

Uses of Local Plant Biodiversity among the Tribal Communities of Jhargram for Treating Fever and other Microbial Infections

Samiran Hota¹, Soumya Nandi¹, Ipsita Banerjee², Annalakshmi Chatterjee³

¹Research Scholars, Laboratory of Food Chemistry & Microbiology, Food & Nutrition Division, Department of Home Science, University of Calcutta, Kolkata, India, ²Faculty, Department of Nutrition, Paramedical College Durgapur, Durgapur, Paschim Bardhaman, India, ³Assistant Professor, Laboratory of Food Chemistry & Microbiology, Food & Nutrition Division, Department of Home Science, University of Calcutta, Kolkata, India.

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Abstract

Background: Forest and its products have played a very significant role in the culture, religion as well as economy of the tribal population throughout the world since time immemorial. Natural flora of a region largely impacts the life of the indigenous people as they depend on forest products in many ways. The traditional knowledge of medical practices of the tribal people is related with the forest ecology as they prepare medicines for different ailments by using medicinal herbs. The present study has been carried out in the Jhargram region to enlist the medicinal plants used by the tribal population for the prevention and treatment of microbial infections and fever.

Methods: The study surveyed knowledgeable informants from different parts of Jhargram district through a semi-structured questionnaire and found 49 plants belonging to 32 families that are used for the treatment of microbial infections and fever.

Conclusion: Decoction of different parts of plants like leaves, stem bark, roots, flowers and fruits are used for the prevention and treatment of fever and microbial infections. Traditional healers like Ojha, Vaidya prescribe them for the treatment of seasonal infections and nutrient deficiencies. This survey illuminates that the tribal people still actively use and believe in medicinal plants for their treatment.

Key word: Ayurveda, Herbalist, Kaadha, Therapeutics, Tribal

Introduction

Plants are one of the most important resources for medicines. The application of plants as medicines is as ancient as prehistoric period. Ayurveda is considered as one of the oldest systems of medical

sciences in the world, which has details of what may be called religious or priestly medicine similar to early Egyptian medicine^[1]. An important aspect of Ayurvedic medicine has been the use of certain plants as medicine in the form of decoction, powder,

Corresponding Author: Annalakshmi Chatterjee, Assistant Professor, Laboratory of Food Chemistry & Microbiology, Food & Nutrition Division, Department of Home Science, University of Calcutta, Kolkata, India.

E-mail: annalakiicb@gmail.com

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or fumigant, or even as amulets. Ayurveda deals with both preventive and curative aspects of life in a comprehensive way considering man to be born in a state of humoral balance that is gradually lost through changes in diet, lifestyle and environment. In India, the curative properties of some herbs in the Rig-veda seem to be the earliest records of use of plants in medicines. The medicinal plants are widely utilized across the world in two different areas of health management; traditional system of medicine and modern system of medicine^[2,3]. According to the WHO, over 80% of the world's population relies on traditional forms of medicine, largely plant based to meet primary health care needs^[4,5].

Drug discovery has achieved lots of success via traditional routes. Historically, the majority of new drugs have been generated from natural products^[6]. Natural products, especially those from terrestrial plants and microbes, have long been a traditional source of drug molecules. Morphine, artemisinin, aspirin, quinine, digoxin, curcumin, reserpine and taxol are the 'poster children' for the power and promise that bioactive molecules can proffer. Plant based natural products subservient to such roles are not sparse in the recorded history of human endeavor^[7,8]. Exploitation of natural sources for the development of traditional medicinal preparations, and also of bioactive molecules, leads and therapeutic agents has acquired a time-tested reputation^[8,9]. Out of an estimated 250,000 – 350,000 plant species identified so far, about 35,000 are used worldwide for medicinal purposes. Of the various natural sources examined, plants proved to have high potential and yielded maximum number of commercially viable therapeutic agents^[7,10].

Ethnomedicine deals with the study of traditional medicinal treatment practiced by different ethnic groups or indigenous people for curing diseases and illness and also address the healing practices^[11]. According to WHO 'traditional medicine is the sum total of the knowledge, skills, and practices based on the theories, beliefs, and experiences indigenous to different cultures, whether explicable or not, used in the maintenance of health as well as in the prevention, diagnosis, improvement or treatment of physical and mental illness'^[12]. In India there are large numbers of tribal communities living in forested

areas whose members lead a primitive life without modern amenities and are entirely dependent upon plants and plant products for their livelihoods. India has the world's largest tribal population (8.6%), also known as Adivasi (original inhabitants) and are major lyreside in the states of Jharkhand, Odisha, West Bengal in northeast India, each with its own customs and cultures^[13,14]. From the past century due to its rapid extension the allopathic medicine system becomes principal medicine system in modern society in India. But till now there are many ethnic groups like Santal, Munda, Bhumij, Lodha, who are very close to nature, use large number of local plants for treating different types of diseases^[15]. In different tribal communities the great wealth of traditional knowledge regarding the medicinal as well as therapeutic value of plants transmitted orally from generation to generation. Most tribal families sip kaadha like tea, whose preparation is similar to the process followed elsewhere in India's heartland. But the composition of the tribal kaadha is more enriched and also provides superior immunity and within two or three days, it works in the body as preventive and curative medicine^[16].

However, due to industrialization, traditional knowledge and folklore are degenerating day by day. Therefore, it has become emergent to document the information available for scientific investigation and future application before they disappear from the society as the present generation of this population are not much interested in carrying forward the traditional knowledge. Herbal medicines are a great source of immunity for the tribes, as Vaidya prescribes them to combat seasonal viral, bacterial, fungal infections and nutrient deficiencies. The present study only focuses on the age-old remedies for fever and few microbial infections but no other diseases. Though there are other common ailments the tribes frequently suffer from but those are not considered in this study.

The aim of this ethnobotanical survey is to document the medicinal plants commonly used by the tribal population of Jhargram district for the prevention and treatment of flu and fever. Another purpose of this survey is to study existing literature to understand the role of traditional use of medicinal plants in improving immunity and the treatment of

flu and fever by the different tribal communities such as Santals, Sabar, Mundas in the Jhargram subdivision of Paschim Midnapur district of West Bengal.

Materials and Method

Source of Data

During field survey information regarding the plant usages have been collected from the traditional healers (Ojha, Vaidya, Kaviraj), local tribal medicine men and women served as the informants, and in some cases aged persons and the forest dwellers those have profound knowledge about plants are also used as informants. The informants were selected based on ethnicity, age and knowledge about the medicinal plants. All the information collected was cross checked with the information provided by other informants of the same tribal group. The questions mainly focus on the locally available medicinal plants used for the treatment of fever and different microbial infections. Information about the data collected from different tribal communities are enumerated by the vernacular name followed by scientific names of the plants, family name, useful parts and specific usages. The data was collected during the months of June to December in the year 2023. Informants were assured that the data collected from this study would only be used for research purposes. Reported plants were recognized on account of literature and taxonomic workout [17].

Area of Study

The survey area selected for the study is the western part of Paschim Medinipur. It consists of Jhargram municipality and eight community development blocks like Binpur-I, Binpur-II, Jamboni, Jhargram, Gopiballavpur-I, Gopiballavpur-II, Nayagram and Sankrail. The general ground configuration is having gentle slope towards east. Hilly terrain occurs in the north-western portion of the Division. The rainy season spreads over June to September due to south-west monsoon and highest rainfall occurs in July and August. The maximum temperature during project was 43°C and minimum was 19°C. The soil is red, laterite, shallow depth gravels, low

in organic matter, nitrogen and high in phosphorus and potassium. The climate in this region is sub-humid and dry^[18]. Extensive field survey is based on the dry deciduous forest areas in the Jhargram subdivision for gathering ethnomedicinal value of different plants used by the different ethnic tribes' like- Santals, Lodhas, Mundas etc. for treating gastro-intestinal disorders.

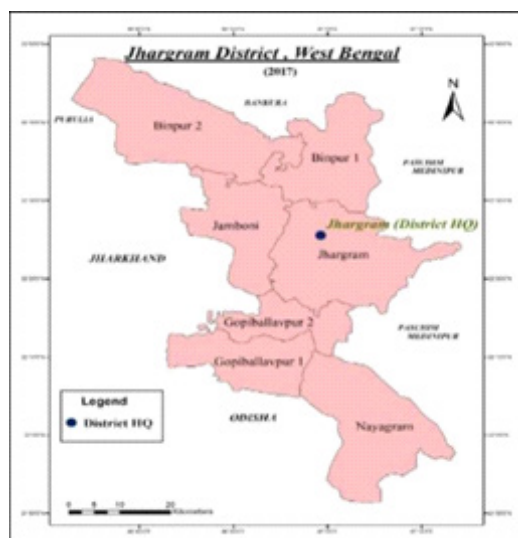


Figure 1: Map of Jhargram District

Results and Discussion

In the present study, the medicinal plants used for the prevention and treatment of microbial infections and fever of Jhargram district are enumerated in Table 1, in which local names are arranged followed by scientific name, family, habit, parts of the plant used and their uses along with medicinal properties. A variety of medicinal plants are used by the tribal population for the treatment of different ailments, among which 49 plants belonging to 32 families are documented based on their uses in the treatment of fever and other infections. The uses column represents the response of the interviewees. The documented plants are extensively used by the tribal population of West Bengal for the prevention and treatment of different physiological disorders. There are many evidence-based literatures are available on the uses and medicinal properties of the enlisted plants [19,20,21]. Images of respective plants are attached for better understanding.

Sl No	Local Name	Scientific Name	Family	Habit	Parts	Uses
1	Basak	<i>Adhatodavasica</i> Nees.	Acanthaceae	S	Leaf	Leaf extract mixed with honey has great medicinal value against bronchitis and asthma and fever
2	Chhatim	<i>Alstoniascholaris</i> R. Br.	Apocynaceae	T	Stem Bark	Bark is used in malarial fever
3	Kalmegh	<i>Andrographis paniculata</i> Nees	Acanthaceae	H	Leaf	Fresh leaf extracts in empty stomach for curing fever
4	Ishermul, Iswarmul, Bhedi janetet (Santali)	<i>Aristolochia indica</i> Linn	Aristolochiaceae	C	Root Leaf Whole Plant	Root is used for fever, Asthma Fresh leaf extract is used for Cold and cough
5	Nim	<i>Azadirachta indica</i> A. Juss.	Meliaceae	T	Leaf	Extract of leaves are used for fever
6	Rosun	<i>Allium sativum</i> L.	Amaryliidiaceae	H	Bulb	Garlic preparations play a great role to treat cold and cough
7	Khair	<i>Acacia catechu</i>	Mimosaceae	T	Stem bark	Stem bark is used as anantipyretic
8	Bans	<i>Bambusa arundinaceae</i> willd (Retz)	Poaceae	T	Stem bark	A siliceous secretion is used in asthma, cough and debilitating diseases
9	Kanchan katmauli	<i>Bauhinia racemosa</i>	Caesalpineaceae	T	Leaf	It is highly effective against fever and cough
10	Akanada	<i>Calotropis procera</i> R.Br	Asclepiadaceae	S	Leaf	Leaves paste is useful for to cure intermittent Fever
11	Bandarlathi	<i>Cassia fistula</i>	Caesalpineaceae	T	Root	Root is useful for fever and common cold
12	Aporajita	<i>Clitoriaternatea</i>	Fabaceae	C	Root	Root extract mixed with honey is active against bronchitis, asthma and fever
13	Ghentu	<i>Clerodendrum visosum</i> Vent	Verbenaceae	S	Leaf	Leaves are used for malaria fever
14	Telakucha	<i>Coccinia grandis</i> (Linn.) Voigt	Cucurbitaceae	H	Fruits	Fruits are useful for fever, bronchitis and asthma
15	Kansira	<i>Commelina benghalensis</i> L.	Commelinaceae	H	Whole part	Useful in treatment of fever

Continue.....

16	Haldi	<i>Curcuma longa</i> L.	Zingiberaceae	H	Rhizome	Rhizome is used to treat cough and fever
17	Sissoo	<i>Dalbergia sissoo</i> Roxb.	Fabaceae	T	Leaf	Leaves are used to cure and fever
18	Kendu tree	<i>Diospyros melanoxylon</i> Roxb	Ebenaceae	T	Bark	Bark is effectively used against Is Malaria fever
19	Gurri Mokka	<i>Euphorbia hirta</i> L.	Euphorbiaceae	H	Aerial parts	The plant extract is used to treat bronchitis, asthma and cough. The plant plays a significant role against dengue fever
20	Manasa	<i>Euphorbia nerifolia</i> L	Euphorbiaceae	S	Leaf	The leaf extract plays a great role, cold and cough
21	Dumur	<i>Ficus hispida</i>	Moraceae	T	Fruit	Used to treat tofever
22	Gamar	<i>Gmelina arborea</i> Roxb.	Verbenaceae	T	Root Stem Bark	The root and bark are effective against piles, urinary discharge and fever
23	Kurchi tree	<i>Holarrhena antidysenterica</i> (L.) Wall	Apocynaceae	T	Leaf	Leaf of kurchi and <i>Cyperus rotundus</i> are paste to treat Malaria fever
24	Kolmisak	<i>Ipomoea aquatica</i> Forssk.	Convolvulaceae	H	Whole plant	The whole plant extract is used to treat jaundice, biliousness, bronchitis, and liver problem and fever
25	Bagbherenda	<i>Jatropha curcas</i> L.	Euphorbiaceae	S	Leaf	The latex plays a great role in fever
26	Swetadrona	<i>Leucas aspera</i> (willd) Link.	Lamiaceae	H	Whole plant	The whole plant is used as antipyretic
27	Leda, Kukurchita, Garur	<i>Litsea glutinosa</i> (Lour.) C.B. Robins. Syn. <i>L. sebifera</i> Pers.	Lauraceae	T	Roots Stem bark	Roots are used in Bronchitis. Stem bark is used in fever
28	Swarnachampa	<i>Michelia champaca</i> Linn.	Magnoliaceae	T	Stem	The bark of stem is used to treat fever
29	Lajjabatilata	<i>Mimosa pudica</i> L	Fabaceae	H	Roots	Roots are used in fever
30	Alkushi shrub	<i>Mucuna pruriens</i> (L.) Dc.	Fabaceae	C	Roots	The root is used against fever
31	Pudina	<i>Metha arvensis</i> L.	Lamiaceae	H	Leaf	Leaves are used in fever

Continue.....

32	Bakul	<i>Mimusopselengi</i> Linn	Sapotaceae	T	Flower	Dried flowers are used to reduce strong fever
33	Ghikalla	<i>Momordica dioica</i> Roxb	Cucurbitaceae	C	Root	The root is used to treat high fever
34	Shiuli	<i>Nyctanthes arbor-tristis</i> L	Oleaceae	S	Stem Bark	Bark is used in malaria fever and rheumatic joint pain
35	Tulsi	<i>Ocimum sanctum</i> L	Lamiaceae	H	Leaf	Leaves are useful against cold and cough. Bronchitis
36	Amrul	<i>Oxalis corniculata</i> L	Oxalidaceae	H	Leaf	Leaves use for curing cold, cough, influenza, fever
37	Nasabhaga	<i>Peristrophecalyculata</i> Nees.	Acanthaceae	S	Leaf	The leaves are used in fever
38	Khajuur	<i>Phoenix sylvestris</i> Roxb.	Areaceae	T	Fruit	Fruits are used to cure fever
39	Kalomorich	<i>Piper nigrum</i> L.	Piperaceae	C	Seed	Seeds are used to treat cold, cough and fever
40	Madhabilata Madhumanjari	<i>Quinqualis indica</i> Linn	Combretaceae	C	Fruit	It is effective against Fever
41	Sarpagandha	<i>Rauwolfia serpentina</i> Benth. ex Kurz	Apocynaceae	S	Root	The root is used against Malaria fever
42	Ritha	<i>Sapindusmukorossi</i> Gaertn	Sapindaceae	T	Leaf	Young leaves are used in fever
43	Kakmachi	<i>Solanum nigrum</i> L.	Solanaceae	H	Root	Root is effective against asthma and whooping cough
44	Kantikari	<i>Solanum surattense</i> Burm. f.	Solanaceae	H	Leaf	Leaves juice is highly used for cough and cold
45	Haritaki	<i>Terminalia chebula</i> Retz	Combretaceae	T	Fruits	Fruits are used to cure cough
46	Gulan-cha	<i>Tinospora cordifolia</i> (Willd) miers ex Hook f Thoms	Menispermaceae	C	Leaf	Leaf juice is used in fever
47	Choto Kuksima	<i>Vernonia cinerea</i> Less.	Asteraceae	H	Whole plant	The whole plant is used in the treatment of fever
48	Nishinda	<i>Vitex negundo</i> Linn.	Verbenaceae	T	Leaf	Leaves are used in and fever
49	Ada	<i>Zingiber officinalis</i>	Zingiberaceae	H	Rhizome	Rhizomes are used for cold and cough

A statistical analysis about the medicinal plants of the Jhargram district belonging to different habits and parts of plants used are presented in Figure 2 and 3. From Figure 2 it can be concluded that trees (18) are predominant in this region followed by herbs

(16), shrubs (8) and climbers (7). One can depict from Figure 3 that leaves are majorly used plant part for the treatment of microbial infection and fever followed by root, stem bark, fruit etc.

Table 1: Enumeration of different medicinal plants used for microbial infection and fever of Jhargram district

Medicinal plants as mentioned in Table 1:



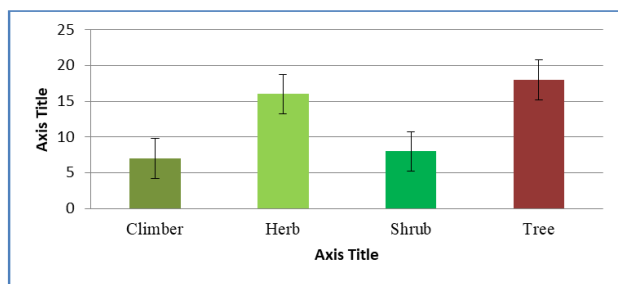


Figure 2: Analysis of Different habits of Plant Species

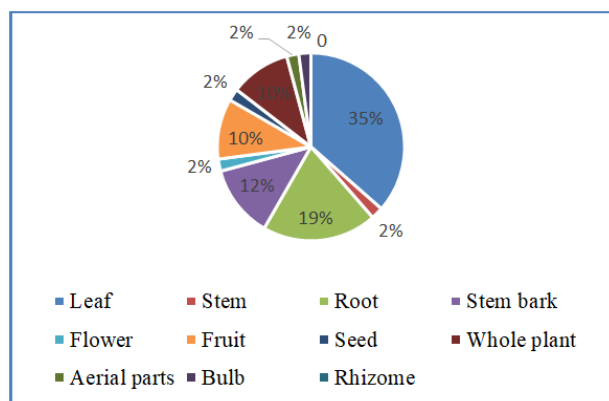


Figure 3: Different Parts of Plant Species Used for Medicine

Conclusion

The present study deals with 49 plant species belonging to 32 different families used by the tribal population of Jhargram district for the prevention and treatment of microbial infection and fever. It includes trees, shrubs, herbs, climbers etc. The knowledge about the use of plants by the tribes appears to be unknown or little known outside their community. The rural area of this district which was our study area is an important source of traditional medicines. More information may be explored from the people residing in the remote villages in this district. The traditional healers are the main source of knowledge on medicinal plants. This knowledge has been transmitted orally from generation to generation; however, it seems that it is disappearing from the modern society since younger people are not interested to carry on this tradition. It is also observed that some traditional plants in that area are fast eroding. The conservation efforts are needed by plantation and protection of these plants with maximum participation of local people. Medicinal plants play an important role in providing knowledge to the researchers in the field

of ethnobotany and ethnopharmacology. There is a wide use of ethnobotanical science for understanding how indigenous knowledge can be used on the utilization of natural resources. The acceptance of plant-based remedies is increasing day by day. So, this research article will attract the attention of ethnobotanists, Phyto chemists and pharmacologists for further critical investigation of medicinal plants present in the districts of West Bengal, India.

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