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SURVEY ON ETHNOMEDICINAL PLANTS USED BY THE GARO TRIBES OF GOALPARA DISTRICT, ASSAM WITH SPECIAL REFERENCE TO HUMAN AND LIVESTOCK

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ABSTRACT

This ethnobotanical survey documents the indigenous medicinal plant knowledge of Garo tribes in Goalpara district of Assam (India), focusing on their traditional plant-based treatments for a variety of human and livestock ailments. Through interviews with 30 key informants, recognized as holders of traditional knowledge within their community, the study aimed to record this knowledge, contributing to the conservation and sustainable use of medicinal plant species in the region, and providing a foundation for evaluating their therapeutic properties. These survey revealed the use of 45 medicinal plant species from 27 families for treating various human and livestock ailments. Trees were the most common plant form (37.77%), followed by herbs (31.11%). Leaves were most frequently used plant part for both human (48.88%) and animal (35.71%) treatments. Quantitative analysis showed high use-value (UV) indices for species like *Azadirachta indica, Centella asiatica, Leucas aspera, Bergera koenigii, Terminalia arjuna* and *Curcuma longa* with highest UV (0.96). *Curcuma longa* demonstrated the highest fidelity level (93.33%). This study highlights the rich ethnomedicinal heritage of the Garo tribes and underscores the urgent need for conservation efforts to preserve both botanical resources and associated traditional knowledge amidst rapid transitions.

Keywords: Conservation, ethnobotany, Garo tribe, livestock, medicinal plant

INTRODUCTION

Traditional herbal remedies and animal-based medicines have remained integral to the healthcare systems across the world for centuries. Ethnomedicinal awareness, often passed down orally through generations, plays a crucial role in preserving and applying traditional healing practices (Vitalini *et al.*, 2013). The North East of India, comprising of Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Tripura, and Sikkim, is one of the world's most biodiverse regions. It is home of over 150 tribes with distinct linguo-cultural traditions, many of which rely on indigenous medicinal know-how for healthcare (Dutta and Dutta, 2005). Assam, with diverse geography and climate, nurtures a rich variety of flora and fauna, making it a focal point for research on traditional herbal medicine.

Tribes across the Northeast India integrate plant-based treatments into their healthcare practices, reinforcing their cultural identity and ensuring the preservation of traditional knowledge. Many plants hold significant medicinal and ritualistic value. For instance, *Rauwolfia serpentina* (sarpagandha) is

widely used by Assamese and Naga tribes to treat hypertension and snakebites, symbolizing the protection and healing (Chakraborty, 2022). The Khasi tribe of Meghalaya reveres Z*ingiber officinale* (ginger), utilizing it in customary ceremonies and for treating stomach disorders (Jaiswal, 2010). Similarly, *Curcuma longa* (turmeric) is a vital component of cleansing rituals and marriage ceremonies among the Karbis and Ahoms (Barua *et al.,* 2016). However, the number of traditional knowledge holders among the tribes is gradually declining due to the decreasing intergenerational transmission of indigenous medical knowledge, driven by modernization and globalization. As the younger generations increasingly adopt modern healthcare and commercial livelihoods, traditional healing practices are often undervalued and dwindling, leading to the erosion of this knowledge system. Preserving this ethnomedicinal heritage is crucial, not only for maintaining the cultural identity but also for its significant contributions to sustainable healthcare and biodiversity conservation.

Extensive ethnobotanical research has been conducted on different tribal groups in Assam (Alom, 2021; Kalita *et al*., 2022; Boro *et al.,* 2023; Gogoi and Sen, 2023; Begum *et al*., 2024; Das and Duarah, 2024). In Goalpara, a district inhabited by tribes such as Garo, Bodo, Koch Rajbangshi, Tiwa, Rabha, and Hajong, traditional medicine remains a cornerstone of healthcare. Among these, Garo tribe is especially known for its reliance on herbal medicine. Talukdar and Gupta (2020) documented 70 plant species from 44 genera used by Garo tribes of two villages in Kokrajhar and Bongaigaon districts in 38 ethnomedicinal formulations to treat 25 ailments. Similarly, Sarma and Devi (2017) identified 51 angiospermic medicinal plants used by Garo community in Sonitpur district, with trees comprising 43% of the documented flora, followed by herbs (25%), shrubs (18%), and climbers (14%). Sharma and Chetri (2017) recorded 25 plant species across 23 families utilized in traditional medicine by the Garo tribe in Dimoria tribal belt of Assam.

Ethnomedical research is crucial for documenting and scientifically validating indigenous healing traditions (Heinrich *et al.,* 2020). Many modern medicines trace their origins to ancient herbal remedies, providing valuable insights for drug discovery (Fabricant and Farnsworth, 2001). Preserving this knowledge supports sustainable healthcare as well as aids biodiversity conservation and enhances medicinal research. Historical practices often reveal the potential new drug compounds (Newman and Cragg, 2016), while ethnobotanical studies help identify plant species requiring conservation efforts (Cunningham, 2001). Globalization has propelled ethnomedicine into mainstream healthcare, with many traditional treatments now incorporated into complementary and alternative medicine systems (Ekor, 2014). Clinical and pharmacological research continues to validate the efficacy and safety of herbal medicines, making them more widely accepted. Advances in biotechnology and pharmacognosy have further enhanced formulation and delivery systems, improving their effectiveness (Gu *et al.,* 2022). Integrating ethnomedicine into education can foster appreciation for indigenous healing practices, while conservation approaches like community-based efforts and agroforestry can safeguard medicinal plants for future generations (Cox, 2020;). Despite extensive research on Assam's ethnobotany, a significant knowledge gap exists about the ethno-medicinal practices of Garo community in Goalpara district. The region's ethnic and linguistic diversity, particularly Garo dialect, presents challenges in documenting and sharing this knowledge beyond local populations. This study aimed to systematically document the traditional plant-based remedies used by Garo tribe of Goalpara district for treating human and animal ailments. By identifying and analysing the therapeutic properties of these plants, the study could contribute to future research on sustainable medicinal plant use and the discovery of novel bioactive compounds.

MATERIALS AND METHODS

Description of the study sites

The study was conducted in and around the Dudhnoi and Damra areas of Goalpara district, Assam, inhabited by Garo tribe. Situated between 25°53′ and 26°15′ N latitude and 90°7′ and 91°5′ E

longitude, the district lies in western Assam, bordered by the Brahmaputra river to the north, south east Garo hills district of Meghalaya to the south, Kamrup district to the east, and Dhubri district to the west (Fig. 1). Covering a total area of 1,824 km², Goalpara has 395.74 km² of forest cover, accounting for 21.70% of its land area (Deka *et al.*, 2024). The district is home to various ethnic communities, including Garo, Rabha, and Bodo, who share a deep connection with nature. Garo people primarily inhabit southern region near the Meghalaya border, constituting 7.56% of the district's population (Census, 2011). The ethnobotanical survey was conducted across different locations in Goalpara district, Assam, India.

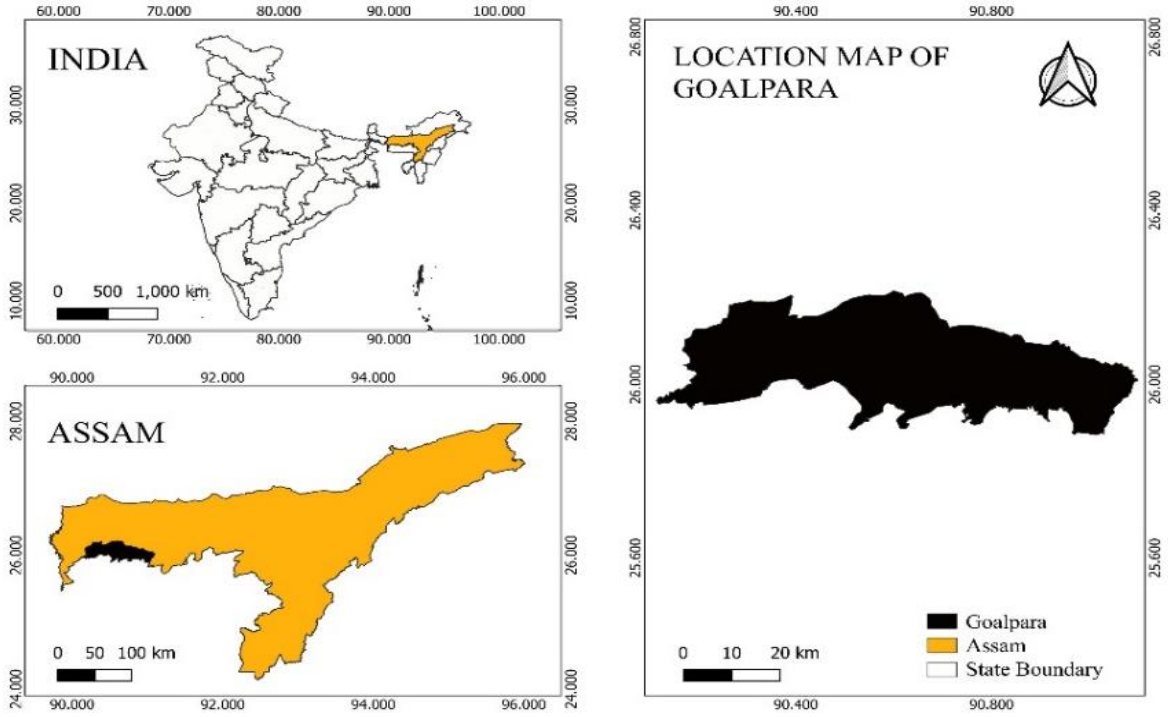

Fig. 1: Map of the study area, Goalpara district, Assam (India). The map was prepared using QGIS software version 3.34.9

Sample size and sampling technique

A systematic and extensive ethnobotanical study was conducted in selected villages in and around the Dudhnoi and Damra areas of Goalpara district from August 2023 to July 2024 to document medicinal plants used by Garo community. Thirty (30) key informants were selected using the multi-stage random sampling method (Ray and Mondol, 2004). Field surveys involved key informant interviews using a structured, pre-tested questionnaire and participatory observation, with prior informal consent obtained from all informants. The survey recorded vernacular plant names, growth habits, plant parts used, methods of utilization, frequency of use, and other ethnomedicinal details. Voucher specimens were collected for plant identification and authenticated by using standard literature (Hooker, 1872–1897; Kanjilal *et al.*, 1934-1940), virtual herbaria of BSI, and eFloras. The current accepted plant names were verified using POWO (2024).

Data analysis

The ethnobotanical data gathered from the questionnaire survey were summarized, analysed and presented in tabular and graphic forms. Following the key informant's selection of plants having medicinal value, a discussion of these plant's significance in disorder/illness management in both humans and animals ensued. The collected data was quantitatively analysed to ascertain the fidelity level (FL%) and use-value (UV) index (Assefa *et al.*, 2020). Quantitative indicators, such UV index

and FL%, are crucial in ethnobotanical research because they shed light on the importance of individual plant species in a community. To evaluate how frequently each medicinal plant is used by Garo tribes, the UV index of each plant was computed as $= \frac{\sum U}{\text{ns}}$; where U is the total number of citations made by all informants for a particular species and ns is the total number of informants. FL was computed to identify the medicinal plant species that informants strongly recommended for treating a certain type of illness. The FL% was computed as $(\%) = \frac{\text{Np}}{\text{N}} x\ 100$; where Np is the number of informants who reported using the plant species to treat a specific disease and N is the total number of informants who used the plants as medicine to cure any given ailment.

RESULTS AND DISCUSSION

Taxonomic evaluation

The Garo tribe in the study area utilized 45 medicinal plants from 45 genera across the 27 families to treat a wide range of ailments. All the 45 plants were used for human healthcare, while 15 species were also employed in treating livestock diseases. The diverse therapeutic applications of these plants, along with their specific uses, are detailed in Tables 1 and 2. The information generated from local healers indicated that the most prevalent human diseases in the study region included skin infections, jaundice, and dysentery, among others. Traditional herbalists employed various diagnostic and therapeutic techniques depending on the nature of illness. For livestock health, herbal remedies are commonly used to treat constipation, skin infections, and respiratory issues.

Among the documented species, Fabaceae family had the highest representation with four species, followed by Amaranthaceae, Zingiberaceae, and Lamiaceae, each with three species. Several families, including Rutaceae, Acanthaceae, Apocynaceae, Oxalidaceae, Meliaceae, Euphorbiaceae, Malvaceae, Rubiaceae, and Combretaceae, were represented by two species each (Fig. 2).

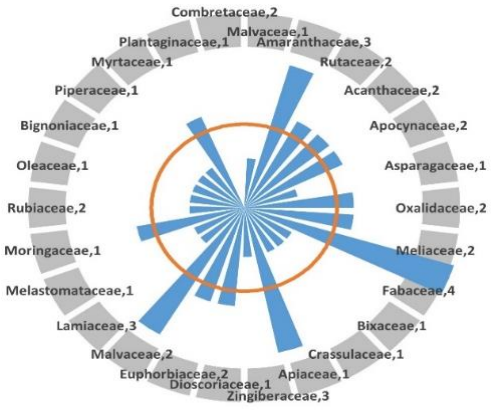

Fig. 2: Family distribution of medicinal plants that are used by Garo tribes of Goalpara district (Assam)

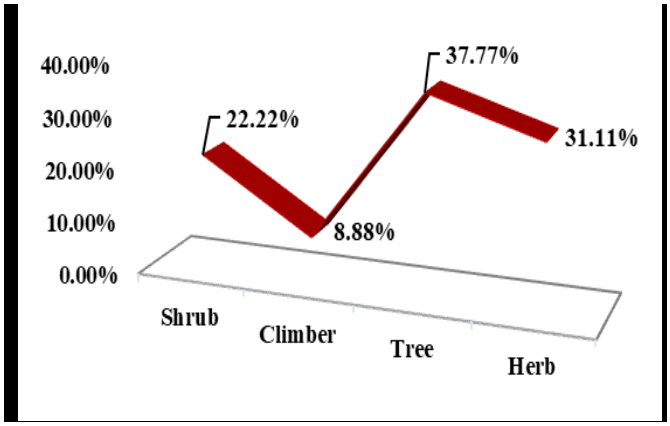

Fig. 3: Growth forms of medicinal plants used by Garo tribes of Goalpara district (Assam)

The recorded medicinal plants exhibited diverse growth forms, with trees being the most dominant (37.77%), followed by herbs (31.11%), shrubs (22.22%), and climbers (8.88%) (Fig. 3). Various plant parts were used for medicinal purposes, with leaves being the most frequently utilized (48.88%), followed by fruits (28.88%), the entire plant (13.33%), bark and flowers (8.88%), rhizomes (6.66%), roots (4.44%), and seeds (2.22%) (Fig. 4). For livestock treatments, the most commonly used plant part was leaves (35.71%), followed by the entire plant and fruits (21.42% each), seeds and rhizomes (14.28%), and roots, flowers, tubers, and bark (7.14%) (Fig. 5).

Table 1: **Ethnomedicinal uses of plants for treatment of livestock diseases used by the Garo tribe of Goalpara district, Assam (India)**

S. No.	Botanical name and family	Local name	Habit	Plant part used	Ethnobotanical uses	Preparation method	Mode of use
1.	*Abutilon indicum* (L.) Sweet [Malvaceae]	Bibal Jacksona	Shrub	Leaf	Swelling, pain	Young leaves crushed into a fine paste with a small amount of water and gently applied to the swollen area	Raw
2.	*Achyranthes aspera* L. [Amaranthaceae]	Memang	Shrub	Whole plant	Headache, worms	Whole plant paste with applied to forehead. Boiled root extract or pure juice applied to infected area for worms	Raw/ decoction
3.	*Aegle marmelos* (L.) Corrêa [Rutaceae]	Belethi	Tree	Fruit, leaf and bark	Dysentery, heart & liver tonic	Ripe fruit juice taken as a liver and heart tonic. Boiled leaf and bark extract used for dysentery.	Decoction
4.	*Andrographis paniculata* L. [Acanthaceae]	Chirota	Herbs	Whole plant	Worms	Young leaf juice taken directly.	Infusion
5.	*Alstonia scholaris* (L.) R.Br. [Apocynaceae]	Soksen	Tree	Bark	Fever	Raw bark sun-dried, powdered, and taken orally with boiled water.	Raw
6.	*Amaranthus spinosus* L. [Amaranthaceae]	Khutura	Herbs	Leaf	Skin sore	Aqueous leaf paste applied to affected areas	Raw
7.	*Alternanthera sessilis* (L.) R.Br. ex DC. [Amaranthaceae]	Adaurak	Herbs	Leaf	Dysentery, diarrhoea	Leaf juice consumed orally.	Raw
8.	*Asparagus racemosus* Willd. [Asparagaceae]	Sathobari Bondu	Climber	Root	Urinary trouble	Boiled root extract used as a tonic for urinary issues like blood in urine.	Decoction
9.	*Averrhoa carambola* L. [Oxalidaceae]	Khanrenga	Tree	Fruit	Cough	Ripe fruit juice extracted and consumed orally.	Infusion
10.	*Azadirachta indica* A. Juss. [Meliaceae]	Nim bijok	Tree	Leaf	worms, diabetes	Raw leaves are sun-dried, powdered, and taken directly.	Raw
11.	*Bauhinia purpurea* L. [Fabaceae]	Migong	Tree	Flower	Jaundice	Flower juice is extracted and consumed orally.	Infusion
12.	*Bixa orellana* L. [Bixaceae]	Bolrong	Tree	Fruit	Hair fall	Ripe fruit paste is applied directly to hair.	Raw
13.	*Bryophyllum pinnatum* (Lam.) Oken. [Crassulaceae]	Pate gaja	Herbs	Leaf	Urinary disorder, headache	Half-cup juice taken on an empty stomach for 3–7 days for gastrointestinal and urinary issues. Leaf paste applied to cuts, wounds, and forehead for headache relief.	Infusion
14.	*Calotropis gigantea* (L.) [Apocynaceae]	Akanda	Shrubs	Leaf	Muscle Pain	Leaf paste is applied to the affected area for pain relief.	Raw
15.	*Centella asiatica* (L.) Urb. [Apiaceae]	Manamuni	Herbs	Whole plant	Headache, Dysentery	3–4 teaspoons of leaf juice taken orally in morning for 2–3 weeks for cooling effect on body and stomach.	Decoction /infusion
16.	*Curcuma zedoaria* (Christm.) Roscoe [Zingiberaceae]	Keturi	Herbs	Rhizome	Diarrhoea	Rhizome juice is used for diarrhea.	Decoction
17.	*Dillenia indica* L. [Dilleniaceae]	Oksi	Tree	Fruits and seed	Hair conditioner	Fruit decoction is applied to the scalp to treat dandruff and prevent hair loss.	Raw

18.	*Dioscorea alata* L. [Dioscoriaceae]	Kath alu	Climber	Tuber	Gonorrhoea	Tuber juice is consumed to eliminate stomach worms.	Decoction
19.	*Erythrina stricta* Roxb. [Fabaceae]	Madar	Tree	Fruits	Toothache	Leaf juice is used as a mouthwash.	Raw
20.	*Euphorbia hirta* L. [Euphorbiaceae]	Khatri-phang	Herb	Whole plant	Ulcer, ear pain	Stem latex extracted, and 1–2 drops are administered twice daily for ear pain.	Raw
21.	*Hibiscus rosa-sinensis* L. [Malvaceae]	Joba	Shrub	Flowers	Hair fall	Flower paste applied to hair to reduce hair fall.	Raw
22.	*Leucas aspera* (Willd.) Link [Lamiaceae]	Doron	Herb	Whole plant	Tonsilitis	For tonsillitis, 4–5 tender leaves & 2–3 black peppers mashed, and the extracted juice is taken orally.	Raw
23.	*Hibiscus sabdariffa* L. [Malvaceae]	Tengamora	Shrub	Leaf and fruit	High blood pressure	Leaves eaten raw in salads.	Raw
24.	*Melastoma malabathricum* L. [Melastomataceae]	Futki	Shrub	Leaf and fruits	Mouth ulcer	Raw leaf and fruit juice taken twice daily.	Raw
25.	*Mimosa pudica* L. [Fabaceae]	Ambi Misum	Herbs	Roots	Dysentery	Boiled root paste used for dysentery with blood/mucus, piles, and urinary calculi.	Decoction
26.	*Moringa oleifera* Lam. [Moringaceae]	Sojna	Tree	Leaf, flower & fruits	Anti-diabetic	Leaf juice consumed orally. Boiled fruits are eaten.	Infusion
27.	*Bergera koenigii* L. [Rutaceae]	Sam khatsi	Tree	Leaf	Fever	Leaf juice taken orally, 1–2 teaspoons once daily.	Infusion
28.	*Neolamarckia cadamba* (Roxb.) Bosser [Rubiaceae]	Kadom	Tree	Leaf and fruits	Fever, skin diseases	Fruit paste applied to the infected area.	Raw
29.	*Nyctanthes arbortristis* L. [Oleaceae]	Sephalika	Tree	Leaf, flower	Worms	Dried flowers boiled in water and consumed as soup.	Infusion
30.	*Ocimum tenuiflorum* L. [Lamiaceae]	Tulshi	Shrubs	Leaf	Cough, asthama	Raw leaf juice mixed with honey (1:1) and taken orally.	Raw
31.	*Oroxylum indicum* (L.) Kurz [Bignoniaceae]	Bhat ghila	Tree	Fruits and bark	Jaundice	Bark processed and taken orally, one teaspoon twice daily.	Raw
32.	*Melia azedarach* L. [Meliaceae]	Ghora-neeem	Tree	Leaf	Antibacterial	Raw leaves preferably used for bathing in hot water.	Raw
33.	*Phlogacanthus thyrsiflorus* Nees [Acanthaceae]	Ellok	Shrubs	Leaf	Asthma	Dried flowers used to make soup and consumed twice daily.	Raw
34.	*Piper nigrum* L. [Piperaceae]	Jaluk	Climber	Fruit	Cough	Fine powder of dry fruit mixed with black tea and consumed orally.	Raw
35.	*Psidium guajava* L. [Myrtaceae]	Kamperum	Tree	Leaf	Dysentery	Leaf juice extracted and taken orally.	Raw
36.	*Ricinus communis* L. [Euphorbiaceae]	Era	Shrub	Fruit, leaf	menstrual disorders	Fresh leaves or seeds crushed with water to make an edible paste.	Raw
37.	*Scoparia dulcis* L. [Plantaginaceae]	Seni bon	Herbs	Whole plant	Diabetes	Fresh leaves or seeds crushed with water to make an edible paste.	Raw
38.	*Senna alata* (L.) Roxb. [Fabaceae]	Dadi - mildang	Shrub	Leaf	Scabis	Fresh leaves or seeds crushed with water to make an edible paste.	Raw
39.	*Terminalia arjuna* (Roxb. ex DC.) Wight & Arn. [Combretaceae]	Arjuna	Tree	Bark	Heart tonic	Bark is ground into a fine powder.	Raw
40.	*Terminalia chebula* Retz. [Combretaceae]	Silikha	Tree	Fruit	Digestive, jaundice	Finely powdered dry seeds used	Raw

41.	*Mentha arvensis* L. [Lamiaceae]	Padina	Herbs	Leaf	Digestive	Two teaspoons of juice mixed with honey to treat flatulence and aid digestion.	Raw
42.	*Curcuma longa* L. [Zingiberaceae]	Haldi	Herb	Rhizome	Gastric, jaundice	Dry rhizome powdered and mixed with milk, and consume orally.	Raw
43.	*Oxalis debilis* Kunth [Oxalidaceae]	Senga tenga	Herb	Leaves	Diarrhea	Chew washed raw leaves.	Raw
44.	*Paederia foetida* L. [Rubiaceae]	Paduri	Climber	Leaves	Gastric, jaundice	Ground leaves used to make soup.	Raw
45.	*Zingiber officinale* Roscoe [Zingiberaceae]	Ada	Herb	Rhizome	Cough	Rhizome chewed or ground and mixed with honey.	Raw

Table 2: Ethnomedicinal uses of plants by the Garo tribes of Goalpara district for livestock diseases treatment

S. No.	Botanical name and family	Local name	Habit	Plant part used	Ethnobotanical uses	Preparation method	Mode of use
1.	*Averrhoa carambola* L. [Oxalidaceae]	Khanrenga	Tree	Fruit	Urinary disease	Ripe fruit juice extracted and mixed with meals	Raw
2.	*Euphorbia hirta* L. [Euphorbiaceae]	Khatri-phang	Herbs	Whole plant	Skin infection	Latex extracted and applied directly to the infected area.	Raw
3.	*Psidium guajava* L. [Myrtaceae]	Kamperum	Tree	Leaf	Diarrhoea	Raw leaves paste mixed with water, and given orally	Raw
4.	*Ricinus communis* L. [Euphorbiaceae]	Era	Shrub	Fruit, leaf	Constipation	Extract oil from raw seeds and fruits, then mix it with food	Raw
5.	*Scoparia dulcis* L. [Plantaginaceae]	Seni bon	Herbs	Whole plant	Respiratory infections	Raw leaf paste mixed with water, and administered orally.	Raw
6.	*Senna alata* (L.) Roxb. [Fabaceae]	Dadi-mildang	Shrub	Leaf	Fungal infection	Raw leaves crushed and applied to the infected area.	Raw
7.	*Terminalia arjuna* (Roxb. ex DC.) Wight & Arn. [Combretaceae]	Arjuna	Tree	Bark	Cardiac diseases	Bark crushed into a powder and mixed with meals.	Raw
8.	*Curcuma longa* L. [Zingiberaceae]	Haldi	Herb	Rhizome	Inflammatory diseases	Rhizome paste administered orally.	Raw
9.	*Oxalis debilis* Kunth [Oxalidaceae]	Senga tenga	Herb	Leaves	Stomach problem	Crushed leaves mixed with water to relieve stomach upset in sheep.	Raw
10.	*Paederia foetida* L. B. [Rubiaceae]	Paduri	Climber	Leaves	Digestion	Crushed raw leaves mixed with feed to treat flatulence and digestive disorders in cattle.	Raw
11.	*Centella asiatica* (L.) Urb. [Apiaceae]	Manamuni	Herbs	Whole plant	Healing	Whole plant extract used to enhance wound healing in dogs and cats	Raw
12.	*Curcuma zedoaria* (Christm.) Roscoe [Zingiberaceae]	Keturi	Herbs	Rhizome	Digestion	Ground rhizomes mixed with water to treat digestive issues and improve appetite in pigs.	Raw
13.	*Dillenia indica* L. [Dilleniaceae]	Oksi	Tree	Fruits & seed	Fever	Fruit pulp mixed with water and used as a cooling agent for fever in cattle during hot seasons.	Raw
14.	*Dioscorea alata* L. [Dioscoriaceae]	Kath alu	Climber	Tuber	Worm	Crushed tubers mixed with feed to treat intestinal worms in goats.	Raw

The medicinal plants were administered in various forms, including raw usage, infusions, and decoctions. The majority were consumed raw (48.88%), followed by infusions (17.77%) and decoctions (15.55%) (Fig. 6).

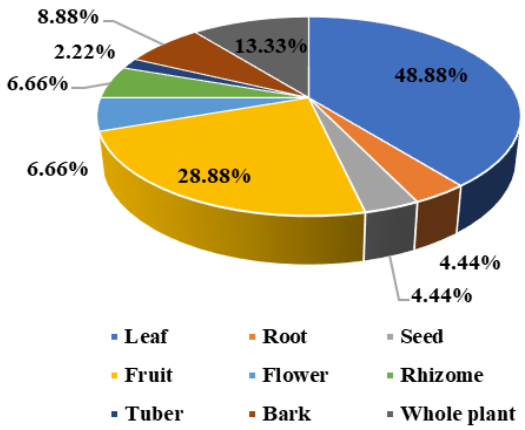

Fig. 4: Plant parts-wise use of medicinal plants used for treating human aliments

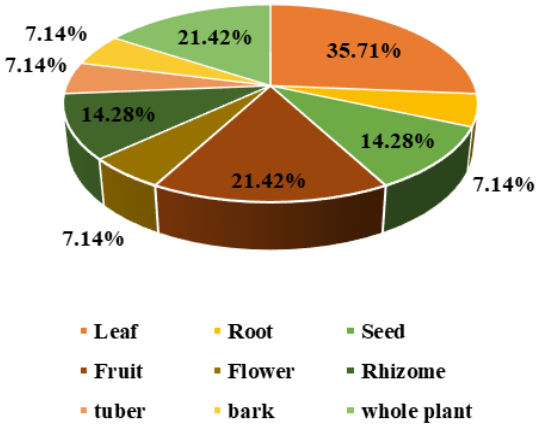

Fig. 5: Plant part-wise use of medicinal plants used for the treating livestock disorders

Plate 1: A. *Erythrina stricta* Roxb., **B**. *Bixa orellana* L., **C**. *Senna alata* (L.) Roxb., **D.** *Curcuma zedoaria* (Christm.) Roscoe., **E.** *Alternanthera sessilis* (L.) R.Br. ex DC., **F**. *Euphorbia hirta* L., **G**. *Ricinus communis* L., **H**. *Leucas aspera* (Willd.) Link, **I**. *Melia azedarach* L., **J**. *Melastoma malabathricum* L., **K**. *Murraya koenigii* (L.) Spreng, **L**. *Averrhoa carambola* L., **M**. *Phlogacanthus thyrsiflorus* Nees, **N**. *Dillenia indica* L., **O**. *Paederia foetida* L., **P**. *Curcuma longa* L.

Plate 2: A. *Aegle marmelos* (L.) Corrêa, **B.** *Psidium guajava* L., **C**. *Bauhinia purpurea* L., **D**. *Nyctanthes arbor-tristis* L., **E**. *Oxalis debilis* Kunth, **F.** *Abutilon indicum* (L.) Sweet, **G**. *Alternanthera sessilis* (L.) R.Br. ex DC., **H**. *Achyranthes aspera* L., **I.** *Oroxylum indicum* (L.) Kurz, **J**. *Moringa oleifera* Lam, **K**. *Neolamarckia cadamba* (Roxb.) Bosser, **L**. *Calotropis gigantean* (L.) Dryand.

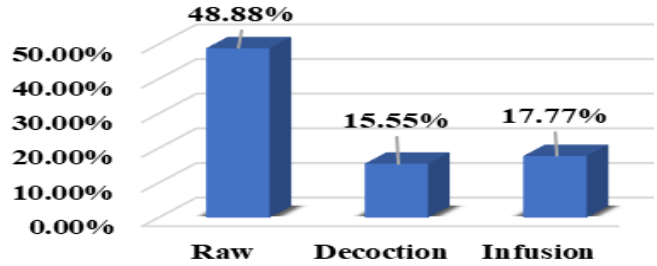

Fig. 6: Various forms of medication used by Garo tribes

Quantitative analysis

The quantitative analysis of ethnomedicinal plant usage revealed that *Azadirachta indica*, *Centella asiatica*, *Leucas aspera*, *Bergera koenigii*, *Terminalia arjuna*, and *Curcuma longa* had the highest Use value (UV) index of 0.96 (Table 3), indicating their cultural significance and frequent use. In contrast, *Senna alata* had the lowest UV index (0.23). Similarly, the fidelity level (FL%) measures the proportion of informants consistently associating a plant with a specific use. *C. longa* recorded the highest FL (93.33%), while *S. alata* had the lowest (40%). A high FL suggests that a plant plays a consistent and reliable role in treating specific ailments (Kumar et al., 2021). The combination of high UV and FL indicates both broad medicinal applications and specific therapeutic reliability, emphasizing their ethnomedicinal potential. These findings

Table 3: Use-value (UV) index and fidelity level (FL%) of medicinal plants in the study area

S. No.	Name of medicinal plants	No. of citations among informants (30)	UV index	Fidelity level (%)
1.	*Abutilon indicum* (L.)	18	0.60	63.63
2.	Achyranthes aspera L.	19	0.63	46.15
3.	*Aegle marmelos* (L.) Correa	28	0.93	47.36
4.	*Andrographis paniculata* (Burm.f.) Wall. ex Nees	24	0.80	84.61
5.	*Alstonia scholaris* (L.) R. Br.	22	0.73	69.23
6.	*Amaranthus spinosus* L.	27	0.90	58.82
7.	*Alternanthera sessilis* (L.) R. Br. ex DC	19	0.63	72.72
8.	*Asparagus racemosus* Willd.	23	0.76	91.66
9.	*Averrhoa carambola* L.	27	0.90	80.00
10.	*Azadirachta indica* A. Juss.	29	0.96	70.58
11.	*Bauhinia purpurea* L.	12	0.40	50.00
12.	*Bixa orellana* L.	13	0.43	62.50
13.	*Bryophyllum pinnatum* (Lam.) Oken.	28	0.93	86.66
14.	*Calotropis gigantea* (L.) Dryand.	21	0.70	75.00
15.	*Centella asiatica* (L.) Urb.	29	0.96	66.66
16.	*Curcuma zedoaria* (Christm.) Roscoe	15	0.50	85.71
17.	*Dillenia indica* L.	26	0.86	88.88
18.	*Dioscorea alata* L.	17	0.56	57.14
19.	*Erythrina stricta* Roxb.	11	0.36	81.81
20.	*Euphorbia hirta* L.	20	0.66	78.57
21.	*Hibiscus rosa-sinensis* L.	25	0.83	81.25
22.	*Leucas aspera* (Willd.) Link	29	0.96	75.00
23.	*Hibiscus sabdariffa* L.	21	0.70	66.66
24.	*Melastoma malabathricum* L.	10	0.33	80.00
25.	*Mimosa pudica* L.	27	0.90	75.00
26.	*Moringa oleifera* Lam.	25	0.83	73.33
27.	*Bergera koenigii* L.	29	0.96	84.61
28.	*Neolamarckia cadamba* (Roxb.) Bosser	14	0.41	50.00
29.	*Nyctanthes arbor-tristis* L.	26	0.86	73.33
30.	*Ocimum tenuiflorum* L.	24	0.80	84.61
31.	*Oroxylum indicum* (L.) Kurz	16	0.53	50.00
32.	*Melia azedarach* L.	8	0.26	33.33
33.	*Phlogacanthus thyrsiflorus* Nees	19	0.63	72.72
34.	*Piper nigrum* L.	25	0.83	66.66
35.	*Psidium guajava* L.	24	0.80	71.42
36.	*Ricinus communis* L.	18	0.60	63.63
37.	*Scoparia dulcis* L.	14	0.46	75.00
38.	*Senna alata* (L.) Roxb.	7	0.23	40.00
39.	*Terminalia arjuna* (Roxb. ex DC.) Wight & Arn	29	0.96	81.25
40.	*Terminalia chebula* Retz.	27	0.90	80.00
41.	*Mentha arvensis* L.	23	0.76	76.92
42.	*Curcuma longa* L.	29	0.96	93.33
43.	*Oxalis debilis* Kunth	20	0.66	66.66
44.	*Paederia foetida* L.	28	0.93	86.66
45.	*Zingiber officinale* Roscoe	27	0.90	92.85

underscore the importance of bioprospecting and conservation to safeguard traditional knowledge for future applications.

Conclusion: This study highlights the unique ethnobotanical knowledge of the Garo tribes in Goalpara district, Assam, documenting 45 medicinal plants from 27 families used in human and

livestock healthcare. Their integration into traditional cuisine reflects a deep-rooted healing tradition that enhances both health and culinary heritage. Quantitative analysis underscores their cultural and medicinal value, with high use value (UV) and fidelity level (FL%) for key species. As part of Northeast India's rich ethnomedicinal legacy, this knowledge risks gradual erosion. Urgent documentation, conservation, and pharmacological validation are essential to sustain biodiversity, traditional wisdom, and future therapeutics.

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