower, leaf	Seizures, nausea
14	<i>Centella asiatica</i> (L.) Urb.	Dangormanimuni (A), Beng saag (T), Ghod-tapre (N), Nahashbin (S)	Apiaceae	Leaf	Eczema, fever, anxiety, menstruation problem
15	<i>Chenopodium album</i> L.	Jilimilixaag (A), Bhotuwa saag (T), Bethe (N)	Amaranthaceae	Whole plant	Rheumatism, urinary infection, skin problems.
16	<i>Coriander sativum</i> L.	Dhoniya (A), Dhaniya (N)	Apiaceae	Leaf, fruit	Stomach disorders
17	<i>Cucurma longa</i> L.	Halodhi (A)	Zingiberaceae	Rhizome	Diabetes, anti- inflammatory, anticarcinogenic
18	<i>Cucurma angustifolia</i> Roxb.	Keturi (A)	Zingiberaceae	Rhizome	Cough, bronchitis
19	<i>Costusspeciosus</i> (J. Koenig) Sm.	Jomlakhuti (A), Belauri (N)	Costaceae	Rhizome, Leaf	Skin ailments, leprosy, asthma
20	<i>Catharanthus roseus</i> (L.) G. Don	Nayantora (A)	Apocynaceae	Flower, Leaf	Stomach aches, Diabetes, Hypertension
21	<i>Commelinabanghelensis</i> L.	Kona-himolu (A), Kane (N)	Commelinaceae	Stem, leaf	Ophthalmia, cure burns
22	<i>Drymaria cordata</i> (L.) Willd. ex Schult.	Laijabori (A), Abhijjaalo (N)	Caryophyllaceae	Leaf	Tumors, leprosy, headache, cold
23	<i>Eryngium foetidum</i> L.	Mandhaniya (A), Naga Dhaniya (T), Bandhana (N)	Apiaceae	Leaf	Fever, hypertension, infertility
24	<i>Euphorbia hirta</i> L.	Gakhiroti bon (A), Aankle jhar (N)	Euphorbiaceae	Leaf, fruit	Asthma, cough, gonorrhoea
25	<i>Ecliptaprostrata</i> (L.) L.	Kehraj (A), Bhringaraj (N)	Asteraceae	whole plant	Headache, hair growth
26	<i>Hydrocotylesibthorpioides</i> Lam.	Xorumanimuni (A), Tikeghortaapre (N)	Apiaceae	Leaf	Skin problems, stomach disorders

Table 1. Continued ..

Sl. No.	Scientific Name	Vernacular Name	Family	Part (s) USED	MEDICINAL USES
27	<i>Houttuynia cordata</i> Thunb.	Mosundori (A), Bisar saag (T), Gane (N), Sinkealap (S)	Saururaceae	Leaf, fruit	Hypertension, dysentery, constipation
28	<i>Hedyotiscorymbosa</i> (L.) Lam.	Bonjaluk (A), Piringo (N)	Rubiaceae	Leaf	Urinary infection, pneumonia
29	<i>Heliotropium indicum</i> L.	Hati-hur (A), Hattisundejharr (N)	Boraginaceae	Flower, leaf.	Eczema, skin problem
30	<i>Ipomoea aquatica</i> Forsskal	Kolmou (A), Kolmi saag (T)	Convolvulaceae	Leaf, stem	Piles, nose bleeds, high blood pressure
31	<i>Leonurus japonicus</i> Houutt.	Rok-drona (A)	Lamiaceae	Flower, leaf.	Abnormal menstruation problems
32	<i>Leucas aspera</i> (Willd.) Link	Duroon bon (A), Gumma (N)	Lamiaceae	Whole plant	Blood pressure, anticancer properties
33	<i>Lasia spinosa</i> (L.) Thwaites	Sengmora (A), Hpungyangnazu (S)	Araceae	Leaf	Rheumatism, piles, stomach aches
34	<i>Mosladianthera</i> (Buch. -Ham. ex Roxb.) Maxim.	Ndaangban (S)	Lamiaceae	Leaf	Cough, fever and cold
35	<i>Mentha piperita</i> L.	Paduna (A), Taksal (N), Pudina (T), Banjikhun (S)	Lamiaceae	Leaf, stem	Nausea, dyspepsia, common cold.
36	<i>Mimosa pudica</i> L.	Nilaji bon (A), Lajjawati (N) Giyaq ban (S)	Fabaceae	Leaf, root	Small pox, dysentery, asthma, fistula, hemorrhoids.
37	<i>Mirabilis jalapa</i> L.	Godhuli-gopal (A), Lanka shani (N)	Nyctaginaceae	Root, leaf, flower.	Wounds, dysentery, skin disease, diabetes
38	<i>Ocimum sanctum</i> L.	Kola tulakhi (A), Tulasi (N)	Lamiaceae	Leaf, flower	Cough, cold, stomach disorders, heals, wounds
39	<i>Oxalis corniculata</i> L.	Horu Tengesi (A), Paasigandhu (T), Chari amilo (N), Majumching (S)	Oxalidaceae	Leaf, flower	Stomach disorders
40	<i>Oxalis corymbosa</i> L.	Bortengesi (A), Chari amilo (N)	Oxalidaceae	whole plant	Stomach disorders
41	<i>Pogostemonheyneanus</i> Benth.	Xukloti (A), <i>Patchouli</i> (N), <i>Xukloti</i> (T)	Lamiaceae	Leaf, Root	Cough, asthma
42	<i>Potentilla indica</i> (Andr.) Wolf.	Gorukhis (A), Bhuinaiselu (N)	Rosaceae	Fruit	Acute tonsilitis, eczema, ringworms
43	<i>Persicaria odorata</i> (Lour.) Sojak.	Bankhoban (S)	Polygonaceae	Leaf	Skin disease
44	<i>Polygonum caespitosum</i> Blume.	Modhuhuleng (A), Khira lap (S)	Polygonaceae	Leaf	Cough and cold
45	<i>Phyllanthus niruri</i> L.	Bhuiamlokhi (A)	Phyllanthaceae	Whole plant	Jaundice, gonorrhoea, diabetes
46	<i>Peperomia pellucida</i> (L.)	Punonoa (A)	Piperaceae	Leaf	Asthma, fever, stomach disorders
47	<i>Phyla nodiflora</i> (L.) Greene	Jal-pipali (A)	Verbenaceae	Whole plant	Knee joints, ulcers and boils
48	<i>Scoparia dulchis</i> L.	Senibon (A), Langhedoodh (S)	Plantaginaceae	Whole plant	Dysentery, diabetes, gonorrhoea, jaundice
49	<i>Solanum ptychanthum</i> L.	Lat kosu (A)	Solanaceae	Fruit	Skin disease, dysentery
50	<i>Oldenlandia corymbosa</i> L.	Bon-jaluk, Korpa-jihba (A) Piringo (N)	Rubiaceae	Leaf, whole plant	Cough and cold

Table 3. Continued ..

Sl. No.	Scientific Name	Vernacular Name	Family	Part (s) USED	MEDICINAL USES
51	<i>Piper nigrum</i> L.	Jaluk (A), Marich (N)	Piperaceae	Fruit	Pneumonia, asthma, fever, stomach disorders
52	<i>Sinapis arvensis</i> L.	Janglisarso (T)	Brassicaceae	Flower, root, leaf	Depression
53	<i>Sphenocleazeylainca</i> Gaertn.	Panileheti (A), Kado saag (T)	Sphenocleaceae	Whole plant	Ulcer
54	<i>Sonchus oleraceus</i> (L.)	Dudhe-kaanda (N)	Asteraceae	Leaf	Anti-cancer properties
55	<i>Talinum triangulare</i> (L.)	Pirali- paleng (A)	Portulacaceae	Leaf	Liver diseases
56	<i>Zanthoxylum nitidum</i> (Roxb.) D.C.	Tejmuui (A), Purpure timmur (N), Sungbrang (S)	Rutaceae	leaf, stem, bark	Stomach disorders, tooth aches

Abbreviation: A- Assamese, T- Tea-tribe, S- Singpho, N- Nepali

Baruah *et al.* (2021) reported that among the 220 plants studied from North Bank Plain Zone of Assam, highest number of plants belong to the family Lamiaceae which is followed by Zingiberaceae. A recent study on the Lamiaceae family stated that the Lamiaceae family includes numerous known species that are used in the traditional medicine (Uritu *et al.*, 2018). The least number of plants were collected from 26 different family comprising of one 1 plant of each family. 47 plants were found to be used by the Assamese people which is followed by Nepali (26 plants), Singpho (16 plants) and tea tribe people (12 plants).

Most of the plants were used for curing a total of 34 diseases ranging from simple stomach disorders

to highly complicated diseases like kidney stones, jaundice, diabetes, etc (Figure 1.2). Maximum number of plants were used for curing stomach disorders and asthma followed by skin disease, cough and cold, fever, diabetes and Diarrhoea. It was also found that a sole plant may be used for curing several illnesses such as, *Piper nigrum* L. is used to cure Pneumonia, asthma, fever and stomach disorders. Similarly, *Zanthoxylum nitidum*(Roxb.) D.C. is used against stomach ache and tooth ache. In traditional health care practices use of medicinal plants by tribes of Dhemaji district, Assam, was studied by Gogoi *et al.* (2019) and reported that 64 indigenous plants used by various tribes in treatment of various common illness. Debbarma *et al.* (2017) studied 51 plant species belonging to 32 families to cure a variety of diseases from Tripura. Though, the medical healthcare services are approached by many people

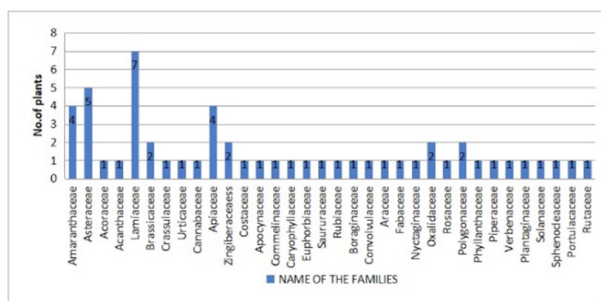


Fig. 1. Number of plants (Species) belonging to different families

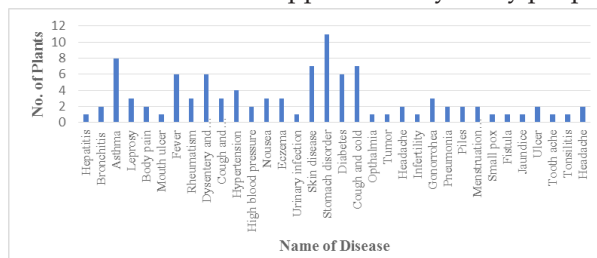


Fig. 2. Number of plants used to treat various diseases

Table 2. Distribution of informants based on age and sex

Age group	Male	Female	No. of persons	Percentage (%)
31-40	7	12	19	13.6
41-50	21	22	43	31.0
51-60	14	21	35	25.0
61-70	9	18	27	19.1
71-80	5	11	16	11.4
Total	56	84	140	

Table 3. Educational grade of the informants

Educational level	No. of individuals	Percentage (%)
Illiterate	31	22.1
Primary level	26	18.6
Middle level	18	12.8
Secondary level	43	30.7
University level	22	15.7
Total	140	

so far, they prefer traditional methods of using medicinal plants for the treatment of different common diseases as quick and effective measures. Few of the plants like *Lasia spinosa*, *Baccopamomnieri*, *Acorus calamus* and *Costusspeciosus* are not found easily in those localities where the research work has been carried out. Previously, these plants were said to be found abundant, but at present they are in very rare condition. The young generations must be encouraged to learn so that the traditional uses of such plants will not get extinct as they are not at all interested in learning the uses of indigenous plants. Furthermore, the recent trends of habitat destruction and decrease in the forest area has executed many species to disappear from environment. In order to achieve their immediate needs the local healers and few elder people who have traditional knowledge on use of such plant species, they collect the plants from the forest and transplanted in the home gardens.

Conclusion

At this time, conservation and sustaining ecological balance has become the main challenge for the world as well as India. From this study, several medicine plant species have been found to be used by the local communities or tribes. It has been established that traditional medicinal plants contribute significantly in the treatment of various diseases in that particular area. But there must be a balance in the utilization of the plants as most of the plants are found in the forest areas, forest areas are facing immense anthropogenic pressure. The tribal and the rural people depend basically on the preparation of these medicinal herbs for a number of treatments. The use of the herbal remedy is not only cost effective but also safe and almost free from serious side effects. The local practitioners are decreasing in number and there is a risk of traditional knowledge system disappearing soon as the younger generation

is not interested to learn their tradition knowledge. Records of the indigenous knowledge through ethnobotanical and ethnomedicine studies are very important for the conservation and utilization of biological resources. It is compulsory that there is a need to pay attention for conservation of commercially species of medicinal plants as well as other valuable forest resources by the local departments and NGO's and medicinal plant board sector for benefits of local people and save the plants from destruction. To find ethnomedicinal uses of medicinal plants and their active constituents further research is mandatory.

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Conflict of interest

The authors declare that they have no conflict of interest.

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