Journal of Pharmacognosy and Phytochemistry
Available online at www.phytojournal.com

E-ISSN: 2278-4136
P-ISSN: 2349-8234
Impact Factor (RJIF): 6.35
www.phytojournal.com
JPP 2025; 14(5): 237-245
Received: 05-07-2025
Accepted: 09-08-2025

Dimple Shinde
Department of Pharmacy, Government College of Pharmacy, Chhatrapati Sambhajinagar, Maharashtra, India

Shweta Saboo
Department of Pharmacognosy, Government College of Pharmacy, Chhatrapati Sambhajinagar, Maharashtra, India

Arvind Dhabe
Department of Botany, Dr. Babasaheb Ambedkar Marathwada University, Chhatrapati Sambhaji Nagar, Maharashtra, India

Corresponding Author:
Dimple Shinde
Department of Pharmacy, Government College of Pharmacy, Chhatrapati Sambhajinagar, Maharashtra, India

Exploring indigenous ethnomedicinal plants used by tribals of Manipur region

Dimple S Shinde, Shweta Saboo and Arvind Dhabe

DOI: https://www.doi.org/10.22271/phyto.2025.v14.i5d.15579

Abstract
This article contains survey, investigate, gather data, and document the plant species associated with traditional ethnomedical knowledge for treatment of various diseases in Manipur, North East India, and to evaluate these traditional practices. Field visit Torbung Bangla, Loklaiphai in the geographical precincts of Churachandpur district; Singda Kuki village in Gamphazol subdivision of Senapati district; Kangpokpi hilly areas; Goukam veng; Bishnupur hilly areas; and Phayeng in the Imphal district of Manipur region and Semi-structured questionnaires were used to gather informations from tribal people of selected region. Traditional treatment ways were studied along with their corresponding ethnomedicinal terminologies. Plant species identified from fields, healers' private collections and home gardens. 55 plants with their ailment category, parts used and route of administration graphical representation showcased and presented in table format. Method of preparation includes most commonly Paste (24%), hot infusion (19%) and Cold infusion (13%). Informants Consensus factor (ICF) used to determine the relation between no. of disease category treated to the no. of plants species used for specific category. Dermatological problem and bites has ICF 0.94 highest value indicates use of specific plants for specific illness by large no. of population. While Psychological issues, cancer and tumour category has lowest ICF 0.01 indicates use of specific plants for specific illness by low or limited no. of population. Many plants species mentioned in the paper are still used by tribal community. Plant species mentioned in this paper sugguests further future study should be conduct in aspects of phytochemical evaluation, characterization and pharmacological investigation. Most of the traditional ethnomedicinal knowledge are still preserved and actively used by traditional healers in daily life for treatment

Keywords: Manipur, ethnomedicinal plants, traditional ethnomedicinal knowledge, traditional healers

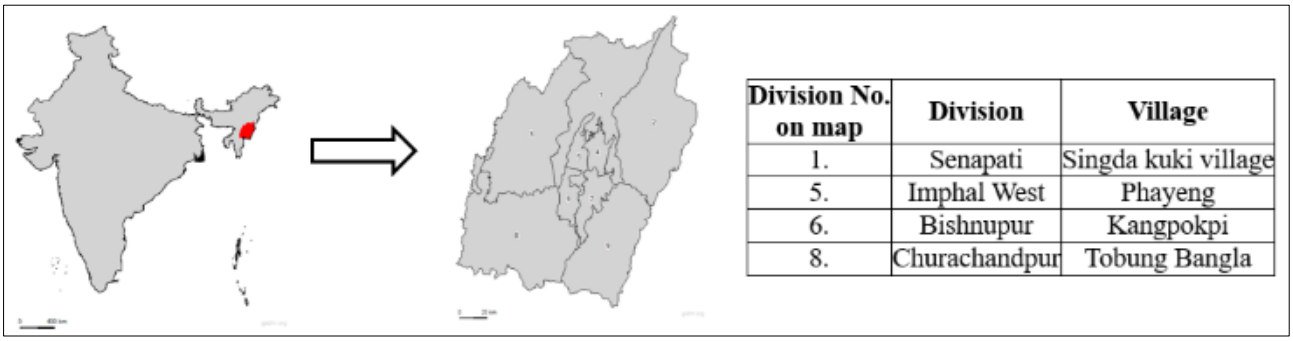
1. Introduction
The north-eastern states of India have been graced various valuable medicinal plant species with ethnomedicinal applications. It is also regarded as one of the world's most abundant collections of various plants, including fragrant and medicinal ones [1]. Since ancient times, traditional medicinal plants has been widely used for disease treatment. This is one of the most widely available and inexpensive techniques of treating several diseased conditions [2]. Indigenous medicinal plants have been traditionally used in various ailment for centuries and have gained popularity in recent years[3]. Bio-folklore is prominent in communities due to the ancient connection between people and their traditional knowledge of bioresources [4]. The indigenous tribal people lived in remote, mountainous regions distinctive heritage, thus they exploited plants in multiple ways for the treatment of various ailments [5]. An estimated 53.8 million tribal people, representing over 550 groups, live on the Indian subcontinent. It is believed that the majority of tribal territories make up approximately 15% of the nation's total land area.

The adverse effects of synthetic, allopathic, and contemporary medicine have led to a significant increase in the use of medicinal herbs in recent decade [6]. Additionally, the expensive expense of modern treatment has contributed to this trend. Developing countries can opt for affordable, effective, and safe traditional herbal medication [7, 8].

A wide variety of medicinal plants are likely to be found in the territory of Manipur. Manipur inhabitants treat illnesses with a wide variety of medicinal plant species. In order to treat most of the common illnesses, plant's various parts *viz*; rhizome, tuber, fruit, root, flower, leave and bulb used in ethnomedicinal formulation by the tribal people of Manipur, both individually and as polyherbal mixtures [9]. Manipur is a hilly state in the northeastern corner of India. It extends between (23049′ and 25044′ N latitude and between 92059′ and 95045′ E longitudes. The state covers an area of 22,327 Sq.km. The state is bounded on the north by Nagaland,

on the east by Myanmar, on the south by Mizoram and Chin Hills of Myanmar and on the west by Cachar district of Assam. The major portion of the State consists of ranges of hills with a north and south facing aspects. The central portion of the state is occupied by the oval-shaped "Imphal Valley" with an area of about 1,545 Sq. km [10].

The Meiteis community is part of one of Manipur's largest ethnic groups. Their three main religions are Christianity, Sanamahism, and Hinduism [11]. Among the tribal communities still vying for official recognition of their ethnic names are aimol, anal, angami, chiru, chothe, gangte, hmar, kabui, koirao, koireng, kom, lamkang, lushai, maipuri muslims, mao, maram, maring, monsang, moyon, paite, purum, ralte, sema, simte, sukte, tangkhul, thadou, vaiphei, and zou [12, 13]. My review paper's objectives are to investigate, gather data, and exhibit Manipur's tribal people' traditional ethnomedical knowledge.



Division No. on map	Division	Village
1.	Senapati	Singda kuki village
5.	Imphal West	Phayeng
6.	Bishnupur	Kangpokpi
8.	Churachandpur	Tobung Bangla

Fig 1: Survey Area conducted in Manipur with Division Manipur region

2. Aim of the study

To survey, investigate, gather data, and document the plant species associated with traditional ethnomedical knowledge for treatment of various diseases in Manipur, North East India, and to evaluate these traditional practices.

3. Material and method

Interviews

During the survey, ethnobotanical information and indigenous knowledge of traditional healers and tribal peoples concerning the usage of local plants for medicinal purposes were gathered through oral questionnaires and in-person interviews [14]. Interviews were carried out on the customary application of several ethnomedicinal herbs by Manipur's folk populations. Through semi-structured questionnaires and open interviews, informants provided their customary knowledge [15]. The primary focus of the questionnaires was the traditional beliefs and ethnobotanical uses of local native plants by local tribal groupings. Total 60 inhabitants of the localities were interviewed among them male is 35 and females are 25. Six subject specialist and expert in plant study were connected during survey and they are localities, belonging communities too. Information about 56 plants of 33 families used to treat 54 different disorders are gathered. Four of these were chosen for further phytochemical and ethnomedicinal research.

3.2 Study area

The field visit and survey covers the following areas: Torbung Bangla, Loklaiphai in the geographical precincts of Churachandpur district; Singda Kuki village in Gamphazol subdivision of Senapati district; Kangpokpi hilly areas; Goukam veng; Bishnupur hilly areas; and Phayeng in the Imphal district of Manipur.

Table 1: Socio-Demographic analysis of informants (Tribal villagers)

Sr. No.	Factor	Tribal Informants category	Total no. of informants Interviewed	Percentage
1	sex	Male	35	58.33%
		Female	25	41.66%
2	Age	Upto 30 years	9	15%
		31 to 45	13	21.7%
		46 to 60	23	38.33%
		61 and above	15	25%
3.	Occupation	Traditional healers	18	30%
		House wives	10	16.6%
		Subject experts	07	11.7%
		Adult tribals	13	21.7%
		Farmers	12	20%

3.3 Quantitative statistical analysis

3.3.1 Informants consensus factor

Informants Consensus factor used to determine the relation between no. of disease category treated to the no. of plants species used for specific category. Informant consensus factor (ICF) was determined using the formula [15].

$[ICF=N_{ur} - N_t / N_{ur - 1}]$

Where, N_{ur} refers to each disease category total number of use (citation) reports and N_t refers to number of plant species used to each ailment category by informants. The ICF should rages between (0-1). 1 is the highest value indicates use of specific plants for specific illness by large no. of population. And 0 is the lowest value indicates lower specificity of species to the specific disease category [16].

3.3.2 Use report

U_r is each mention of use for a plant by an informant as a single use record. Another use for specific plant mentioned by informant considered to be two citation records by informant [17]. Since the focus was on determination of relative homogeneity of use-reports, we compared the number of use-reports U_r to the number of species in each category of use N_t [18] (see Table 3)

4. Result and Discussion

4.1 Ailments category

The classification of disorders into several groups was contingent upon the use of ethnomedicinal herbs by Meitei and other tribal people as traditional healers. Topical illnesses, external injuries, cuts, bites, and skin infections, respiratory tract disorders, urinary tract infections, gynaecological issues, circulatory system disorders, bone dislocation, dental issues, hepato-biliary system issues, digestive system issues, menstrual excessive blood loss, and issues related to the nervous and psychological systems are the most common categories. Skin infections and infestations (32%) were more common than neuro-muscular problems (2%), in hilly areas. Immature deaths are caused by a lack of medical facilities and skilled contemporary practitioners, that's why ethnomedical practice is essential to preventing in unpredictable circumstance

4.2 Method of preparation

Inhabitants of the highland Manipuri region have become accustomed to using herbal remedies in their natural form. There are many different ways that plants are utilized to cure different illnesses. Direct application to wounds, cuts, and bites is most common. Direct application, decoction, hot and cold infusions, dried powder, and paste are examples of indigenous methods of usage. Some of the traditional methods used by tribal people and traditional healers to make preparations included boil in water (28%), ash (48%), rupturing layers to release scent (21%), heating the material slightly (3%), and dietary fruits and vegetables.

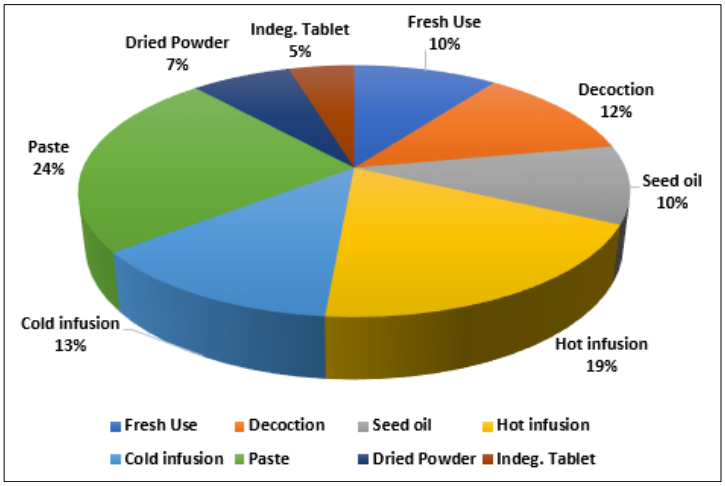


Fig 2: Percentage of types of Indigenous plants preparation used by traditional healers and tribal people

4.3 Parts of plants used in the ethnomedicinal formulation preparation

The habitat is comprised of vegetation such as grass, trees, shrubs, and plants. The plant has active pharmacological phytoconstituents in several parts that are highly effective against a variety of diseases. Indigenous medical systems encourage the use of all plant parts since they have been shown to be beneficial in treatment. Traditional healers in the Manipur region uses a variety of plant materials, including whole plants, roots, stems, bark, fruits, flowers, seeds, latex, gum/resin, tubers, and rhizomes, in the preparation of traditional indigenous medicines. Certain therapeutic plants are often used as vegetables in diets. Following graphical depiction are as:

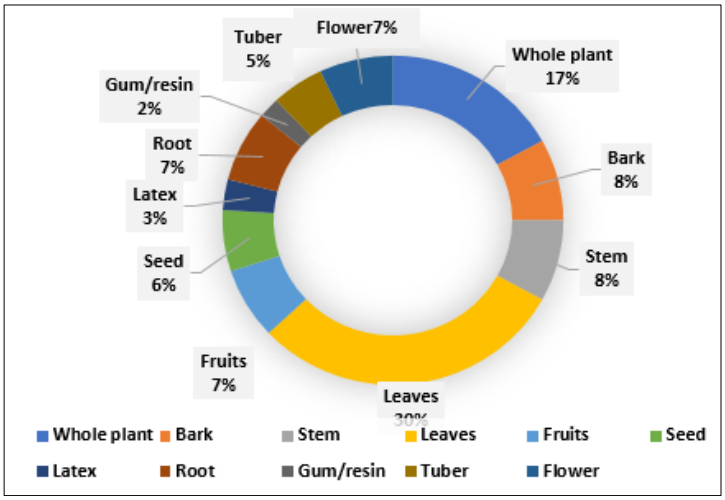


Fig 3: Graphical representation of ethnomedicinal formulation preparation

Table 2: Ethnomedicinal plants used by tribal people of Manipur

Sr. No	Botanical name	Family	Vernacular name	Part used	Preparation	Uses	Reference
01	*Acacia fernesiana* (L.) Willd	*Leguminosae*	*Chingonglei hangampal*	Bark, seed and leaves	Decoction	Decoction and paste is applied in ringworm, anti-inflammatory, Antioxidant, tuberculosis.	[19]
02	*Acacia nilotica* (L.) Delile	*Legumin Osae*	*chigonglei*	Bark, gum and leaves	Decoction	Throat infection and tooth pain. Extract of pod used in urinogenital diseases. Fresh leaves infusion used in diarrhoea and dysentery. Gum is best antisyptic and astringent property.	[20, 21]
03	*Ageratum conyzoides*	*Asteraceae*	*Khongjai napi*	Leaves	Paste	Leaf paste is styptic and vermifuge	[22]
04	*Alangium Chinense (Lour.) Harms*	*Alangiaceae*	*Kokan, Kokal*	Leaves, roots	paste	acroanesthesia, hemostasis, fractures, snake bites, circulatory issues,toxicity, contraception, rheumatic arthritis and wound healing	[4, 23]
05	*Alisma plantago aquatica L.*	*Alismataceae*	*Kouthum*	seeds	Powder	Useful in treatment of beri-beri, Leprosy	[24]
06	*Allium hookeri Thwaites*	*Amaryllidaceae*	*Maoi napakpi*	Whole plant	Juice	Blood pressure, ulcer	[15]
07	*Allium sativum Linnaeus*	*Amaryllidaceae*	*chanam*	bulb	Juice	Used in the treatment of Rheumatic pain, watery diarrhoea, blood thinning agent, menopause	[25]
08	*Amaranthus viridis L.*	*Amaranthaceae*	*Chengkruk*	shoo	Juice, Paste	Emollient, Antioxidant, Anticancer, Antiinflammatory, wound healing, acne and skin treatment.	[26]
09	*Argemone Mexicana L.*	*Papavaraceae*	*Yenkhumit*	Whole plant	Juice	Applied locally in fresh injuries, wounds and boils. as an emollient, decoction is used in fresh wound and skin itching	[27]
10	*Artemisia Nilagirica (C.B. Clarke) pamp.*	*Asteraceae*	*Laibakngou*	Leaves	Infusion	Stomachic, haemostatics, antiseptic	[28]
11	*Artocarpus heterophyllus*	*Moraceae*	*Theibong*	Fruit pulp	Pulp	Applied to cure boils	[29]
12	*Asparagus Filicinus Buch.-Ham. ex D. Don*	*Asparagaceae*	*Nirshing*	Tuber	Decoction	small pox, menstrual problems, tonic	[30]
13	*Bixa Orellana L.,*	*Bixaceae*	*Ureirom (Urucum)*	Leaves	Juice	In jaundice, laxative, bronchitis, wound healing.	[31]
14	*Blumeopsis flava*	*Araceaeste*	*Hao-chak*	Leaves	Paste	Leaf paste prevent wounds from worsening, decoction in bronchial congestion, cold, cough and effective in skin diseases. Leaf with mustard oil used for dropsy and back pain.	[32]
15	*Bombax ceiba Linnaeus*	*Malvaceae*	*Terea*	Bark and fruit	Juice	Female disease, Asthma, small pox, boils	[33]
16	*Cayaponia laciniosa*	*Curcubitaceae*	*Kwak-thabi*	Tender twig and leaves	Extract	Tender twig extract is used in cuts, wounds, skin infection and burs. boiled leaves are eaten and used in inflammation	[34]
17	*Chenopodium album L.*	*Amaranthaceae*	*Monshaobi*	Leaves	Decoction	Decoction of leaf is recommended for leukoderma	[35]
18	*Clerodendrum infortunatum L.*	*Lamiaceae*	*Kuthap manbi*	Leaves	Paste	Leaf paste is useful for skin diseases, to cure cough and dysentery	[36]
19	*Commelina benghalensis L.*	*Commelinaceae*	*Wangden Khoibi*	Whole plant	Decoction	Leaf decoction paste is applied in boils and burns	[37]
20	*Costus speciosus (J. Koen ex Retz Smith)*	*Zinziberaceae*	*kebu, keyu, kostam, kudavam*	rhizome	Powder	Used to treat inflammation, bronchitis, rheumatism, and fever.	[38]
21	*Crassocephalum crepidioides (Benth.)*	*Asteraceae*	*Tera-paibi*	Whole plant	Fresh	Used in wound healing	[39]
22	*Cucurbita pepo Linnaeus*	*Cucurbitaceae*	*Mai*	Seeds	Roasted seeds	Used as vermifuge, Anthalmentics	[40]
23	*Curcuma longa*	*Zingiberaceae*	*Yaingang*	Rhizome	Paste	Paste applied over wounds	[41]
24	*Cuscuta Reflexa roxb.*	*Convolvulaceae*	*uri sanamacha*	whole plant	Decoction	Plant decoction used to bath against skin infection, laxative, purgative	[42]
25	*Cynodon Dactylon (L.) Pers.*	*Poaceae*	*Tingthou*	Whole plant	Juice	Used as blood coagulant, antidiabetic, antibacterial, anti-inflammmatory.	[43, 44]
26	*Cyperus rotundus L.*	*Cyperaceae*	*Sembangkouthum*	Rhizome, tubers	Decoction	Used in the treatment of diabetes, inflammation, liver diseases	[45]
27	*Eugenia praecox Roxb.*	*Myrtaceae*	*Shileima*	Seeds and fruits	Seed powder Bark paste	Seed in diabetes, Respiratory infections, Bark as haemostatic	[46]
28	*Euphorbia odoratum*	*Asteraceae*		Leaves	Paste	oil is styptic and wound healing	[47]
29	*Ficus Religiosa L.*	*Moraceae*	*Peepal, Sana Khongnang*	Leaves, latex, tender	Juice, Paste	Antiseptic, antibacterial, antiulcer Astringent on cuts and wound, skin diseases	[48]

				branches, fruits			
30	*Goniothalamus sesquipedalis (Wall.) Hook. f. & Thomson*	*Annonaceae*	*Leikham*	Whole plant	Decoction	Drunk as remedy of stomach pain	[49, 50]
31	*Goniothalamus sesquipedalis (Wallich) Hooker f. & Thomson*	*Annonaceae*	*Leikham / Ahom*	Leaf	Juice	Purification of blood, Antiviral	[51]
32	*Houttuynia cordata Thunberg*	*Saururaceae*	*Aithanglou*	Whole plant	Decoction	Excessive menstrual discharge, goitre, Chronic skin diseases, Diuretic and Anti-inflammatory	[51]
33	*Iris sibirica L.*	*Iridaceae*	*Kombirei*	Rhizome	Decoction	Brain coolent and hysteria	[52]
34	*Isodon Ternifolius D. Don kudo*	*Lamiaceae*	*Khoiju*	Leaves	Decoction	Antimicrobial, Antifungal, skin infection and skin diseases.	[53]
35	*Kaempferia rotunda Linnaeus*	*Zingiberaceae*	*Yai thamna monbi*	rhizome	Liquid paste	Inlfammation, bolis, wounds, epilepsy and acidity	[54]
36	*Litsea khasiana Meisn*	*Lauraceae*	*Litsea hookeri*	roots	Powder	In the treatment of chronic bronchitis root powder given along with piper nigrum and suagr	[55]
37	*Magnolia hodgsonii (Hook. F & Thoms.) H. Keng.*	*Magnoliaceae*	*U-thambal angagba*	Bark	Powder	Rheumatism, diaphoretic	[52]
38	*Mikania micrantha Kunth*	*Asteraceae*	*Oori Hingchabi*	Whole Plant	Infusion	Used in skin infecton, Antimalarial, Diuretic	[56]
39	*Mukia maderaspatana (Linnaeus) M. Roemer*	*Cucurbitaceae*	*Lamthabi*	Whole plant	Juice	Jaundice and kidney infection	[57]
40	*Musa paradisia Linnaeus*	*Musaceae*	*Changlong*	stem	extract	Anti-diabetic activity, antiulcer activity, wound healing, hair growth promoter, diuretic, analgesic, and anti-allergic activity	[58]
41	*Mussaenda roxburghii Hooker*	*Rubiaceae*	*Hanu-rei*	Petaloid floral bracts	Paste	The leaf paste is applied on wounds for blood clotting, Applied to suppurate boils, used as source of vegetables.	[59]
42	*Oryza sativa L.*	*Poaceae*	*Phou*	seeds	Cooked rice ad charcoal powder	Applied to external areas of fractured bone for rapid and quick healing	[60]
43	*Paederia foetida Linn*	*Rubiaceae*	*Oinam*	Leaves, roots, whole plant	Paste	Thick mixture of Root paste and salt is applied in ringworm,	[61]
44	*Passiflora edulis Sims.*	*Passifloraceae*	*Sapthei*	Root and leaves	Juice	To reduce clotting of blood and induce abortion	[62]
45	*Phyllanthus emblica*	*Euphorbiaceae*	*Gooseberry Heikru*	Fruits, barks, leaves	Fruit juice, leaves Paste	Bark paste applied in injuries, UV protectant, skin anti-aging, antidiabetic, anti-inflammatory	[63]
46	*Phyllanthus emblica L.*	*Phyllanthaceae*	*Heikru*	fruits	Juice	Used as brain and nerve tonic in blood disease	[64]
47	*Phyllanthus fraternus G. L. Webster*	*Euphorbiaceae*	*Chakpa heikru angouba*	leaf	Juice	Fever and cough, Jaundice, blood coagulation, as antioxidants in skin aging	[65]
48	*Podophyllum hexadrum Royle*	*Podophyllaceae*	*Sielkhupdon*	stem	Eaten raw	Stem is eaten raw against piles	[66]
49	*Psidium guajava*	*Myrtaceae*	*pungton*	Fruits, young twigs	Pulp	Ripe fruits applied over wounds, Anti skin aging, diabetes,	[67]
50	*Psidium guajava Linnaeus*	*Myrtaceae*	*Kolthei*	young twigs	raw twig eaten	As antidiarrhoeic, antidysenteric, eaten to cure stomachache	[68]
51	*Saccharum officinarum Linnaeus*	*Poaceae*	*Kolchu*	Stem	Extract	Extract used to purify blood, cures liver and kidney infections.	[69]
52	*Schima wallichi (DC)*	*Theaceae*	*Usoi*	Bark, Leaves, Fruits	Infusion	Infusion of bark is used in injury while fresh twigs extract are applied on spider bite and skin infection	[70]
53	*Solanum violaceum Ortega*	*Solanaceae*	*Chinlengbi*	flower	juice	Relieve toothache, ati-microbial, anti-bacterial and used in skin infection	[71]
54	*Tamarindus indica Linnaeus*	*Caesalpiniaceae*	*Mangge*	fruits	Infusion, paste,	In the treatment of liver diseases, for snake bite fruit seeds placed on cut area	[72]
55	*Terminalia Myriocarpa Heurck and Muell*	*Combretaceae*	*Tolhao*	Leaves	Paste	Skin diseases	[73]

Table 3: Informants Consensus factor

Ailment category	No. of medicinal plants used	U_r	ICF
Dermatological problems and bites	33	153	0.94
Respiratory tract problems	4	19	0.83
Oro-dental problems	2	34	0.89
Kidney related problems	3	10	0.77
Blood clotting, purification of blood and B.P.	3	7	0.66
Gynaecological, menstruation related problems	3	17	0.80
Stomach ulcer and Stomach ache	3	08	0.71
Gastro-Intestinal (abdominal) problems	4	21	0.85
Hepato-liver diseases	3	13	0.72
Bone fracture and dislocation	3	18	0.81
Psychological issues	1	1	0.01
Nervous system related issues	3	5	0.34
Cancer and tumour	1	1	0.01

GPS Photos of actual Survey on field work

Image B. (from right to left) Ms. Dimple Shinde, Dr. Deshworjit Singh Ningombam, local Traditional healer, Mr. Sukhadev Shinde and Mrs.Babita Shinde. Acknowledging other images consisting of Local traditional healers of Manipur

Conclusion

Plants plays an indispensable role in the lives of the tribal indigenous people of Manipur. Years of ethnomedicinal practices proves true potential of plants against wide range of ailments. Method of preparation includes most commonly Paste (24%), hot infusion (19%) and Cold infusion (13%). Dermatological problem and bites has ICF 0.94 highest value indicates use of specific plants for specific illness by large no. of population. While Psychological issues, cancer and tumour category has lowest ICF 0.01 indicates use of specific plants for specific illness by low or limited no. of population. Phytopharmaceutical evaluation and pharmacological investigation should be carry out on this plants. More importantly most of the traditional knowledge are still preserved and actively used in daily life for healing in natural ways in villages on ground level of knowledge and this can be better replacement to allopathic synthetic medication having large side effects to patients.

Conflict of interest

There is No Conflict of Interest.

Acknowledgement

Thankful to Prof. Potsangbaam Kumar Singh Senior Professor and Research Officer, Department of Plant Physiology, Manipur University, Imphal and Dr. Deshworjit Singh Ningombam Taxonomist and Assistant Professor, Department of Botany, Jadonang Memorial College, Noney, Manipur for helping in survey period in selected region.

List of abbreviations

ICF	Informants Consensus factor
N_t	refers to number of plant species used to each disease category by informants
N_{ur}	refers to each disease category total number of use (citation) reports
Sq.km	Square kilometer
U_r	Use report

References

1. Duary R, Haokip N. traditionally used unexplored ethnomedicinal plants by Thadou-Kuki tribe of Churachandpur district, Manipur, India. Journal of Complementary Medicine Research. 2021;12(2):163-170. doi:10.5455/jcmr.2021.12.02.19
2. Saxena M, Saxena J, Nema R, Singh D, Gupta A. Phytochemistry of medicinal plants. Journal of Pharmacognosy and Phytochemistry. 2012;1(6):168-182.
3. Laishram J, Dey M. Evaluation of plants used in traditional medicine in Bishnupur district of Manipur, Northeast India. Journal of Himalayan Ecology and Sustainable Development. 2021;16:170-182.
4. Paudel B, Sharma TPP, Zhang Y. Traditional ecological knowledge of resource management in Nepal. In: Traditional Ecological Knowledge and Resource Management in Asia. Springer; 2023. p.119-136. doi:10.1007/978-3-031-16840-6_8
5. Thakur SK, Pal R, Pandey P, Havelikar U. A systematic review on several therapeutics' activities and recent trends on *Moringa oleifera* a traditional medicinal plant. International Journal of Pharmaceutical Sciences and Research. 2024;13(2):136-142.
6. Chanda S. Importance of pharmacognostic study of medicinal plants: An overview. Journal of Pharmacognosy and Phytochemistry. 2014;2(5):69-73.
7. Malik S. Biotechnology and production of anti-cancer compounds. Springer; 2017. doi:10.1007/978-3-319-53880-8
8. Soni A, Sosa S. Phytochemical analysis and free radical scavenging potential of herbal and medicinal plant extracts. Journal of Pharmacognosy and Phytochemistry. 2013;2(2):22-29.
9. Singh Yumnam R, Onita Devi C, Singh Abujam S, Chetia D. Study on the ethnomedicinal system of Manipur. International Journal of Pharmaceutical and Biological Archives. 2012;3(3):587-591.
10. Sharma HM, Sharma BM, Devi AR. Ethnomedicinal uses of monocotyledonous plants by the Meiteis of Manipur. In: Ethnobotany and Medicinal Plants of India and Nepal. 2003.
11. Hodson TC. The native tribes of Manipur. Journal of the Anthropological Institute of Great Britain and Ireland. 1901;31:300-309.
12. Watt G. The aboriginal tribes of Manipur. Journal of the Anthropological Institute of Great Britain and Ireland. 1887;16:346-370.
13. Devi P, Suresh Kumar P. Traditional, ethnic and fermented foods of different tribes of Manipur. Indian Journal of Traditional Knowledge. 2012;11(1):70-77.
14. Ghorbani A, Langenberger G, Feng L, Sauerborn J. Ethnobotanical study of medicinal plants utilised by Hani ethnicity in Naban River Watershed National Nature Reserve, Yunnan, China. Journal of Ethnopharmacology. 2011;134(3):651-667. doi:10.1016/j.jep.2011.01.011
15. Heinrich M, Ankli A, Frei B, Weimann C, Sticher O. Medicinal plants in Mexico: Healers' consensus and cultural importance. Social Science & Medicine. 1998;47(11):1859-1871. doi:10.1016/S0277-9536(98)00181-6
16. Bibi T, Ahmad M, Bakhsh Tareen R, *et al.* Ethnobotany of medicinal plants in district Mastung of Balochistan province-Pakistan. Journal of Ethnopharmacology. 2014;157:79-89. doi:10.1016/j.jep.2014.08.042
17. Collins S, Martins X, Mitchell A, Teshome A, Arnason JT. Quantitative ethnobotany of two East Timorese cultures. Economic Botany. 2006;60(4):347-361. doi:10.1663/0013-0001(2006)60[347:QEOTET]2.0.CO;2
18. Etkin NL. Plants and indigenous medicine and diet: Biobehavioral approaches. Routledge; 2019. p.1-336. doi:10.4324/9781315060385
19. Claudia DP, Mario CH, Arturo NO, *et al.* Phenolic compounds in organic and aqueous extracts from *Acacia farnesiana* pods analyzed by ULPS-ESI-Q-oa/TOF-MS. *In vitro* antioxidant activity and anti-inflammatory response in CD-1 mice. Molecules. 2018;23(9):2186-2207. doi:10.3390/molecules23092386
20. Riasat N, Jadoon M, Akhtar N, *et al.* Polyphenolic characterization and biological assessment of *Acacia nilotica* (L.) Willd. ex Delile: An *in vitro* and *in vivo* appraisal of wound healing potential. Journal of Ethnopharmacology. 2024;325:117842. doi:10.1016/j.jep.2024.117842
21. Al-Rajhi AMH, Qanash H, Bazaid AS, Binsaleh NK, Abdelghany TM. Pharmacological evaluation of *Acacia nilotica* flower extract against *Helicobacter pylori* and human hepatocellular carcinoma *in vitro* and in silico.

Journal of Functional Biomaterials. 2023;14(4):237-251. doi:10.3390/jfb14040237
22. Thorat VH, Ghorpade SS, Patole T. *Ageratum conyzoides* Linn.: A review. International Journal of Pharmaceutical Sciences and Research. 2018;5(4):213-218. doi:10.13040/IJPSR.0975-8232.IJP.5(4).213-18
23. Xiao T, Cheng X, Huang J, Guo Z, Tao L, Shen X. Bioactive substances inhibiting COX-2 and cancer cells isolated from the fibrous roots of *Alangium chinense* (Lour.) Harms. RSC Advances. 2023;13(5):3346-3363. doi:10.1039/d2ra06931h
24. Adams M, Gschwind S, Zimmermann S, Kaiser M, Hamburger M. Renaissance remedies: Antiplasmodial protostane triterpenoids from *Alisma plantago-aquatica* L. (Alismataceae). Journal of Ethnopharmacology. 2011;135(1):43-47. doi:10.1016/j.jep.2011.02.026
25. Mostafa RM, Moustafa YM, Mirghani Z, AlKusayer GM, Moustafa KM. Antioxidant effect of garlic (*Allium sativum*) and black seeds (*Nigella sativa*) in healthy postmenopausal women. SAGE Open Medicine. 2013;1:205031211351750. doi:10.1177/2050312113517501
26. Sahoo H, Sahoo S, Mishra K, Sagar R. Evaluation of the wound-healing potential of *Amaranthus viridis* (Linn.) in experimentally induced diabetic rats. International Journal of Nutrition, Pharmacology, Neurological Diseases. 2015;5(2):50-55. doi:10.4103/2231-0738.153792
27. Dash GK, Murthy PN. Evaluation of *Argemone mexicana* Linn. leaves for wound healing activity. Journal of Natural Products and Plant Resources. 2011;1(1):46-56. Available from: http://scholarsresearchlibrary.com/archive.html
28. Suresh J, Mahesh NM, Ahuja J, Santilna KS. Ethnopharmacological investigation of medicinal plants. International Journal of Pharmaceutical Sciences Review and Research. 2011;1(2):97-104.
29. Periyanayagam K, Karthikeyan V. Wound healing activity of the leaves of *Artocarpus heterophyllus* Lam. (Moraceae) on *ex-vivo* porcine skin wound healing model. Innovare Journal of Life Sciences. 2013;1(1):22-27. Available from: https://www.researchgate.net/...
30. Rajbhandari M, Mentel R, Jha PK, *et al.* Antiviral activity of some plants used in Nepalese traditional medicine. Evidence-Based Complementary and Alternative Medicine. 2009;6(4):517-522. doi:10.1093/ecam/nem156
31. Vilar DDA, Vilar MSDA, Moura TFADLE, *et al.* Traditional uses, chemical constituents, and biological activities of *Bixa orellana* L.: A review. The Scientific World Journal. 2014;2014:857292. doi:10.1155/2014/857292
32. Panmei R, Gajurel PR, Singh B. Ethnobotany of medicinal plants used by the Zeliangrong ethnic group of Manipur, northeast India. Journal of Ethnopharmacology. 2019;235:164-182. doi:10.1016/j.jep.2019.02.009
33. Singh AK, Raghubanshi AS, Singh JS. Medical ethnobotany of the tribals of Sonaghati of Sonbhadra district, Uttar Pradesh, India. Journal of Ethnopharmacology. 2002;81(1):31-41. doi:10.1016/S0378-8741(02)00028-4
34. Rauthan S, Mishra D, Mishra R. Establishing the correct identity of *Jalakumbhi* in Ayurveda: A critical analysis based on various literatures. Ayushdhara. 2022;9(3):102-113. doi:10.47070/ayushdhara.v9i1.846
35. Said A, Naeem N, Siraj S, *et al.* Mechanisms underlying the wound healing and tissue regeneration properties of *Chenopodium album*. 3 Biotech. 2020;10(10):439-453. doi:10.1007/s13205-020-02436-6
36. Gouthamchandra K, Mahmood R, Manjunatha H. Free radical scavenging, antioxidant enzymes and wound healing activities of leaves extracts from *Clerodendrum infortunatum* L. Environ Toxicol Pharmacol. 2010;30(1):11-18. doi:10.1016/j.etap.2010.03.005
37. Misra A, Srivastava A, Srivastava S, Rawat AKS. Simultaneous reverse-phase HPLC determination of major antioxidant phenolics in *Commelina benghalensis* L. tubers. Acta Chromatogr. 2016;28(4):541-554. doi:10.1556/1326.2016.28.3.08
38. Pawar V, Pawar P. *Costus speciosus*: An important medicinal plant. Int J Sci Res. 2014;3(7):28-33. http://www.ijsr.net/archive/v3i7/MDIwMTQ4ODU=.pdf
39. Can NM, Thao DTP, Gil G. Wound healing activity of *Crassocephalum crepidioides* (Benth.) S. Moore leaf hydroethanolic extract. Oxid Med Cell Longev. 2020;2020:2483187. doi:10.1155/2020/2483187
40. Feitosa TF, Vilela VLR, Athayde ACR, *et al.* Anthelmintic efficacy of pumpkin seed (*Cucurbita pepo* Linnaeus, 1753) on ostrich gastrointestinal nematodes in a semiarid region of Paraíba State, Brazil. Trop Anim Health Prod. 2012;45(1):123-127. doi:10.1007/s11250-012-0182-5
41. Tabassum N, Hamdani M. Plants used to treat skin diseases. Pharmacogn Rev. 2014;8(15):52-60. doi:10.4103/0973-7847.125531
42. Vijikumar S, Ramanathan K, Devi BP. *Cuscuta reflexa* Roxb.: A wonderful miracle plant in ethnomedicine. Indian J Nat Sci. 2011;1(9):676-683.
43. Al-Snafi PAE. Chemical constituents and pharmacological effects of *Cynodon dactylon* - A review. IOSR J Pharm. 2016;6(7):17-31.
44. Biswas TK, Pandit S, Chakrabarti S, Banerjee S, Poyra N, Seal T. Evaluation of *Cynodon dactylon* for wound healing activity. J Ethnopharmacol. 2017;197:128-137. doi:10.1016/j.jep.2016.07.065
45. Watson H, Cockbain AJ, Spencer J, *et al.* Exploring the anticancer properties of eicosapentaenoic acid in colorectal cancer. Prostaglandins Leukot Essent Fatty Acids. 2016;115:60-66. doi:10.1097/JU.0000000000002945
46. Garcia MO, Allend SO, da Cunha KF, Hartwig DD. *Myrtaceae* family: An update on plant-derived bioactive compounds against bacteria that affect the respiratory system. Rodriguesia. 2023;74:e01212022. doi:10.1590/2175-7860202374029
47. Abuzaid H, Amin E, Moawad A, *et al.* Liquid chromatography high-resolution mass spectrometry analysis, phytochemical and biological study of two *Aizoaceae* plants: A new kaempferol derivative from *Trianthema portulacastrum* L. Pharmacogn Res. 2020;12(3):24-30. doi:10.4103/pr.pr
48. Lepcha C, Sharma B. Diversity of *Ficus* L. (*Moraceae*) and its uses in Sikkim Himalayas (India). Int J Bot Res. 2021;11(2):39-56.
49. Kilmer PD. Review article. Journalism. 2010;11(3):369-373. doi:10.1177/1461444810365020
50. Thongbam A, Thongbam J. *Goniothalamus sesquipedalis*: Ethnomedicine to natural pharmaceutical. Int J Pharm Pharm Sci. 2024;2(6):708-726. doi:10.5281/zenodo.11620859

51. Singh SK, Singh RKB, Sharma HM. Ethnobotanical studies in relation to certain traditional culture of Chothe tribe in Bishnupur district of Manipur, India. Pleione. 2015;9(1):144-159.
52. Devi KY, Devi MH, Singh PK, Devi CY. Ethnomedicinal plants used by the Meitei community of Manipur. Int J Appl Res. 2017;3(4):462-471.
53. Qin L, Zhou Z, Huang H, Wang J, Chen Y, Nong R. Network pharmacology and molecular docking reveal the mechanism of *Isodon ternifolius* (D. Don) Kudo against liver fibrosis. Res Square Preprint. Published online 2021. doi:10.21203/rs.3.rs-1088473/v1
54. Tomba Singh T. Plants used in the treatment of piles by the scheduled caste community of Andro Village in Imphal East District, Manipur (India). J Plant Sci. 2014;2(3):113-117. doi:10.11648/j.jps.20140203.13
55. Kayang H, Kharbuli B, Myrboh B, Syiem D. Medicinal plants of Khasi hills of Meghalaya, India. Acta Hortic. 2005;675:75-80. doi:10.17660/ActaHortic.2005.675.9
56. Jyothilakshmi M, Jyothis M, Latha MS. Antidermatophytic activity of *Mikania micrantha* Kunth: An invasive weed. Pharmacogn Res. 2015;7(Suppl 1):S20-S25. doi:10.4103/0974-8490.157994
57. Sarkar A. Non-timber forest produces and their conservation in Buxa Tiger Reserve, West Bengal, India [dissertation]. University of North Bengal; 2014. Available from: https://ir.nbu.ac.in/bitstream/123456789/1547/21/272109.pdf
58. Mahadeva Rao US, Mohd KS, Muhammad A, Ahmad BA, Mohamad M, Ali RM. Taxonomical, phytochemical and pharmacological reviews of *Musa sapientum* var. *paradisiaca*. Res J Pharm Technol. 2014;7(11):1356-1361.
59. Tag H, Jeri L, Tsering J. Higher plant diversity in Pakke Wildlife Sanctuary and Tiger Reserve in East Kameng District of Arunachal Pradesh: Checklist-I. Pleione. 2012;6(1):149-162.
60. Jang WS, Seo CR, Jang HH, *et al.* Black rice (*Oryza sativa* L.) extracts induce osteoblast differentiation and protect against bone loss in ovariectomized rats. Food Funct. 2015;6(1):265-275. doi:10.1039/c4fo00836g
61. Upadhyaya S. Screening of phytochemicals, nutritional status, antioxidant and antimicrobial activity of *Paederia foetida* Linn. from different localities of Assam, India. J Pharm Res. 2013;7(1):139-141. doi:10.1016/j.jopr.2013.01.015
62. Jiménez AM, Sierra CA, Rodríguez-Pulido FJ, González-Miret ML, Heredia FJ, Osorio C. Physicochemical characterisation of gulupa (*Passiflora edulis* Sims. fo. *edulis*) fruit from Colombia during the ripening. Food Res Int. 2011;44(7):1912-1918. doi:10.1016/j.foodres.2010.11.007
63. Ahmad B, Hafeez N, Rauf A, *et al. Phyllanthus emblica*: A comprehensive review of its therapeutic benefits. S Afr J Bot. 2021;138:278-310. doi:10.1016/j.sajb.2020.12.028
64. Gul M, Liu ZW, Iahtisham-Ul-haq, *et al.* Functional and nutraceutical significance of amla (*Phyllanthus emblica* L.): A review. Antioxidants. 2022;11(5):916. doi:10.3390/antiox11050816
65. Kalam MA, Malik AH, Ganie AH, Butt TA. Medicinal importance of Papra (*Podophyllum hexandrum* Royle) in Unani system of medicine. J Complement Integr Med. 2021;18(3):485-490. doi:10.1515/jcim-2020-0178
66. Begum S, Hassan SI, Ali SN, Siddiqui BS. Chemical constituents from the leaves of *Psidium guajava*. Nat Prod Res. 2004;18(2):135-140. doi:10.1080/14786410310001608019
67. Gonçalves FA, Andrade Neto M, Bezerra JNS, *et al.* Antibacterial activity of guava, *Psidium guajava* Linnaeus, leaf extracts on diarrhea-causing enteric bacteria isolated from seabob shrimp, *Xiphopenaeus kroyeri* (Heller). Rev Inst Med Trop Sao Paulo. 2008;50(1):11-15. doi:10.1590/S0036-46652008000100003
68. Rosales R. Hypocholesterolemic effect of mature leaf extract of sugarcane, *Saccharum officinarum* (Linnaeus, 1753), in induced rats. ASEAN J Sci Eng. 2021;1(3):199-206. doi:10.17509/ajse.v1i3.38784
69. Bhattacharjee M, Sema YV, PratimSarma M. Study on multipotent medicinal aspects of *Schima wallichii* (bark) from Nagaland, NE India. Asian J Pharm Clin Res. 2019;12(3):155-158. doi:10.22159/ajpcr.2019.v12i3.29288
70. Raju GS, Moghal MR, Dewan SMR, Amin MN, Billah M. Characterization of phytoconstituents and evaluation of total phenolic content, anthelmintic, and antimicrobial activities of *Solanum violaceum* Ortega. Avicenna J Phytomed. 2013;3(4):313-320. http://www.ncbi.nlm.nih.gov/pubmed/25050288
71. McConnell K. Tamarind (*Tamarindus indica* L.). Econ Bot. 2005;59(4):419. doi:10.1663/0013-0001(2005)059[0419:dfabre]2.0.co;2
72. Boulis AG, El Zalabani SM, Ghaly NS, *et al.* Secondary metabolites from the leaves of *Terminalia myriocarpa* and their α-glucosidase inhibitory potential. J Appl Pharm Sci. 2024;14(3):244-251. doi:10.7324/JAPS.2024.170866