



ETHNOBOTANICAL SURVEY OF MEDICINAL PLANTS USED BY COMMUNITIES OF TWO VILLAGES OF CACHAR DISTRICT, SILCHAR, ASSAM

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AUTHORS' CONTRIBUTIONS

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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ABSTRACT

Traditional uses of medicinal plants in healthcare practices are providing clues to new areas of research. In the present study, we have made an ethnobotanical survey of medicinal plants used by communities of two villages of Cachar District, Silchar, Assam. Information was obtained through interviews using semi-structured questionnaires. At the end of our survey, we found that a total of 18 plant species are used in the treatment of various diseases by the communities of our study areas. Peoples from both the communities used various units of measurement such as finger length for root, bark, and stem, pinch for powdered, and numbers for leaves, seeds, fruits, and flowers, to fix the amount or dosage of medicine. We also observed that the healers were mostly aged person. Finally, we collected a part of each reported plant species, took photograph and identified.

Keywords: Ethnobotany; traditional medicine; medicinal plants; pharmaceutical.

1. INTRODUCTION

Ethnobotany is the study of a region's plants and their practical uses through the traditional knowledge of local communities. In this traditional system of medicine, plant preparations in the forms of decoctions, concoctions, macerations, or infusions are used to treat a wide range of diseases. An estimate of 75-87% of the global population mainly from the developing countries depends directly on plants for

medicines [1,2]. In 1996, Cotton wrote in his book "Ethnobotany: Principles and Applications", about the increasing interest in traditional medicine, as well as the potential for exciting new drug discoveries citing examples from throughout the world and drawing on a wide range of source materials [3]. The search for new medicines by the pharmaceutical industry has turned to plant natural products and to ethnobotanical studies as a first step in bioprospecting. Most herbal medicines need to be studied scientifically so that in

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some cases, the active principles of plant-derived products can be isolated and characterized. Moreover, some lifesaving miracle drug formulation can be discovered from one or some of these plants which are being used with trust and confidence by thousands of people - the tribal and the villagers residing in Assam. Documentation of indigenous knowledge through ethnobotanical studies is important in conservation of biological resources [4]. This is because the herbal medicines are collected from the wild and this has negative impact on the plant resource due to unsustainable exploitation. The identification of local names, scientific names and indigenous uses of plants, not only preserves indigenous knowledge but also facilitates future research on safety and efficacy of medicinal plants in treatment of various ailments [5]. Vasudevan and Sundararajan identified a total of 100 plant species belonging to 47 families at Dharmapuri District in Tamil Nadu [2]. They recorded vernacular name, botanical name, family, part(s) used, phytochemical constituents and their medicinal uses. They mentioned that these plants need to be explored for phytochemical and pharmacological activities. At the same time suitable measures should be taken for the conservation of these valuable plants. In order to conserve these plant species, there is a need for reliable data on their distribution and the level of use [6]. In an ethnobotanical study, Guha et al. reported that the Manipuri community people of Tripura, used a total of 27 plant species belonging to 14 families for the treatment of around 30 different types of human diseases [7]. In another study, a total of 302 medicinal plant species belonging to 117 families were investigated and documented by Gao et al. in the Wuliang Mountains of Jingdong [8].

Ethnobotany is critical to the growing importance of developing new crops and products such as drugs from traditional plants [9]. Ethnobotanists Balick and Cox share two decades of experience living with the indigenous peoples of Central and South America, the Caribbean, and Southeast Asia, conducting fieldwork in the study of how people use plants. The result of their efforts details a story of human culture in relationship to the plants they have traditionally used for medicinal, recreational, and ornamental purposes. This legacy continues today in the form of pharmacology research, aided by the fields of anthropology and botany [10]. In another study, Tugume et al. reported a total of 190 plant species, used by peoples of 14 villages adjacent to Mabira Central Forest Reserve (CFR) in Central Uganda in the treatment of various health conditions [11]. In a similar study Ayam et al. reported 62 plant species, used to cure different diseases and

ailments by the Mising tribe in Dhemaji district of Assam [12].

While the focus of ethnomedical studies is often the indigenous perception and use of traditional medicines, another stimulus for this type of research is drug discovery and development. A significant number of drugs, such as reserpine (a treatment for hypertension) podophyllotoxin (the base of an important anti-cancer drug), and vinblastine (used in the treatment of certain cancers) have been established from plants that are used to treat innumerable diseases [13], [14]. Keeping all these in mind we have made an ethnobotanical survey of medicinal plants used by communities of two villages of Cachar District, Assam.

2. METHODOLOGY

2.1 Study Area

The field survey was carried out in two different villages (Gor Gori Par and Singerband) of Cachar district of Assam in the month of January and February, 2020. Both the villages belong to Silchar, the headquarters of Cachar district in the state of Assam in India. The district occupies an area of 3,786 square kilometers (1,462 sq mi) with the GPS coordinates of 24° 49' 59.7756" N and 92° 46' 44.058" E [15]. The district falls under sub-Himalayan region zone II. It is bounded on the North by Barali and Jayantia hill ranges, on the South by the State Mizoram, on the East by the State Of Manipur and West by sister districts Hailakandi and Karimganj. The Barak is the main river of the district and apart from that there are numerous small rivers which flow from Dima Hasao district, Manipur or Mizoram. The district is mostly made up of plains, but there are a number of hills spread across the district.

2.2 Data Collection

The villages we selected are mostly inhabited by the Manipuri community. However, some Bengali community are also there. The data was collected by questionnaires of the traditional practitioners and elderly people of Manipuri community through interviews using semi-structured questionnaires [11]. We met the traditional healers of each village who are the custodians of indigenous knowledge on herbal medicines. They provided the information on plants and their parts used, ailments treated, mode of preparation of the formulation and administration. From survey area, we collected the parts of cited medicinal plants and their local name with the help of the traditional healers and took photograph. The

plants were then identified with the help of plant taxonomist. The correctness of scientific names of species was also checked according to PlantNet app

and Tropicos:<http://www.tropicos.org> database accessed on 28/02/2020.



Fig. 1. Map of Silchar, Assam. Source: Google map



Fig. 2a. Map of Gor Gori Par, Silchar

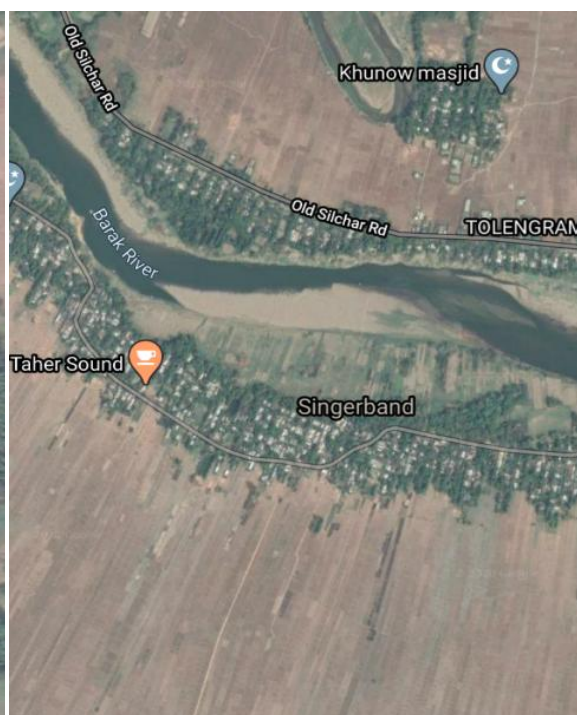


Fig. 2b. Map of Singerband, Silchar

Fig.2a and 2b. Map of study areas

Table 1. List of plants used against various human ailments by the communities of two villages of Silchar.

S. No	Local name (Manipuri)	Assamese name	Scientific name with family	Parts used	Ailments treated	Methods of preparation
Plants used in Gor Gori Par village						
1	Tulasi	Tulasi	<i>Ocimum tenuiflorum</i> (Lamiaceae)	leaves	for treating worms	The juice obtained after crushing the fresh leaves is mixed with honey and then consumed
2	Kokra	Honborolua	<i>Urena lobata</i> (Malvaceae)	leaves	For treating the problems of white discharge in women.	The juice obtained after crushing the fresh leaves is mixed with raw milk and then consumed.
3	Saakombrek	Helechi	<i>Enhydra fluctuans</i> (Asteraceae)	leaves	1. For the treatment of asthma.	Leaves are fried without oil but a little amount of water is added and then consumed
				leaves	2. For the treatment Uterine Infection	The juice obtained after crushing the fresh leaves is mixed with raw milk and then consumed.
4	Nungsihidak	Pudina	<i>Mentha spicata</i> (Lamiaceae)	leaves	for treating gastritis	The juice obtained after crushing the fresh leaves and then consumed
5	Methi	Methi	<i>Trigonella foenum-graecum</i> (Fabaceae)	seed	for treating gastritis	Seeds are soaked in water for overnight. The water is consumed on next day
6	Ningthoukhongli	Aamoilota	<i>Tinospora cordifolia</i> (Menispermaceae)	stem	for treating Piles (haemorrhoids)	Stem is cut in to small pieces and soaked it in water overnight. Next day the water is consumed with Tal mishri or Palm sugar.
7	Lam pasotlei	Kathanda phul	<i>Tabernaemontana divaricata</i> (Apocynaceae)	bark	for treatment of poisons from cat and dog's scratches	All 3 parts of respective plants are grind together and small pills are made. It is the consumed.
8	Long	Long	<i>Syzygium aromaticum</i> (Myrtaceae)	flower buds, i.e., cloves		
9	Gurumusi	Jaluk	<i>Piper nigrum</i>	seeds		

S. No	Local name (Manipuri)	Assamese name	Scientific name with family	Parts used	Ailments treated	Methods of preparation
10	Leikhaman	Kukur-suta	(Piperaceae) <i>Blumea aromatica</i> (Asteraceae)	leaves	for treating urinary or faecal incontinence	Both parts are boiled together and then the water portion is consumed
11	Pundhon	Madhuriaam	<i>Psidium guajava</i> (Myrtaceae)	bark	after parturition	
Plants used in Singerband village						
12	Peruk	Bor manimuni	<i>Centella asiatica</i> (Apiaceae)	whole plant except its roots.	for the treatment of menstrual irregularities	Soaked in water for overnight. The water is then consumed nextday, twice daily
13	Tulasi	Tulasi	<i>Ocimum tenuiflorum</i> (Lamiaceae)	leaves	for treating Vitiligo	The juice obtained after crushing the fresh leaves is applied on the affected areas
14	Fadigom	Dhania	<i>Coriandrum sativum</i> (Apiaceae)	seeds	For treatment of jaundice	Seeds are soaked in water overnight. Next day, water is mixed with Tal mishri or Palm sugar and consumed.
15	Chappaheigru	Bhuiamla	<i>Phyllanthus amarus</i> (Phyllanthaceae)	leaves	for treating jaundice.	Leaves of these three plants are mixed, and the juice obtained after crushing these leaves together is consumed.
16	Mairongbi	Rahar daal	<i>Cajanus cajan</i> (Fabaceae)	leaves		
17	Uchisumbal	Kehraj	<i>Eclipta alba</i> (Asteraceae)	leaves		
18	Kuthapmanbi	Dhopattita	<i>Clerodendrum infortunatum</i> (Lamiaceae)	leaves	for treating dysentery	Leaves of the two plants are mixed, and the juice obtained after crushing these leaves together is consumed.
19	Kafoi	Dalim	<i>Punica granatum</i> (Lythraceae)	leaves		

3. RESULTS

A total of 18 plant species belonging to 11 different families are used in the treatment of various diseases by the communities of the study areas. Serial no of plants 1-11, are found to be used in the village Gor Gori Par and serial no 12-19 in the village Singerband (Table 1). These plants are found to be commonly used by the Manipuri Community of both the villages of Silchar for treatment of various ailments in their own traditional method (Table 1). The scientific name of plants along with their local name, family, part/s used, ailments treated and methods of preparation for administration are given in Table 1. The plant *Ocimum tenuiflorum* is used in both the villages, but

the purpose of use is different: peoples of Gor Gori Par village used the plant for treating worms, whereas peoples of Singerband village used it for treating Vitiligo. The figures of individual plants and their parts used are given in Fig. 3 to Fig. 25. The most common part of plant utilized by the communities are the aerial parts of the plant (leaf, seed, stem and bark). They used the plant parts without uprooting the plant and it is an outstanding way to conserve them. The medicinal preparations are made out of a single plant part or combination of several plant parts. Most of the preparations are taken orally. When there is a need, the herbal practitioners collect the plants from wild. However, in some cases, a few of them maintained small herbal gardens in their home for the purpose.



Fig. 3. *Ocimum tenuiflorum*



Fig. 4. *Urena lobata*



Fig. 5. *Enhydra fluctuans*



Fig. 6. *Mentha spicata*



Fig. 7. *Trigonella foenum-graecum* (seed)



Fig. 8. *Trigonella foenum-graecum* (plant)



Fig. 9. *Tinospora cordifolia*

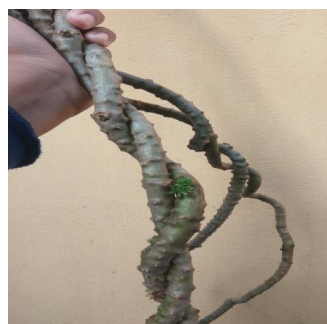


Fig. 10. *Tinospora cordifolia* (stem)



Fig. 11. *Tabernaemontana divaricata* (plant)



Fig. 12. *Syzygium aromaticum* (plant)



Fig. 13. *Syzygium aromaticum* (cloves)



Fig.14. *Piper nigrum* (plant)



Fig. 15. *Piper nigrum* (seed)



Fig. 16. *Blumea aromatica*



Fig. 17. *Psidium guajava*



Fig. 18. *Centella asiatica* (plant)



Fig. 19. *Coriandrum sativum*



Fig. 20. *Coriandrum sativum* (seed)



Fig. 21. *Phyllanthus amarus*



Fig. 22. *Cajanus cajan*



Fig. 23. *Eclipta alba*



Fig. 24. *Clerodendrum infortunatum*



Fig. 25. *Punica granatum*

Figs. 3 to 25. Photos of the medicinal plants and their parts used by the communities of the two villages for the treatment of various ailments

4. DISCUSSION

A total number of 18 plant species belonging to 11 different families are used in the treatment of various diseases by the communities of the study areas. The local people of the study area used various units of measurement such as finger length for root, bark, and stem, pinch for powdered, and numbers for leaves, seeds, fruits, and flowers, to fix the dosage of medicine. Judgment of the healer to stop the treatment were based on the disappearance of the symptoms of the diseases. This may be a criticism by certain groups. But the traditional healers have their own logic and explanations. No serious adverse effects were reported from the identified plants from our survey. It indicated that herbal preparations are considered harmless [16]. In this study, we found that the medicinal preparations were made out of a single plant part or combination of several plant parts, without uprooting the plant. It is reported that about 15,000 medicinal plant species may be threatened with extinction world widely due to habitat loss and over harvesting [17]. As a result of which, we are losing some potential major drugs. We also observed that the healers were mostly aged person. It seems that the indigenous knowledge transfer to the young generation is poor. It may be due to the modernization. Similar results were reported by Yineger and Yewhalaw, and Jima and Megersa [18,19], where young people showed disinterest on traditional medicinal plants. We also observed that some people have started to conserve medicinal plants by cultivating at home gardens, although the effort was minimal. Yineger et al stated that natural resources could be utilized best in sustainable way if management practices are complete [20].

5. CONCLUSION

The information of medicinal plant plays a significant role in various ethnic communities of the society. In

the present study, we have found that 18 plant species are used by the communities in two villages of Silchar for the treatment of various ailments. The traditional practitioners are the main source of information of ethno medicinal plants. With the passage of time, traditional uses of herbal medicine are gradually decreased due to different factors, like, lack of herbs, identification of traditional healers, discrimination of healers and their patients, declining interest of young people to become healers, and loss of attractiveness of the profession. Acquiring herbs and plants is an increasing challenge as growing population and expanding settlements mean healers have to travel greater distances to find what they need. Thus, there is an urgent need to formulate appropriate strategies for conservation of these traditional uses to revive the sustainable use of these plants.

DISCLAIMER

The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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