https://doi.org/10.33472/AFJBS.6.5.2024. 7505-7531

AfricanJournalofBiological Sciences

Exploring the Ethno-Medicine Landscape: A Survey of Medicinal Plants in Sagalee, Arunachal Pradesh, India

Dakme Papi[1*], Christina Narzary[2], Taba Puka[3], Priyanka Das[4], Ananga Mohan Das[5], Jangrang Techi[6], Yuvraj Kumar[7], Makbul Hussain Chowdhury[8]

1. School of Pharmacy, Arunachal University of Studies, Namsai, Arunachal Pradesh-792103, India
2. Regional College of Pharmaceutical Science, Sonapur, Assam-782402, India
3. School of Pharmacy, Arunachal University of Studies, Namsai, Arunachal Pradesh-792103, India
4. Regional College of Pharmaceutical Science, Sonapur, Assam-782402, India
5. Department of Pharmacy, Himalayan University, Arunachal Pradesh-791111, India
6. School of Pharmacy, Arunachal University of Studies, Namsai, Arunachal Pradesh-792103, India
7. School of Pharmacy, Arunachal University of Studies, Namsai, Arunachal Pradesh-792103, India
8. SAS International Model School, Borhawor, Hojai, Assam-782439, India

*__Corresponding author:__ Dakme Papi, Assistant Professor, School of Pharmacy, Arunachal University of Studies, Namsai, Arunachal Pradesh-792103, India
E-mail: dakmepapi@gmail.com

Article History
Volume 6, Issue 5, 2024
Received: 15 May 2024
Accepted: 22 May 2024
doi:*10.33472/AFJBS.6.5.2024. 7505-7531*

Abstract:

This ethno-medicine survey explores the rich diversity of medicinal plants in Sagalee, Papum Pare, Arunachal Pradesh, India. Recognizing the historical significance of plant-derived medicines, this study delves into the traditional knowledge of over 500 medicinal plant species within the region. The ethnobotanical investigation aims to understand the distribution of plant uses based on gender, age, and education, shedding light on the integral role these plants play in the cultural and economic fabric of Arunachal Pradesh. The study encompasses 28 ethnic groups, each possessing unique insights into plant utilization for therapeutic purposes, highlighting the cultural importance of traditional medicine. Employing a retro-prospective observational design, the research gathers data through house-to-house interviews from a sample size of 500 individuals over six months. Preliminary results indicate varying patterns of traditional medicinal plant usage, showcasing the dynamic interplay between cultural practices and healthcare systems in the region. Further analysis promises insights into the sustainable integration of medicinal plants within Arunachal Pradesh's socio-economic landscape.

Keyword: Ethno-Medicine, cultural practice, Medicinal herb, Therapeutic uses, Plant-derived medicines, and Cultural practices.

Introduction

Throughout human history, medicinal plants have been vital to the advancement of civilization. Medicinal plants have long been valued as a source of medicine in almost every culture on Earth. Many modern medications are derived from medicinal plants, which are thought to be rich sources of traditional medicines [1]. Medicinal herbs have been used for thousands of years to treat illnesses, preserve food, add flavour, and stop disease outbreaks. The biological traits of plant species that are used all over the world are typically caused by the secondary metabolites that the plants generate. Plant-derived compounds regulate the growth of microorganisms in various conditions [2]. The use of medicinal plants is based on experimental research conducted over hundreds to thousands of years, and some of the supposed health benefits of plants have been shown to be unreliable. Commiphora species (myrrh), Cedrus species (cedar), Glycyrrhiza glabra (licorice), Papaver somniferum (poppy juice), and Cupressus sempervirens (cypress) oils were among the materials used in the earliest reports of cuneiform carvings on clay tablets, which date from approximately 2600 BC [3,11]. These materials are still used today to treat ailments ranging from colds and coughs to inflammation and parasite infections. The active ingredients of medicinal plants are arranged in their storage organs, which include their roots, leaves, flowers, seeds, and other plant parts. These ideas are helpful to humanity in the management of illness.

Over 500 different types of medicinal plants have been identified in Arunachal Pradesh. They have the ability to treat illnesses and possibly even boost the state's economy. It will create opportunities for industrial application, processing, packaging, marketing, and agriculture. Arunachal Pradesh, which is largest state of North East also known as “Land of Rising Sun”, India having Geographical Area of 83,743 sq.km, and altitude: 100-7000m approximately. In addition to being the primary source of medicinal substances, plants are crucial to the survival of the ethnic and tribal tribes in Arunachal Pradesh [4, 8]. The World Health Organization states that “herbal medicines meet the health needs of millions of people living in rural parts of developing countries, which accounts for around 80% of the world's population”. There are 28 primary ethnic groups in the state, and each one has developed unique methods for harnessing the resources found in nature and possesses a varied range of native, original knowledge about medicinal herbs. Each tribe has a distinctly distinctive concept of how to use these resources. Their faith in the healing properties of their traditional native medicine has increased as a result of the utilization of these plants for therapeutic purposes. The only way that the knowledge and beliefs were passed down from generation to generation was orally.

Aim: To study the Use of medicinal plants by people of Sagalee, Arunachal Pradesh.

Objectives:

1. Distribution of uses of medicinal plant according to Gender
2. Distribution of uses of medicinal plant according to age
3. Distribution of uses of medicinal plant according to Education
4. Growth habits of the reported medicinal plant species
5. Morphological plant parts used in the preparation of traditional medicine
6. Forms of medication used in herbal healthcare system.

Methodology

Study Design:

- A retro-prospective observational study was performed on the people of Sagalee, Arunachal Pradesh to study the uses of medicinal plants.

Study Site

- The study was carried out in various area of Sagalee, Arunachal Pradesh.

Sources of Data

- By conducting house-to-house interviews.

Sample size

- 500 samples.

Duration of study

- The study was performed for duration of 6 months.

Statistical Analysis

The collected were inputted on Microsoft excel sheet, the data were included scientific name of the plant, family name, local name of plant, habit, ethno-medicinal uses, plant parts used as medicine and phytochemicals.

Table 1: Traditionally used medicinal plants in Sagalee, Arunachal Pradesh, India

Sl No	Scientific Name	Source or Family	Local name	Habit	Ethno-medicinal uses	Plant parts used	Phytochemicals reported	Ref
1	*Clerodendron glandulosum*	Lamiaceae	Pattoi	Shrub	For treatment of high blood pressure and bowel troubles, obesity	Fruits and leaves	Ascorbic acid, polyphenols, steroids, saponin, flavonoids etc	Ref 1
2	*Dillenia indica*	Dilliniaceae	Ahutenga	large shrub/ medium tree	Fruit decoction is applied to scalp for curing dandruff, wound healing, bone fracture, anti-diarrhoea	Fruit pulp and leaves	Diterpene namely dipoloicacid, kaempferol, quercetin, betulin, betulinic acid, mallicacid, free amino acid	Ref 1
3	*Piper betel*	Piperaceae	Ritik rhinik	Vine (Creeper)	Leaf after rubbing with mustard oil and warming over burning charcoal is applied to belly during stomach ache of children	Leaf	Nicotinic acid, thiamine, starch, eugenol, eugenylacetate, camphene,cineole, caryophyllene, D-limonene, terpinen-4-ol.	Ref 1,2
4	*Curcurma longa*	Zingiberaceae	Longobom	Herb	Used in bone fracture, anti	Leave, rhizom	Curcuminoides which includes	Ref 2,5

					tumour, in cardiovascular disease, anti bacterial	e	curcumin, demethoxycurcumin, resin, atlantone, turmerone, bisdemethoxycurcumin, sugars.	
5	*Alstonia scholaris*	Apocynaceae	Tayesange	Tree	Treatment of ulcer, swelling, latex is given during abdominal pain after delivery	Leaves, root, bark, latex	Flavonoids, alkaloids, proanthocyanidines, echitenine and echitamine	Ref 2,7
6	*Ageratum conyzoides*	Asteraceae	Pashpaya	Weed	wound healing, anti-helmintic	Leaf, stem	Chromene, chromone, monoterpenes(β-pinene, linalools, sabinene), sesquiterpene, flavonoides, alkaloids	Ref 2,10
7	*Artemesia nilagirica*	Asteraceae	Tipintarin	Shrub	In headache and stomach pain, used as vegetable, to get relief from asthma	Leaves	Glycosides, tannins, phenols, terpenoides, saponins, amino acids, alkaloids, essential oil.	Ref 3,8
8	*Centella asiatica*	Apiaceae	Ngulyikheq	Shrub	Fresh plant juice with honey is	Whole plant	Pentacyclictriterpenoids, asiaticoside,	Ref 3.2

					given in stomach ulcer, leprosy		brahmoside, Asiatic acid, brahmic acid etc	
9	*Musa sapientum*	Musaceae	Nyoro kopa	flowering plant with herbaciou s growth	Boiled unripe fruits are given during dysentery, diabetes, in anaemia	Fruits and leaves	Saponins, potassium, protein, calcium, sodium, iron etc	Ref 3,12
10	*Moringaoleifera*	Moringaceae	Sajana	Tree	In liver disorder, water purification etc	Pods, leaves	Catechol tannins, gallic tannin, anthraquinones, reducing	Ref 3,16
11	*Piper longum*	Piperaceae	Saturiki	climber	Treat joints pain, gout, paralysis, improve immune and digestive	Whole plant	Piperene 3%,rutin4%, sabinene, β-caryophyllene, chavicin, phellandrene,	Ref 4 ,1
12	*Artemisia indica*	Asteraceae	Laglin	herb	Treat stomachic, diarrhea, dysentery, and abdominal pains	Leaves, young seedlings and roots	Sesquiterpenes, 7510omitin(15%),β-elemene, linalool,limonene,1,8-cineole,sabinene, arcurcumene(1.3%), δcadinene(1.3%)	Ref 4, 3
13	*Chromolaena*	Asteraceae	Telimbabo	shrub	Wound healing, skin	Roots and	α-pinene,β-pinene,	Re

	odoratum				diseases, diuretic, analgesic, anti-microbial, relieve pain	leave	geijerone,cubebol, epicubebol, camphor, limonene, himachalol, β-caryophyllene, 5 phenyl derivatives.	f 4 , 3
14	*Colocasia esculenta*	Araceae	Yaksar	aquatic tropical Plant	Fever and cough,petiole juice is used as styptic and stimulant	Leaves, stem and rhizome	Apigenin, luteolin, anthocyanin, minerals, steroids, sitosterol, starch	Ref 4,8
15	*Erigeron bonariensis*	Asteraceae	Daglentao	herb	Vapour of leaves is inhaled in sinus problem	Leaves	Stigmasterol, freideline, quercitrin, caffeicacid, the aromatic glycoside called erigoside G, acrylic acid	Ref 4,17
16	*Solanum nigrum*	Solanaceae	Byako	weed	Vomiting, diarrhoea,also used to cure tuberculosis, reduce mild abdominal pain	Berries, leaves, shoots	Pinoresinol,syringaresinol, medioresinol, 7511omiting 75117511i, tetracosanoic acid and β sitostero	Ref 5
17	*Tacca integrifolia*	Dioscoraceae	Tagoon	herb	skin disease, leprosy, wound healing,	Rhizome s, tubers	Diosgenin, costanogenin, taccalin, betulinic acid,	Ref 5,13

					stomach pain, dysentry		ntriacontanol, amino acids like valine, leucine	
18	*Zanthoxylum armatum*	Rutaceae	Honyur	tree	Seed and bark are used as tonic during fever and cholera, stomach disorder	Fruit, seed, bark	Aliphatic and aromatic amides, alkaloids like benzophenanthridines, furoquinolines(dictamine), carbazoles, berberine, acridones, lignansesamin	Ref 5,14
19	*Terminalia myriocarpa*	Combrtaceae	Hilika	Tree	Bark extract is given in chest pain and as cardiac stumulant	Fruit, leaves, bark	Methyl-flavogallonate, gallic acid, methyl gallate, ethyl gallate, vitexin, isovitexin, orientine,rutin, ellagic acid, flavogallonic acid	Ref 5,19
20	*Spilanthus acmella*	Asteraceae	Mershang	herb	Antimalarial, antipyretic, analgesic, flowers are chewed during toothache	Flower bud, stem, roots, leave	Spilanthol, stigmasteryl-3-O6-D-glycopyranoside, N-isobutylamidemoeity	Ref 6
21	*Swertia*	Gentianac	Chirata	herb	Plant	Whole	Sawertiamarine,	Ref

	chirayita	ee			decoction is taken in fever, anti-hepatitis B	plant	mangeferin, amarogenitine, oleinicacid, maslinic acid, sumaresinolic acid, swerilactones	6
22	*Arisaema consanguineu m*	Araceae	Biram sing	Perenial Plant	Locally used for arrow poisioning for hunting	Rhizome	Saponins, aspartic acid, amino acids like leucine, phenylalanine, histidine, valine, isoleucine etc	Ref 6,5
23	*Aconitum ferox*	Ranunculaceae	Omli	herb	Underground roots and tubers are used in arrow poisioning by local hunters	Roots and tubers	Aconitine, mesaconitine, hypaconitine, benzoylaconcine, benzoylmesaconine, diterpenoid alkaloid such as liaconitine A, transconitine A, geniconitine, foresaconitine	Ref 7
24	*Alnus nepalensis*	Betulaceae	Taram sin	tree	Disinfectant, diuretic, reduce swelling, prevent excessive	Branches , bark, leaves	Bark is reported to contain 7% tannin	Ref 7,8

					sweating, also used for carpentry			
25	*Laggera pterodonta*	Asteraceae	Dindoeh	herb	Antihelmintic, treatment in inflammation and swelling	Whole plant	n-tricontane(43%), dimethoxydurene(9%), caryophyllene oxide(7%), linoleoyl chloride (7%), oleic acid(4%), γ-eudesmol (4%)	Ref 7,12
26	*Gerbera piloselloides*	Compositae	Pangnesir	Small flowering plant	Treat cold,fever, acute conjunctivitis, rheumatic pain	Leaves and rhizomes	Dicoumarin like dibothrioclinins I, dibothrioclinins II	Ref 8,10
27	*Oxyspora paniculata*	Melastomatace ae	Porkijale	shrub	Treatment of various liver disorder, stomachic, antidote against snake poisioning	Leave, whole plant	Andrographolide, 14-deoxyandrographo- lide, neoandrographolide, andrographiside, 14-deoxyandrographiside	Ref 8,5
28	*Rubia manjith Roxb.*	Rubiaceae	Tamin	Climber	Used to cure headache, cough, cold,	Roots, fruits and	Roots contains an organic compound	Ref 8,2

					locally used as a textile dye	leaves	called alizarin that gives its red colour	
29	*Plantago erosa*	Plantaginaceae	Donihana kang	herb/ subshrubs	Constipation, improvesdigestion, astringent, demulcent, diuretic, expectorant, anti-inflammatory	Seeds, leaves	Flavonoids, alkaloids, steroids which causes anti-inflammatory, tannins etc	Ref 8,5
30	*Perilla ocymoides*	Lamiaceae	Namdung	herb	Locally used as spices or as a curry, in treatment of asthma, also used for nausea, sunstroke, reduce muscle spasms	Seeds, leaves	Perillaldehyde(50-60%), farnesene, perilla oil is a rich source of omega-3-fatty acid	Ref 9,12
31	*Phrynium capitatum*	Marantaceae	Ekkam	herb	Anti-diabetic, analgesic, antih-yperglycemic, locally used as wrapping and packaging materials	Leaves	Saponin, alkaloid, 7515omiting 75157515, tannin et	Ref 9,1

32	*Mikania scandens*	Asteraceae	Chakpan	Climber	Blood clotting, insect bites and sting, antifungal, gastric ulcer, locally used as ornamental plant	Leaves, flower	Cardinene (12.2%), αcubebine, 1,2benzenedicarboxylic acid (10.17%), βhimachalene (4.68%), Tcadinol (3.98%),βfarnesene(3.08%)	Ref 9,17
33	*Hedychium coccineum*	Zingiberaceae	Uii-telli	herb	Cure asthma and indigestion, anti-microbial, also used for local ornamental purposes	Whole plant	1,8-cineole, β-pinene, α terpineol,caryophylleneoxide,caryophyllenol I, caryophyllenol II etc	Ref 10,18
34	*Gynocardia odorata*	Achariaceae	Teeksin	tree	In treatment of leprosy, toothache, lupus, scrofula and many skin diseases	Seeds and fruits	Flavonoides, protein, fixed oil, tannins, alkaloids, glycosides, carbohydrate, 7516omiting 75167516ids, saponins	Ref 10
35	*Clerodendrum serratum*	Lamiaceae	Bortapipik	herb	Diabetes, obesity, hypertension, locally it is also used as a	Whole plants	D-mannitol, hispidulin, apigenin, serratagenic acid, acteoside,	Ref 10

					vegetable		oleanolicacid,cholestanol, clerosterol, campesterol, 24- ethyl cholesterol	
36	*Embelia ribes*	Myrsinaceae	Onior	herb	Anti-diarrhoea, also used against intestinal worm infection.	Leaves and fruits	Embelia, quercitol, christembine, honsoembelin, vilangineetc	Ref 11,2
37	*Scoparia dulcis*	Plantaginaceae	Mithipatti	herb	Jaundice, diabetes, anti – oxidant, diuretic, analgesic, anti-inflammatory	Roots, leaves, all parts	Scoparicacid, scopadubic acid, scopadulciol, scopadulin, triterpene, 7517omiting, dulcitol	Ref 11
38	*Oxalis corniculate*	Oxalidaceae	Amrul	herb	Dyspepsin, bowel disorder, 7517omitin, scurvy, daturapoisioning, cure opacity of cornea	Whole plant	Flavonoids, vitexin, isovitexin, oxalic acid, ascorbic acid, malic acid, tartaric acid, oxalates of calcium and pottassium	Ref 12,5
39	*Rauwolfia serpentine*	Apocynaceae	Sarpagandha	herb	Antihypertensive, sedative,	Roots and leaves	Ajmaline, aricine, corynanthine,	Ref 12.1

					hypnotic, liver ailments, constipation, epilepsy, schizophrenia		deserpidine, rescinnamine, reserpine, reserpiline,iso-reserpine, serpentine, yohimbine.	
40	*Gmelina arborea*	Lamiaceae	Gamari	tree	Purify blood, stomach trouble, leprosy, diuretic, anaemia, snake bite and scorpion sting, ulcers	Whole plant	Arborea, paulownin, gmelinol, endermin, β-sitosterol, 6-bromo-isoarboreal, 4-hydroxysesamin, umbelliferone, gmelanone	Ref 12
41	*Mimosa pudica*	Mimosaceae	Hanian g	herb	Anti-depressant, anticonvulsant, anti-fertility, sinus,dysentery, tumour, insomnia, antidote in snake poison	Whole plant	Mimosine, quinines, phenols, tannins, coumarins, phytosterol, amino acid, 7518omiting, glycosides, flavonoides	Ref 13
42	*Mentha arvensis*	Lamiaceae	Pudina	herb	Stomach disorder, influenza, appetizer, gall bladder problem, Flavouring	Leaves	Menthol, menthone, piperiton, isomenthone, neomenthol, methyl acetate, α-pinene, β	Ref 13,4

					agent		caryophyllene, β-pinene	
43	*Emplica officinalis*	Euphorbiaceae	Amloki	herb	Liver tonic, anti-diabetic, asthma, peptic ulcer,analgesic, heart problems, jaundice	Fruits, seed	Phyllembin, tannin(5%),fixed oil, vitamin C, pectin, iron, calcium,	Ref 13,8
44	*Houttuynia cordata*	Saururaceae	Nekir name	Herb	Measles, gonorrhoea, skin troubles, anti-tumour, anti-cancer, pneumoni, bronchitis, stomach ulcer	Shoots, leaves, stem	HouttuynosideA (1) and A(2), quercitrin, kaempferal, esters, quercetin, nonanol, bornyl acetate, lauraldehyde.	Ref 14,12
45	*Costus speciosus*	Costaceae	Jam-lakhmti	herb	Respiratory problem, astringent, stimulant, anti-helminthic, liver cirrhosis, aphrodisiac,urinary problem	Roots and stem	Diosgenin, cycloartanol,25encycloartenol, Prosapogenin B, diosgenone, octacosanoic acid, gracillin, ligogenin, methyl proto dioscin	Ref 14,2
46	*Cannabis sativum*	Cannabaceae	Bang	herb	Stomach disorder, hypnotic, sedative,	Stem, seed, leaves, flower	Cannabidiol, myrcene, linalool, α-pinene,	Ref 14

					anti-inflammatory, analgesic, nausea, vomiting, hallucinogenic		αterpinolene, α-humulene, caryophyllene oxide, tetrahydrocannabinol	
47	*Aesculus assamica*	Hippocastanaceae	Ozonsak	tree	Skin infection, reduces backache, in the treatment of haemorrhoids	Seed, roots and flowers	Triterpenesaponin called escin, assamicin and isoescin	Ref 15,19
48	*Syzgium cumini*	Myrtaceae	Jamun	tree	Astringent, carminative, anti-diabetic, stomach disorder, diarrhoea and dysentery	Fruit and bark	Resin, albumin, jambosine-3, gallic acid, ellagic acid, corilagin, tannin, steroid, zinc, sodium, potassium	Ref 15,18
49	*Phlogacanthus curviflorn*	Acanthaceae	Thamranhingse	shrub	Boiled leaf juice are used to cure cough and fever	Leaves, roots	Phlogacantholli des B and C, lupeol, β-dancosterol, 7520omitin, β-sitosterol	Ref 16
50	*Oroxylum indicum*	Bignonaceae	Panokni	tree	Cancer,anti-malarial, jaundice,anti-arthritic,diarrhoea,fever,ulcer, anti-	Roots	baicalein, oroxylin, chrysin, apagenin, oroxindin, ellagic acid,	Ref 16

					inflammatory		aloeemodin,anthraquinone,prunetin, biochanin A.	
51	*Acorus calamus*	Acoraceae	Wok-kakhing	Semi aquatic creeper	Sedative, laxative, carminative, stroke,insecticidal activities, also in making perfume	Leaves, stems and roots	α-asarone, β-asarone,eugenol, triploid and tetraploid A	Ref 16
52	*Coptis teeta*	Ranunculaceae	Rinko, iduaro	herb	Fever, headache, gastric trouble, 7521omiting 7521, ulcer, insomnia, 7521omiting stimulant to heart, anti-bacterial	Roots	Berberin, coptisine, epiberberine, berberrubin, palmeatin, columbamine, ferrulic acid, worenine, magnoflorine,obakumone, obakulactone	Ref 17
54	*Sapium baccatum*	Euphorbiaceae	Shigum	tree	Analgesic, antimicrobial, skin irritant, locally used as fish poison	Leaves, stem	Lupeol, 7521otulin, β-taraxerol, taraxerone, stigmasterol, docosanoic acid, docosyltransisoferulate, β	Ref 17,3

							sitosterol	
55	*Physalis minime*	Solanaceae	Bodopati	herb	Gastric trouble, laxative, diuretic, anti-cancer, in hypertension, anti-inflamma-tory	Whole plant	Tannins(0.6%), pectin(0.5%), sugars(6%), physalin F, physalin B, isophysalin B, physalin H.	Ref 18,2
56	*Solanum violaceum*	Solanaceae	Teeta Biyako	herb	Appetizer, toothache, roughage, berry is given to patient of stone problem	Berry	Phenolic content, flavonoid content etc	19
57	*Plantago major L*	Plantaginaceae	Mip-yaru	herb	Healing different kinds of wounds such as (snake bite, intestinal worms and infectious wounds), cold treating,Remedy for diabetes	Whole plant	Flavonoids, alkaloids, terpenoids, phenolic acid derivatives, fatty acids and vitamins.	20
58	*Pilea scripta*	Urticaceae	Gugi O	shrub	Body weakness, gastritis and	Leave	Flavonoids, alkaloids etc	21,17

					insomnia			
59	*Pouzolzia indica*	Urticaceae	Hoyik	shrub	Female infertility, cancer, inflammation insecticide and anti-snake venom	Leave, root and stem	Lanceolone, isoflavone	22,12
60	*Sarcochlamys pulcherrima Gaud.*	Urticaceae	Bola sen	herb	Antidiabetic, antidiarrhoeal, hepatoprotective and antifungal	Leave	Phenolic, flavonoids and saponin	23
61	*Alpinia malaccensis (Burm.f.) Rose.*	Zingiberaceae	Bolo	herb	Throat sore, cough and fever	Leave	Camphor, g-terpinene, geraniol, methyl cinnamate and b-caryophyllene	24
62	*Cardamine hirsuta L.*	Cruciferae	Piidii sorum	herb	Anticancer and antidiabetics	Whole plant	Flavonoids, saponins and phenolic acid	25,30
63	*Clerodendrum colebrookianum Walp.*	Verbanaceae	Poto	shrub	Antihypertensive, anthelimintic, analgesic, antioxidant and antistress activities	Leave	Phenols, alkaloids, flavonoids, polyphenols, steroids etc	26,27
64	*Amaranthus spinosus L*	Amaranthaceae	Pachu koyu	herb	Blood disorders, cough, leucorrhoea, constipation,	Whole plant	Di-glycoside, flavonoids, phenolic acids, hesperidin, sterols and	28,29

					urinary tract infection, leprosy, skin infection, piles and dysentery		amino acid	
65	*Litsea cubeba (Lour.) Pers*	Lauraceae	Sen Teyir	shrub	gastro-intestinal ailments (e.g., diarrhea, stomachache, indigestion, and gastroenteritis) along with diabetes, edema, cold, arthritis, asthma, and traumatic injury.	Fruits	Alkaloids, flavonoids, terpenes	30,31
66	*Paederia foetida*	Rubiaceae	Upu ter	herb	Kidney stone, loose motion, Urinary disorder, and digestive system	Leaf, root	Paederolone, paederine, β-sitosterol, paederoside, asperuloside	32,33
67	*Phoebe goalparensis L.*	Lauraceae	Sangchar	shrub	Anti-malarial, anti-inflammatory and anti-tumor	Leaves, bark	Steroids, flavonoids, tannin, saponins and phenols	34,35,36

RESULTS

Distribution of Traditional Medicinal Plants used in according to gender

In this study, out of 500 samples, 242 (48%) were male and 258 (52%) female are shown in Table-2 and Figure-2

Table-2: Distribution of Traditional Medicinal Plants used in according to gender

Sl. No.	Gender	Number	Percentage (%)
1	Male	242	48
2	Female	258	52

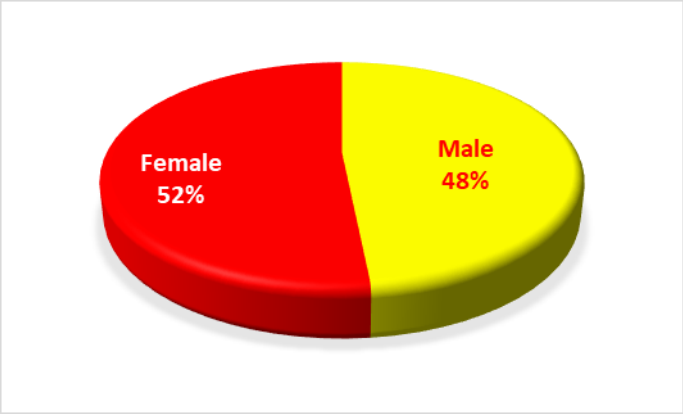

Figure-2: Distribution of Traditional Medicinal Plants used in according to gender

Distribution of Traditional Medicinal Plants used in according to age group

Out of 500 informants, 16.2% informants are in the 18-22 age group, 19% in the 23-30 age group, 22.4% in the 31-40 age group, 25% in the 41-50 age group, and 17.4% in 51-60 age group.

Table-3: Distribution of Traditional Medicinal Plants used in according to age group

S. No.	Age class	Number	Percentage (%)
1.	18-22	81	16.2
2.	23-30	95	19
3.	31-40	112	22.4
4.	41-50	125	25

5.	51-60	87	17.4

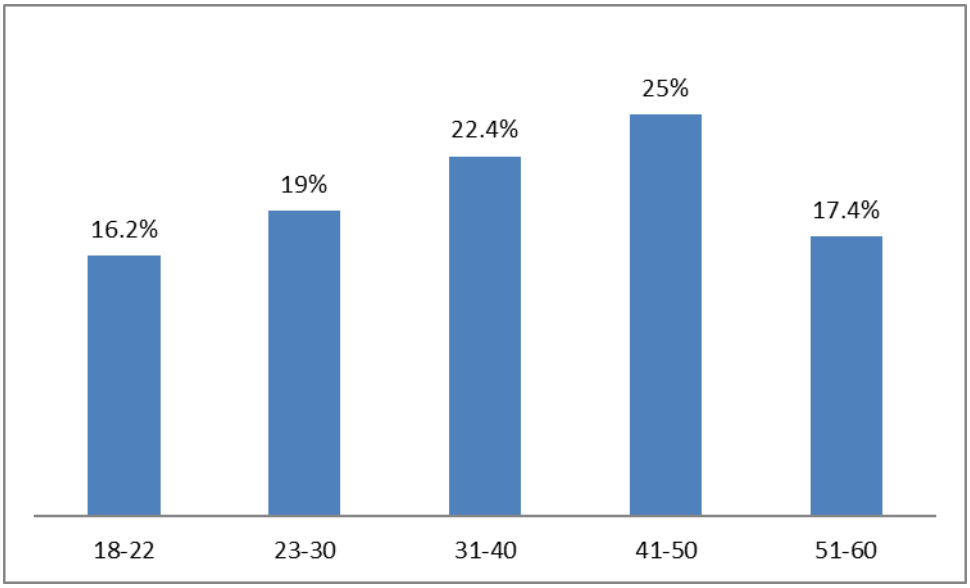

Figure-3: Distribution of Traditional Medicinal Plants used in according to age group

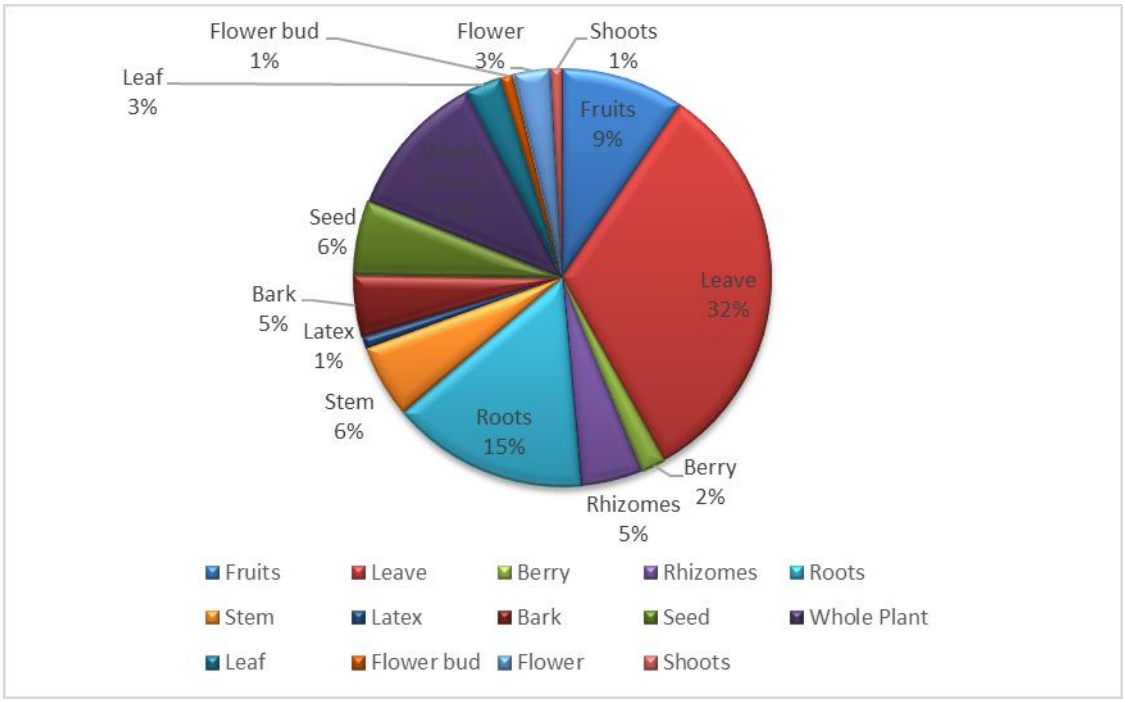

Figure-4: Morphological plants part used in the preparation of traditional medicine

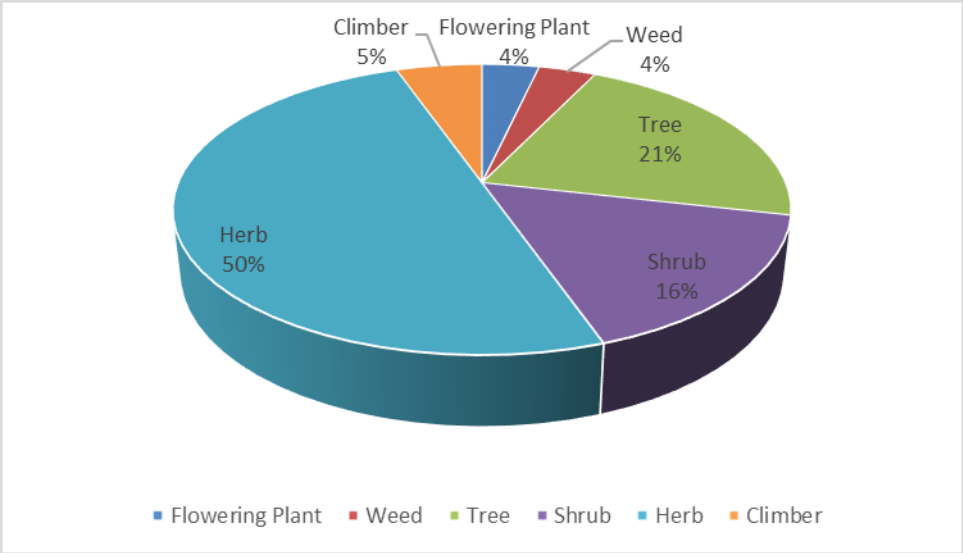

Figure-5: Growth habits of the reported medicinal plants species

Discussion

The findings of this survey shed light on the dynamic interplay between cultural practices, healthcare systems, and biodiversity conservation in Arunachal Pradesh. The integration of traditional medicine into the socio-economic fabric of the region presents both opportunities and challenges. While traditional knowledge serves as a valuable resource for community healthcare, ensuring its sustainability requires concerted efforts to preserve biodiversity, safeguard indigenous rights, and promote intergenerational knowledge transmission. Further analysis of the survey data promises insights into the sustainable utilization of medicinal plants, offering pathways for the conservation of cultural heritage and the promotion of holistic healthcare practices.

Conclusion

In conclusion, the ethno-medicine survey conducted in Sagalee, Arunachal Pradesh, provides valuable insights into the rich diversity of medicinal plants and traditional knowledge systems within the region. By documenting and analyzing plant utilization patterns across different demographic segments, the study contributes to our understanding of the intricate relationship between culture, biodiversity, and healthcare. Moving forward, efforts to integrate traditional medicine into mainstream healthcare systems must be guided by principles of sustainability, equity, and cultural sensitivity, ensuring the preservation of indigenous knowledge for future generations.

Acknowledgement

Special Thanks to Prof. (Dr) Shantanu Bandopadhyay, Principal, School of Pharmacy, Arunachal University of Studies, Namsai for their valuable advice and support.

Conflict Of Interest

The authors declare no conflict of interest.

References

1. Perme, N., Choudhury, S. N., Choudhury, R., Natung, T., & De, B. (2015). Medicinal plants in traditional use at Arunachal Pradesh, India. *International Journal of Phytopharmacy*, *5*(5), 86-98.
2. Deb, S., Arunachalam, A., & Das, A. K. (2009). Indigenous knowledge of Nyishi tribes on traditional agroforestry systems, *Indian J of Traditional knowledge*, 8(1): 41-46.1.
3. Venkateswarlu, K., Devanna, N., & Prasad, N. B. L. (2014). Microscopical and Preliminary Phytochemical Screening of 'Piper betel'. *PharmaTutor*, *2*(4), 112-118.
4. Ming, L. C. (1999). Ageratum conyzoides: A tropical source of medicinal and agricultural products. *Perspectives on new crops and new uses, 1988*, 469-473.
5. Leela NK, Tava A, Shafi PM. (2002). Chemical composition of essential oils of Turmeric (Curcuma longa); Acta Pharm, 52: 137-141.
6. Singh, S., Singh, D. R., Banu, V. S., & Avinash, N. (2014). Functional constituents (micronutrients and phytochemicals) and antioxidant activity of Centella asiatica (L.) Urban leaves. *Industrial Crops and Products*, *61*, 115-119.
7. Goswami, P., Soki, D., Jaishi, A., Das, M., & Sarma, H. N. (2009). Traditional healthcare practices among the Tagin tribe of Arunachal Pradesh.
8. Srivastava, R. C. (2009). Traditional knowledge of Adi tribe of Arunachal Pradesh on plants. *Indian journal of traditional knowledge*, *8*(2), 146-153.
9. Owolabi, M. S., Ogundajo, A., Yusuf, K. O., Lajide, L., Villanueva, H. E., Tuten, J. A., & Setzer, W. N. (2010). Chemical composition and bioactivity of the essential oil of Chromolaena odorata from Nigeria. *Records of natural products*, *4*(1), 72.
10. Tag, H., & Das, A. K. (2004). Ethnobotanical notes on the Hill Miri tribe of Arunachal Pradesh. Indian J of Traditional Knowledge, 3(1): 80-85.
11. Omoregie, E. H., Oluyemisi, K. F., Koma, O. S., & Ibumeh, O. J. (2012). Chemical constituents of the essential oil of Laggera pterodonta (DC.) Sch. Bip. from North-Central Nigeria. *Journal of Applied Pharmaceutical Science*, *2*(8), 198-202.

12. Nandi, J. K., Sultana, S., Rahman, K. H., Rahman, S., Rahman, M. M., & Rahmatullah, M. (2014). Oral glucose tolerance, phytochemical screening, acute toxicity and analgesic activity evaluation of leaves of Phrynium capitatum. *World J Pharm Res*, *3*(8), 35-44.
13. Omoregie, E. H., Oluyemisi, K. F., Koma, O. S., & Ibumeh, O. J. (2012). Chemical constituents of the essential oil of Laggera pterodonta (DC.) Sch. Bip. from North-Central Nigeria. *Journal of Applied Pharmaceutical Science*, *2*(8), 198-202.
14. Gibji, N., Rawat, J. S., Arunachalam, A., & Oyi, D. (2011). Ethno-medicines of Aka tribe, West Kameng district, Arunachal Pradesh (India). *Science and Culture*, *77*(3/4), 149-155.
15. Mishra, M. R., Behera, R. K., Jha, S., Panda, A. K., Mishra, A., Pradhan, D. K., & Choudary, P. R. (2011). A brief review on phytoconstituents and ethnopharmacology of Scoparia dulcis Linn.(Scrophulariaceae). *International Journal of Phytomedicine*, *3*(4), 422-438.
16. Khongsai, M., Saikia, S. P., & Kayang, H. (2011). Ethnomedicinal plants used by different tribes of Arunachal Pradesh. *Indian Journal of Traditional Knowledge*, *10*(3), 541-546.
17. ElSohly, M. A., & Slade, D. (2005). Chemical constituents of marijuana: the complex mixture of natural cannabinoids. *Life sciences*, *78*(5), 539-548.
18. Khatwang Wangjen, K. W., Shivaji Chaudhry, S. C., Arya, S. C., & Samal, P. K. (2011). A preliminary investigation on ethnomedicinal plants used by Wancho tribes of Arunachal Pradesh, India., J of Non- Timber Forest Products, 2011; 18 (2): 129-132.
19. Prabodh Satyal, P. S., Prajwal Paudel, P. P., Ambika Poudel, A. P., Dosoky, N. S., Moriarity, D. M., Vogler, B., & Setzer, W. N. (2013). Chemical compositions, phytotoxicity, and biological activities of Acorus calamus essential oils from Nepal, Nat Prod Commun. 2013;8(8): 1179-81
20. Mishra, M. R., Behera, R. K., Jha, S., Panda, A. K., Mishra, A., Pradhan, D. K., & Choudary, P. R. (2011). A brief review on phytoconstituents and ethnopharmacology of Scoparia dulcis Linn.(Scrophulariaceae). *International Journal of Phytomedicine*, *3*(4), 422-438.
21. Kizi, K. S. A. (2022). Pharmacological Properties of Plantago Major L. and Its Active Constituents. *International Journal of Medical Science and Public Health Research*, *3*(04), 09-12.
22. Gogoi, J., Sharma, M., & Sharma, C. L. (2023). Nutrient analysis of some selected wild edible plants traditionally consumed by the Wancho tribe of Arunachal Pradesh, India. *Vegetos*, 1-7.

23. Roongruangchai, J., Sookkua, T., Kummalue, T., & Roongruangchai, K. (2011). Pouzolzia indica methanolic extract fraction 2 and povidone-iodine induced changes in the cyst of Acanthamoeba spp.: light and electron microscopic studies. *Journal of the Medical Association of Thailand*, *92*(11), 1492.
24. Ahmed, A., Rajendaran, K., Jaiswal, D., Singh, H. P., Mishra, A., Chandra, D., ... & Jain, D. A. (2010). Anti-snake venom activity of different extracts of Pouzolzia indica against Russel viper venom. *International Journal of ChemTech Research*, *2*(1), 744-751.
25. Doley, B. K., & Kakoti, B. B. (2018). Hepatoprotective potential of Ficus auriculata and Sarcochlamys pulcherrima, two ethnomedicinal plants used by the mishing community of assam. *World J Pharm Pharm Sci*, *15*(7), 913-922.
26. Balkrishna, A., Joshi, B., Srivastava, A., Shankar, R., Vashistha, R. K., Kumar, A., & Mishra, R. K. (2021). Medicinal plants of Seijosa circle, Pakke-Kessang district, Arunachal Pradesh, India. *Indian Journal of Natural Products and Resources (IJNPR)[Formerly Natural Product Radiance (NPR)]*, *12*(1), 101-115.
27. Nyitan, J., & Das, A. K. Documentation and phytochemical screening of wild vegetables from Siang District of Arunachal Pradesh, India.
28. Rajbongshi, P. (2014). Clerodendrum Colebrookianum Walp: A Phytopharmacological Review. *World Journal of Pharmaceutical Research*, *3*(7), 305-317.
29. Kumar, R. P., Jindal, S., Gupta, N., & Rana, R. (2014). An inside review of Amaranthus spinosus Linn: a potential medicinal plant of India. *International Journal of Research in Pharmacy and Chemistry*, *4*(3), 643-653.
30. Kumar, R. P., Jindal, S., Gupta, N., & Rana, R. (2014). An inside review of Amaranthus spinosus Linn: a potential medicinal plant of India. *International Journal of Research in Pharmacy and Chemistry*, *4*(3), 643-653.
31. Sivamaruthi, B. S., Kesika, P., & Chaiyasut, C. (2020). The composition, pharmacological and economic importance of essential oil of Litsea cubeba (Lour.) Pers. *Food Science and Technology*, *42*, e35720.
32. Soni, R. K., Irchhaiya, R., Dixit, V., & Alok, S. (2013). Paederia foetida Linn: Phytochemistry, pharmacological and traditional uses. *International Journal of Pharmaceutical Sciences and Research*, *4*(12), 4525.
33. Wang, L., Jiang, Y., Han, T., Zheng, C., & Qin, L. (2014). A phytochemical, pharmacological and clinical profile of Paederia foetida and P. scandens. *Natural product communications*, *9*(6), 1934578X1400900640.

34. Kumar Semwal, D., & Badoni Semwal, R. (2013). Ethnobotany, pharmacology and phytochemistry of the genus Phoebe (Lauraceae). *Mini-Reviews in Organic Chemistry*, *10*(1), 12-26.
35. Panda, S. K., Das, R., Leyssen, P., Neyts, J., & Luyten, W. (2018). Assessing medicinal plants traditionally used in the Chirang Reserve Forest, Northeast India for antimicrobial activity. *Journal of ethnopharmacology*, *225*, 220-233.
36. Saikia, S., Begum, R. A., & Buragohain, A. (2021). Comprehensive list of anti-malarial plants used by different communities of Assam and Arunachal Pradesh, India. *Int J Mosq Res*, *8*, 63-9.
37. Muthu, J., & Rimo, Y. (2018). An enumeration on some of the commercialized ethnovegetables plants of Arunachal Pradesh: A preliminary study. *Bull Arunachal For Res*, *33*(1), 52-58.