

Traditional Use of Medicinal Plants against ENT Diseases by the Tribals of Purulia District, West Bengal, India

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ABSTRACT

Background: Since ancient times natural plant parts were extensively used for the treatment and prevention of Ear, Nose and Throat related diseases. ENT related diseases are caused by various types of micro-organism. Eleven ethnic groups (Bhumij, Birhor, Gond, Sabar, Kharwar, Kurmi, Lodha, Malpaharya, Sardar, Oraon, Santal) present in Purulia district. **Objectives:** This study aims to record herbal plants used in the traditional treatment of ENT related ailments in Purulia district of West Bengal. **Materials and Methods:** Semi-structured questionnaire, interviews with traditional healers and focused group discussion were used to gather ethnobotanical data **Results:** This investigation listed 24 species in 20 plant families that are beneficial for treating ENT disorders in the Purulia district of West Bengal. **Conclusion:** The primary source of information on therapeutic plants is traditional healers. This information has been passed down orally from one generation to the next, but it appears that it is fading from modern society since young people are not interested to continue this tradition. So, the traditional wisdom on ethnobotanicals should be digitized for future references in India.

Keywords: ENT, Ethnobotany, Purulia.

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INTRODUCTION

Herbals have long been used as a key source of products such as food, clothing, medicine and lumber.^[1] Since ancient times, plants have been used as an essential part of indigenous healing systems.^[2] The tribal people live in very remote areas where there has no hospital facility. They are entirely dependent upon the local healers for their primary health care. Local herbal practitioners or healers practice the use of medicinal plants for general people in a very low cost.^[1] More than 53 million tribal people in India who are members of 550 tribal communities under 227 linguistic groups have been recorded. They frequently use the phytoresources of their areas to treat and prevent various illnesses in both domesticated animals and themselves. According to WHO, traditional medicine have been shown to be safe and effective^[2] and 80% of the world population relies on it. There are a lot of people who live in extreme poverty in developing nations and some of them are suffering and even dying because they lack access to medicine and clean water. They have no opportunity for primary health care.^[3] India has 45,000 plant species, among these 15,000 are of flowering plants and 7,000 plant species identified as ethnobotanicals.^[4] In West Bengal, Purulia is a

reliable source of ethnomedicinal plants used as folk remedies.^[5] Folklore and traditional knowledge are currently deteriorating as a result of the destruction of forest covers and the uprooting of tribal populations brought about by industrialization. Therefore, it is very necessary to thoroughly document the knowledge that is currently available for proper application and scientific research.

Human infections are a significant problem and microorganisms such as bacteria and fungi are most common pathogen. The Ear, Nose and Throat (ENT) are important bodily organs that are all closely inter-connected, a problem in one organ can trigger off problems in the other two organs. ENT related diseases are caused by bacteria, fungi, viral and environment factors. Adults and children are affected by ENT infections, significantly disrupt the patients' life.^[6] Antibiotics have helped to decrease ENT infections, it is now believed that excessive and improper usage of antibiotics leads to an increase in antibiotic resistance.^[7] Alternative sources for novel medications are required due to environmental contamination and the rising resistance of ENT infection-related microorganisms.

MATERIALS AND METHODS

Study Area

Purulia, the western most district of West Bengal, lies between 22°60' and 23°50' north latitude and 85°76' and 86°65' east latitude (Figure 1). It has an area of 6259 sq km with an altitude range of 250–700 m. In winter temperature goes down as low as



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7°C, while during summer it reaches up to 45°C. About 1701 mm of rain precipitation occurs annually. Soils have limited water holding capacity, shallow modulated gravely, coarse grained, and good drainage. Top soils are extremely prone to erosion and react acidically (pH 5.5 to 6.2). A huge number of indigenous people live in the district making up around 20% of its overall population. Bhumijis, Birhores, Sabar, Lodhas, Sardar, Santals, Lohar and Oraons are the leading tribal groups in the district. Earlier studies reported that about 210 plant species are utilised by aboriginals in the Purulia district as medicine.^[8]

Data Collection

A thorough field investigation was conducted for the current probe in numerous communities within the Purulia area. The data were gathered using a typical ethnobotanical method.^[9] From July 2021 to October 2022, several field trips were conducted in and around the many villages and markets dispersed throughout the several communities of our research area. After extensive discussion and interviews with various tribal members, particularly elder men and women who were living when their culture was less influenced by modern civilization, detailed ethno botanical information about wild plants was recorded during field surveys. Open-ended interviews were done using a semi-structured questionnaire. The information on medicinal plants, including their local names, components used, preparation methods, and administration methods, was gathered via questionnaires. Informants were requested to visit the field and display the plants they frequently utilized as medicines for ENT-related illnesses. The collected data was written down in a notebook, and the species mentioned by the traditional healers were gathered and taxonomically identified with the help of taxonomists from BSI, Kolkata, herbarium materials, real specimens, journals, floras and from various books available in our college's library.^[10-19]

RESULTS

Ethnobotanicals was enlisted with scientific name and author citation, followed by local name, family, habit, plant part(s) used, method(s) of preparation and mode(s) of administration (Table 1). This study listed 24 plant species belonged under 20 families that are beneficial for treating ENT disorders in the Purulia district of West Bengal (Table 1). Amongst these nine species were mentioned three or more times. The highest number of ethnobotanicals were recorded in Lamiaceae (3 species) followed by families Euphorbiaceae and Rhamnaceae. Each one of these families consists two species. The distribution of habit types and part (s) used were showed in Figures 2-3 respectively. Amongst these 24 species, 54% herbaceous plants are commonly used for medication followed by 17.17% shrubs, 17% trees, 8% vines and 4% climbers (Figure 2). In case parts used leaves (52%) were found to be the most favoured plant parts followed by roots (11.11%), whole plant (5.55%) and barks (5.55%) (Figure 3).

DISCUSSION

The Purulia district is one of the best places to get herbal medicines. The tribal inhabitants of the district have been using herbal remedies since the past and continue to do so. It has been shown that the methods employed to treat the illness varied from one ethnic group to another. This is a result of their various socioeconomic systems, as well as their historic traditional knowledge and beliefs. Their way of life is completely reliant on the environment, and they appear to be living a very traditional life while using only basic technology. Every day more, young people are turning away from the traditional use of medicinal plants. The emphasis of the current study was on the significant and widening knowledge gap between older and younger generations. Compared to younger generations, those over 50 years old are much more knowledgeable about the items made from wild plants.^[20-27] The current study listed 24 angiosperm

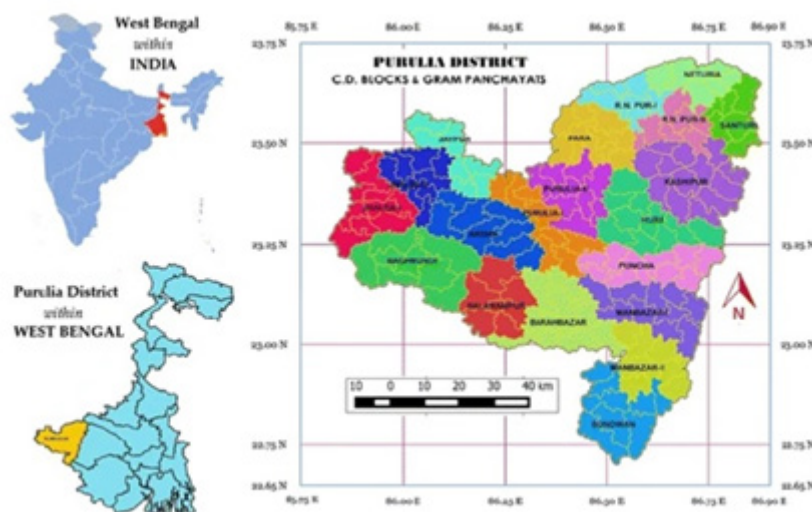


Figure 1: Map of study area.

Table 1: Medicinal Plants used by Various Tribes of Purulia district for Treatment of ENT related diseases.

Sl. No.	Scientific Name	Vernacular Name	Family	Disease	Plant part used	Method of preparation	Method of administration
1	<i>Justicia adhatoda</i> L.	Basak	Acanthaceae	Cg	Leaf	Leaf juice	30 mL leaf juice is taken once daily.
2	<i>Allium sativum</i> L.	Rasun	Amaryllidaceae	Ear pain	Bulb	Boiled in mustard oil	5 mL prepared oil is given once daily.
3	<i>Asparagus recemosus</i> Willd.	Satamuli	Asparagaceae	Cg	Leaf	Crushing	Chewing
4	<i>Cayratia pedata</i> (Wall) Gagnep	Goali-lata	Vitaceae	EI	Leaf	Leaf juice	Lukewarm leaf juice (1 mL) is put twice daily as ear drop.
5	<i>Citrus aurantifolia</i> (Christm. & Panz.) Swing	Kagji	Rutaceae	As	Fruit	Boiling	Taken orally
6	<i>Coccinia grandis</i> (L.) Voigt	Kundri	Cucurbitaceae	EP	Leaf	Leaf juice	1 to 2 drops of leaf juice are given into the ear.
7	<i>Cocos nucifera</i> L.	Narkel	Palmaceae	TI	Root	Liquid preparation is obtained by boiling the root in water.	One cup of decoction root is gargled in the throat twice daily.
8	<i>Colocasia antiquorum</i> Schott	Kachu	Araceae	EI	Leaf	Sap are obtained from the leaves.	Taken orally
9	<i>Crotolaria agatiflora</i> Sensu auct.		Papilionaceae	OM	Leaf	Crushing, some water added.	2 drops are given twice daily.
10	<i>Curculigo orchioides</i> Gaertn.	Talmuli	Hypoxidaceae	NB	Rhizome	Decoction	30 mL is given once daily.
11	<i>Datura metel</i> L.	Dhutra	Solanaceae	EI	Fruit	Boiled in mustard oil.	Two drops are given twice daily.
12	<i>Euphorbia hirta</i> L.	Swarna chapa	Euphorbiaceae	EP	Stem latex	The stem is broken to extract the latex.	One drop latex is given twice daily.
13	<i>Lantana camara</i> L.	Kutus	Verbenaceae	EI	Leaf	Crushing leaves.	Two drops of leaf juice are given twice daily.
14	<i>Leonotis leonurus</i> (L.) R.Br.	Jhatituloshi	Labiatae	TI	Leaf and root	Decoctions are used.	Taken orally to treat throat infections.
15	<i>Mentha longifolia</i> L.	Poudina	Lamiaceae	NI	Leaf	The leaves are dried and powdered.	Dried, powdered leaves used as snuff.
16	<i>Ocimum gratissimum</i> L.	Tulsi	Lamiaceae	Cg	Leaf	Leaf juice.	Leaf juice with honey is taken once daily.

Sl. No.	Scientific Name	Vernacular Name	Family	Disease	Plant part used	Method of preparation	Method of administration
17	<i>Ricinus communis</i> L.	Venna	Euphorbiaceae	Cg	Seed	The seeds are grinded and cooked fatty part.	Taken orally
18	<i>Sarcosnemma acidum</i> (Roxb.) Voigt	Kula thar	Apocynaceae	Earache	Whole plant	Dry power of the plant in the form of decoction.	Taken orally.
19	<i>Sensevieria hycinthoides</i> (L.) Druce	Snake plant	Ruscaceae	EI	Leaf	A cut lead is heated.	The warm leaf juice squeezed into the ear.
20	<i>Sida acuta</i> Burm. F.	Sahar jhati	Malvaceae	NB	Leaf	Leaves are squeezed.	The leaves paste is placed at the nostril.
21	<i>Ventilago denticulata</i> Willd.	Rairui	Rhamnaceae	EI	Root	Root juice.	Two drops are put in the ear.
22	<i>Vitex negundu</i> L.	Nishindha	Lamiaceae	EI	Leaf	A paste of leaves and common salt is fried in mustard oil. It is left for cool and ingredients are allowed to settle down. Onlyoil is collected.	Oil is poured into the infected ear drop by drop.
23	<i>Zingiber officinale</i> Roscoe	Aada	Zingiberaceae	TI	Rhizome	Fresh or dried rhizomes are used.	Fresh and dried rhizomes are chewed to relieve throat infections.
24	<i>Ziziphus jujuba</i> Miller	Khejur	Rhamnaceae	TI	Leaf, bark and root	Warm infusions of roots, bark or leaves are used.	Taken orally to treat sore throat.

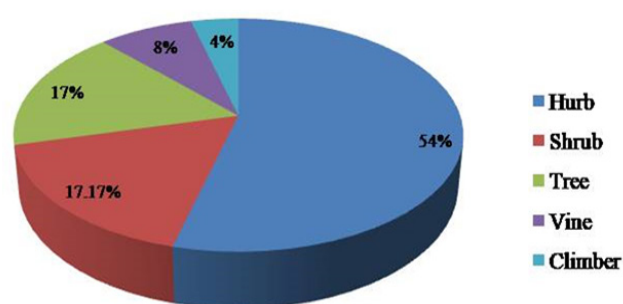


Figure 2: Percentage of habit types of total studied plant specimens used to treat ENT diseases.

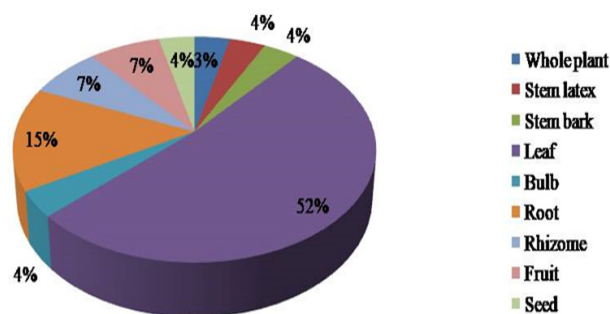


Figure 3: Percentage of plant parts used for medication.

species that were used to make herbal remedies for ENT-related illnesses (Table 1). Most frequently, leaves were utilized as a potential source of medications for the treatment of ENT illnesses. All the identified species may be subjected to scientific analysis for the creation of innovative drugs to treat ENT-related illnesses. *Datura metel* and *Ocimum gratissimum* were the two plant species out of these 24 that were most frequently used in the Purulia district.

CONCLUSION

This study found that nasal haemorrhage, otitis media, cough, tonsillitis, asthma, and sore throat were the most prevalent ENT illnesses treated with conventional therapies. This study also found that nine of the 24 plant species were mentioned three or more times during the field survey and that they are utilized to treat ENT infections in the Purulia district. In this study, non-plant medicines including fat, oils, and animal components are also mentioned. The primary source of information on therapeutic plants is traditional healers. Generally, Local Practitioner or healers practice their own traditional knowledge for medicine formulation and want to conceal it to the patients. This information has been passed down orally from one generation to the next, but it appears that it is fading from modern society due to destruction of forest areas, uprooting of ethnic groups, industrialization and above all in different attitude of younger generation. Utilization of medicinal plants is the main cause of their religious and cultural beliefs, low economic conditions, and a lack of contemporary medical facilities. Therefore, the present record is a preliminary effort to pave the path for developing digitized database in future. A proper planning and management are the need of the age for their sustainable exploitation and conservation. To support the claims of traditional healers, phytochemical research, active component isolation, and pharmacological analysis are desired. More work must be put into capturing locals' traditional knowledge in order to compile a thorough account of it. This will open up new avenues for plant research that are considerably safer, more affordable, and eco-friendly.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest

ABBREVIATIONS

Cg: Cough; **EI:** Ear infection; **As:** Asthma; **EP:** Ear Pain; **TI:** Throat Infection; **OM:** Otitis Media; **NB:** Nasal Bleeding; **NI:** Nose Infection.

SUMMARY

Natural resources play an important role against various ailments. Tribal people from rural area of Purulia district suffer ENT related ailments form long time ago. They are too much dependent upon traditional healers for their primary health care. Present work summarise the investigation ethnobotanicals which are used by traditional healers for the treatment of ENT disease. Traditional knowledge is eroding in Purulia due to lack of proper facilities and disinterest among young generations. So, this documentation may provide a valuable path for further research on ENT disease.

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