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Ethnobotanical study of different medicinal plants used by Bodo community of Dhemaji District of Assam, India

Probha Boro[1]* and Jyotishma Nath[2]

[1,2] Department of Botany, Silapathar Science College, Silapathar, Assam, India-787059

Corresponding address: probhaboro123@gmail.com

Abstract

The present investigation documented the traditional knowledge associated with medicinal plants used by the Bodo community of Dhemaji district, Assam, for healthcare and the treatment of various ailments. The ethnobotanical information was collected through interviews and informal conversations with knowledgeable elderly men and women belonging to the Bodo community. In this investigation, a total of 50 plant species belonging to 31 families were described, which were used for the treatment of 46 ailments. Leaves were the most commonly used plant part. Herbs were the dominant plant category. The most frequently reported medicinal uses were for skin diseases, jaundice, and dysentery. Among the documented plant species, Lamiaceae was the most represented family.

Keywords: *Ethnobotany, Bodo community, Medicine, Healer, Dhemaji, Assam.*

Introduction

Ethnobotany is an interdisciplinary field that examines the relationships between human societies and plants, with particular emphasis on the traditional knowledge, utilization, and cultural significance of plant resources (Cotton et.al, 1996) [2]. Traditional medicinal knowledge has been developed and transmitted through generations and continues to play a vital role in primary healthcare systems, especially among indigenous and rural communities (WHO, 2013) [12]. In many parts of India, medicinal plants remain an important component of healthcare practices due to their accessibility, affordability, and perceived effectiveness in treating various ailments (Jain et.al, 1991) [7].

The Northeastern region of India is recognized as one of the world's biodiversity hotspots and is inhabited by numerous ethnic communities possessing rich indigenous knowledge related to the use of medicinal plants (Mao et al., 2009) [10]. Among these communities, the Bodo people have maintained a close association with their natural environment and have developed extensive knowledge regarding the therapeutic uses of local flora. This traditional knowledge forms an integral part of their cultural heritage and contributes significantly to community healthcare. However, rapid socio-economic changes, urbanization, modernization, and the declining interest of younger generations in traditional practices pose serious threats to the preservation of this valuable knowledge (Kala et.al, 2005) [8].

Dhemaji District of Assam is characterized by diverse vegetation and a rich cultural landscape that supports a wide variety of medicinal plant species. The Bodo community residing in this district continues to utilize plant-based remedies for the treatment of common ailments and health disorders. Documentation of such ethnomedicinal knowledge is essential not only for conserving traditional healthcare practices but also for identifying plant resources with potential pharmacological value (Fabricant & Farnsworth, 2001) [3].

The present study was undertaken to document the traditional medicinal plants used by the Bodo community in Dhemaji District, Assam. Specifically, the study aimed to identify and record medicinal plant species traditionally employed for healthcare purposes, document their local and botanical names, and investigate the plant parts utilized, methods of preparation, and modes of administration adopted in traditional treatments. The findings of this study are expected to contribute to the preservation of indigenous knowledge and provide a foundation for future ethnobotanical and pharmacological research.

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Materials and Methods

The present ethnobotanical investigation was conducted in Demow, Simen Chapori, Dipa, Jaipur, and Majorbari village of Dhemaji District, Assam during the month of January to May, 2026. The study area situated in the northeastern part of the state and lies between 27°05′–27°57′ N latitude and 94°12′–95°41′ E longitude. The district is characterized by a humid subtropical climate, fertile alluvial plains, and rich floral diversity. Agriculture is the primary occupation of the local inhabitants, and several indigenous communities, including the Bodo community, reside in the district. The abundance of natural vegetation and the continued dependence on plant-based healthcare systems make the area suitable for ethnobotanical studies.

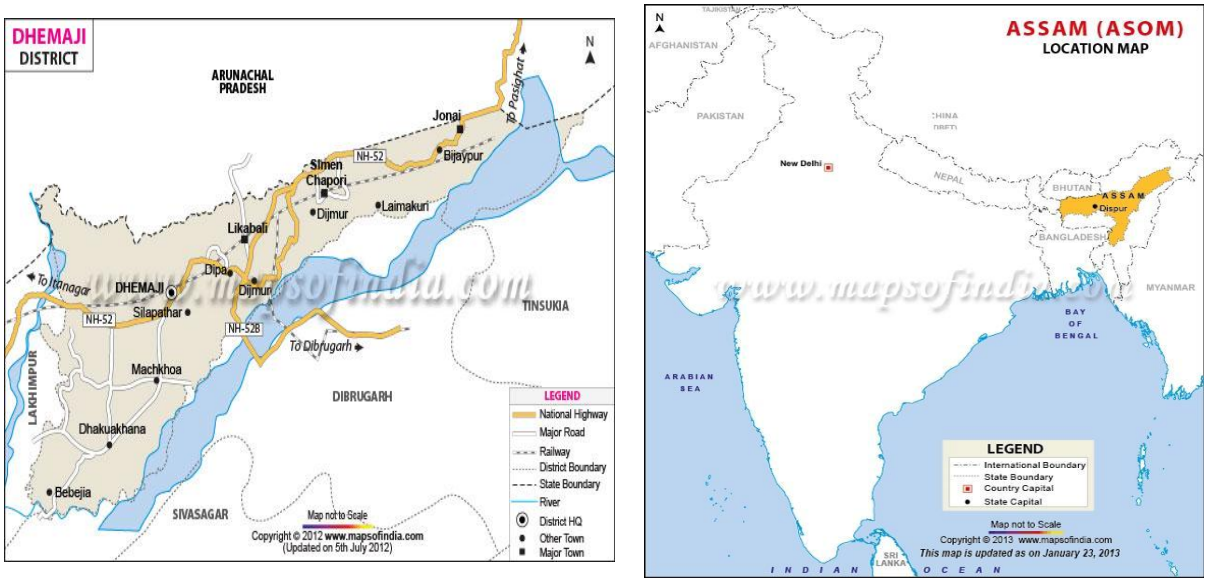

Fig- 1: Map of the study area (Dhemaji District) along with Indian map

Ethnobotanical data were collected through interviews, personal discussions, and field observations with the Bodo community, following standard methods. Information on medicinal plant use was obtained directly from informants in their local language, documenting vernacular names, ailments treated, plant parts used, preparation methods, and dosage. Specimens reported by respondents were collected during field visits with the help of local guides, processed, preserved, and identified using regional floras, taxonomic literature, and authenticated herbarium references. Both local (Bodo) and scientific names were recorded to correlate indigenous knowledge with botanical information. Details of preparation methods such as decoction, paste, infusion, and direct consumption, along with therapeutic applications, were systematically documented. The collected data were analyzed descriptively, categorizing species by families, growth habits, plant parts used, preparation methods, and ailments treated, thereby highlighting traditional healthcare practices of the Bodo community in Dhemaji District.

Result and Discussion

The analysis of plant family distribution revealed that the documented medicinal plants belonged to a wide range of taxonomic families, indicating considerable botanical diversity in the study area. All the plants are documented in Table 1. Among the recorded families, Lamiaceae was the most dominant, followed by Asteraceae and Fabaceae (Figure 2). Several other families were represented by one or two species, demonstrating a broad utilization of plant resources by the Bodo community. The predominance of certain families may be attributed to their abundance, accessibility, and recognized medicinal value. Overall, the diversity of plant families highlights the rich ethnobotanical knowledge of the community and emphasizes the need for conservation of these valuable plant resources.

The predominance of herbs in traditional healthcare systems may be attribute to their abundance in natural habitats, rapid growth, and higher concentration of bioactive components in accessible parts such as leaves, stems, and rhizomes Among them the most common habitat is herbs (43.1%) followed by trees, shrub, small tree, climbers and creeping herbs (Figure 3).

The ethnobotanical survey conducted among the Bodo community of Dhemaji District recorded the use of a wide range of plant parts in the preparation of traditional herbal remedies. A total of 50 medicinal plant species were documented, yielding 72 individual plant-part use reports. Among these, leaves were the most frequently utilized plant part, accounting for 30 use reports (42%), followed by fruits with 9 use reports (12%), roots with 7 use reports (10%), and bark, rhizomes, and flowers with 5 use reports each (7%). Stems contributed 4 use reports (5%), whereas twigs, seeds, and whole plants were represented by 2 use reports each (3%). Bulbs were the least commonly used plant part, contributing only 1 use report (1%) (Figure 4).

The greater reliance on leaves suggests that they play a central role in the traditional healthcare system of the study area. Their widespread use may be associated with their easy availability, simple collection process, and continuous regeneration throughout the growing season. In addition, leaves contain numerous phytochemical constituents that are often responsible for medicinal activity. Because leaf harvesting generally does not destroy the plant, local communities may prefer this plant part for the preparation of remedies. Similar trends have been observed in several ethnobotanical investigations, where leaves constituted the principal component of traditional herbal formulations (Gidayet al., 2003; Kala, 2005) [4], [8].

Fruits formed the second-largest category of medicinal plant parts. Several species, including *Phyllanthus emblica*, *Psidium guajava*, *Momordica charantia*, and *Citrus aurantiifolia*, were reported to be used in the treatment of various ailments. The medicinal importance of fruits may be related to their nutritional value and the presence of biologically active compounds that contribute to disease prevention and recovery.

Roots, bark, and rhizomes were also important components of traditional remedies. These plant parts were commonly employed for treating digestive disorders, respiratory problems, skin diseases, and other health conditions. Although these structures are often rich in therapeutic compounds, indiscriminate collection may threaten plant survival because harvesting roots and bark can severely damage or kill the plant. Therefore, proper conservation measures and sustainable harvesting practices are necessary to maintain the availability of these medicinal resources for future generations (Hamilton et.al 2004) [5].

The findings indicate that traditional medicinal plants are predominantly used for the treatment of digestive and skin-related ailments, highlighting the importance of indigenous ethnomedicinal knowledge in addressing common health problems within the community. Some of the pictures during medicine preparation are shown in Figure 5. The diversity of ailments treated demonstrates the broad therapeutic significance of medicinal plants in primary healthcare practices.

Table 1: Checklist of ethnomedicinal plants used by the Bodo communities of Dhemaji District, Assam

Sl. No.	Scientific Name	Common Name (Bodo)	Family	Part Used	Diseases/Ailment Treated	Habit
1.	*Acemella ciliata* (Kunth) Cass	Jharifisa	Asteraceae	Leaf	Tongue bumps	Herb
2.	*Amaranthus viridis* L.	Khutra	Amaranthaceae	Leaf	Blood purification	Herb
3.	*Jatropha curcas* L.	Enda	Euphorbiaceae	Twig Roots	Tooth decay	Shrub
4.	*Ocimum tenuiflorum* L.	Tulungshi	Lamiaceae	Leaf	Cough	Herb
5.	*Zingiber officinale* Roscoe	Hijeng	Zingiberaceae	Rhizome	Cough, Dog bite, vomiting	Herb
6.	*Areca catechu* L.	Goi	Aracaceae	Seed	Dysentery	Tree
7.	*Azadirachta indica* A.Juss.	Neem	Maliaceae	Leaf	Diabetes, Itching, Ringworm	Tree
8.	*Rosa indica* L.	Golab Bibar	Rosaceae	Flower Leaf	Constipation	Shrub

9.	*Centella asiatica* (L.) Urb.	Manimuni	Apiaceae	Leaf Root	Boils	Creeping herb
10.	*Lawsonia inermis* L.	Jentoka	Lythraceae	Leaf	Dry skin/ cracks on skin	Shrub
11.	*Carcia papaya* L.	Muduful	Cariacear	Fruit	Burning skin	Small tree
12.	*Phyllanthus emblica* L.	Hamlai	Phyllanthaceae	Fruit	Falling of hair	Tree
13.	*Momordica charantia* L.	Korola	Cucurbitaceae	Fruit	Dsymenorrhoah	Climber
14.	*Kalanchoe pinnata* (Lam.) Pers.	Bilai gaja	Crassulaceae	Leaves	Kidney stone	Herb
15.	*Euphorbia neriifolia* L.	Sijou	Euphorbiaceae	leaves	Wounds, inflammation	Tree
16.	*Psidium guajava* L.	Saphari	Myrtaceae	Leaves	Diarrhea, Dysentery, Skin diseases	Tree
17.	*Nyctanthes arbortristis* L.	Sewali	Oleaceae	Leaves, Flower	Malaria, Diabetes, Ringworm	Small tree
18.	*Murraya koeniggi*(L.) Spreng	Norsing	Rutaceae	Leaves	Skin problem, Blood disorders	Small tree
19.	*Ocimum tenuiflorum* L.	Tulunsi	Lamiaceae	Leaves	Sore eye, Pneumonia	Herb
20.	*Mentha spicata* L.	Pudina	Lamiaceae	Leaves	Digestive issue, oral problem	Herb
21.	*Curcuma longa* L.	Haldoi	Zingiberaceae	Rhizome	Pimples	Herb
22.	*Zingiber officinalis* Roscoe	Haizang	Zingiberaceae	Rhizome	Vomiting	Herb
23.	*Musa balbisiana* Colla	Bhimthalir	Musaceae	Fruit	Dysentery	Giant herb
24.	*Nyctanthes arbortristis* L.	Sewali	Olaceae	Leaves , Flower	Ringworm, skin disease.	Shrub
25.	Moringa oleifera Lam	Sajna	Moringaceae	Leaves, Bark	Excessive urine	Tree
26.	Allium cepa L.	Sambramgaja	Amaryllidaceae	Bulb	Insect bite	Herb
27.	*Musa paradisiaca* L.	Thalir	Musaceae	Stem	Excess urination	Giant herb
28.	*Citrus aurentiifoli* (Christm.) Swingle	Golnemu	Rutaceae	Fruit	Skin disease	Shrubs
29.	*Tamarindus Indica* L.	Thing-klang	Fabaceae	Leaves	Piles	Tree
30.	*Mangifera indica* L. & *Cynodon dactylon*(L).pers	Thaijwo & Dhubrihagra	Anacardiaceae & Poaceae	Bark & Roots	Jaundice	Tree & Herbs

31.	*Solanum lycopersicus* L.	Bilahi	Solanaceae	Fruit, Leaves and roots	Heart disease, Skin diseases	Herb
32.	*Clitoria ternata* L.	Aparajita	Fabiaceae	Leaves, Root, Flower, Seeds	Snake bite, Azoospermia	Herb
33.	*Tegete serecta* L.	Narjibibar	Asteraceae	Leaves, flower	Fever, Blood purification	Herb
34.	*Catharanthus roseus* (L.) G.Don	Nayantara	Apocynaceae	Leaves, Root	Diabetes , cancer	Small herb
35.	*Mimosa pudica* L.	Daosamukreb	Fabaceae	Whole plant	Juindice , stomach pain	Herb
36.	*Lippia alba* (Mill.) N.E.Br. ex-Britton & P.Wilson	Ontaibazab	Vernaceae	Leaves	Feaver, Digestive issue, Respiratory ailments	Shrub
37.	*Mentha villosa* Huds.	Pudina	Lamiaceae	Leaves	Digestive issue, Headach, Respiratory problem	Shrub
38.	*Ananas comosus* (L.) Merr.	Anarosbilai	Bromeliaceae	Leaves	Hiccups	Herb
39.	*Capsicum annuum* L.	Phanlubwddwn	Solanaceae	Fruit	Migraine	Herb
40.	*Corchorus capsularis* L.	Fatw	Malvaceae	Bark and stem	Cuts	Shrub
41.	*Chromolaena odorata* (L.) R.M.King & H.Rob.	Lewabendwng	Asteraceae	Leaves	Bleeding stop	Shrub
42.	*Cinnamomum tamala* (Buch. -Ham.) T.Nees & Eberm.	Tej pat	Lauraceae	Leaves	Eye problem	Tree
43.	*Clitoria ternatea* L.	Aparajita	Fabaceae	Flower	Digestion	Climber
44.	*Hellenia speciosa* (J.Koenig) S.R.Dutta	Burithokon	Costaceae	Rhizome	Burning urine	Shrub
45.	*Hypericum japonicum* Thunb & Murray	Sonaphuli	Hypericaceae	Whole plant	Typhoid, Jaundice, Gastric	Herb
46.	*Houttuyani cordata* Thunb	Maisundri	Saururaceae	Leaves	Cough , inflamation	Herb
47.	*Oroxylum indicum* (L.) Kurz	Kharokhandai	Bignoniaceae	Stem, bark	Jaundice	Tree
48.	*Acorus calamus* L.	Bosib	Acoraceae	Leaves	Gastric	Herb
49.	*Aegle marmelos* (L.) Correa	Bael	Rutaceae	Leaves	Dog bite	Tree
50.	*Ziziphus jujuba* Mill.	Bwigri bijou	Rahmnaceae	Twig and Leaves	Stomach ache	Tree

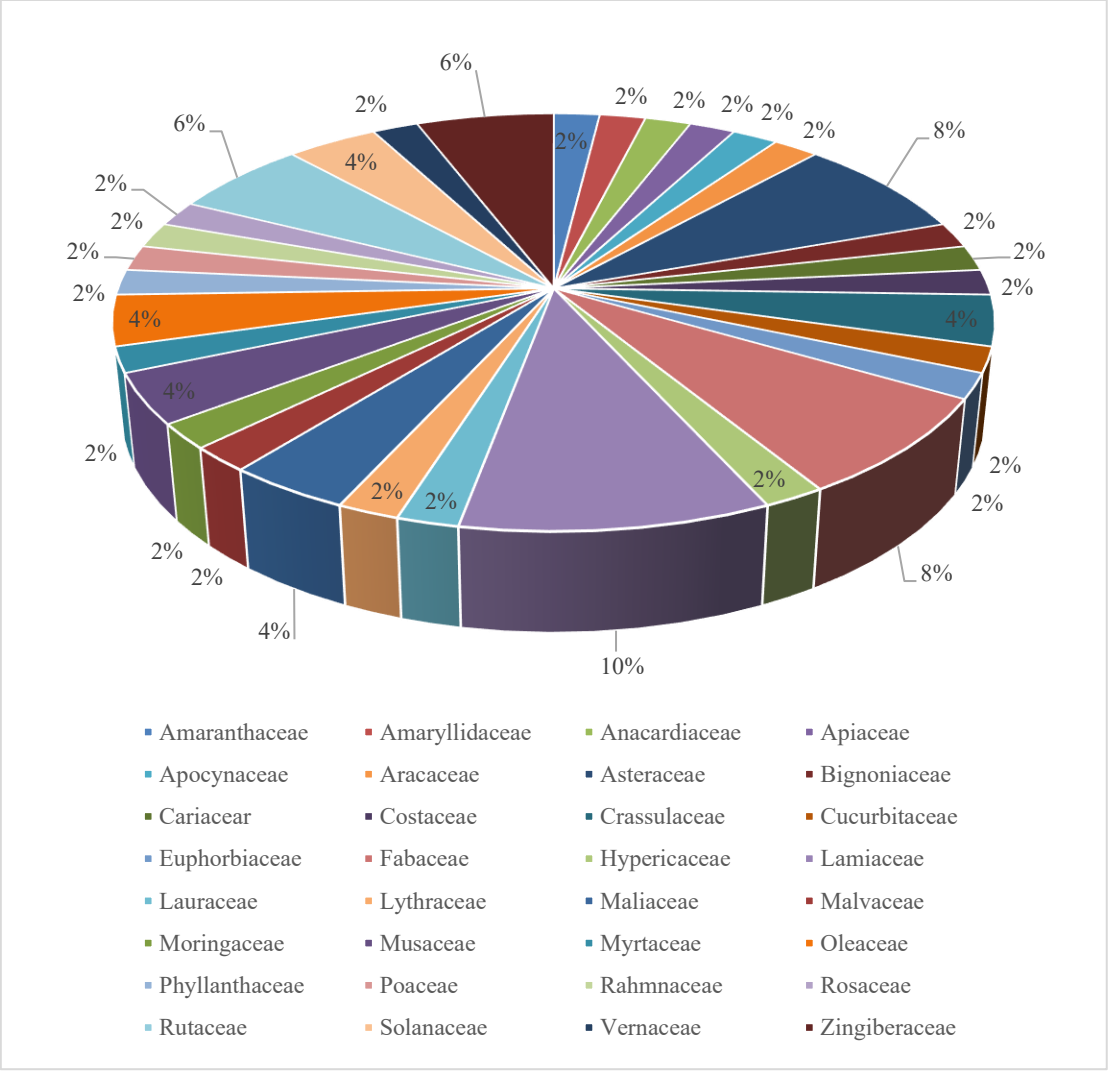

Fig 2: Different plant families found during the survey

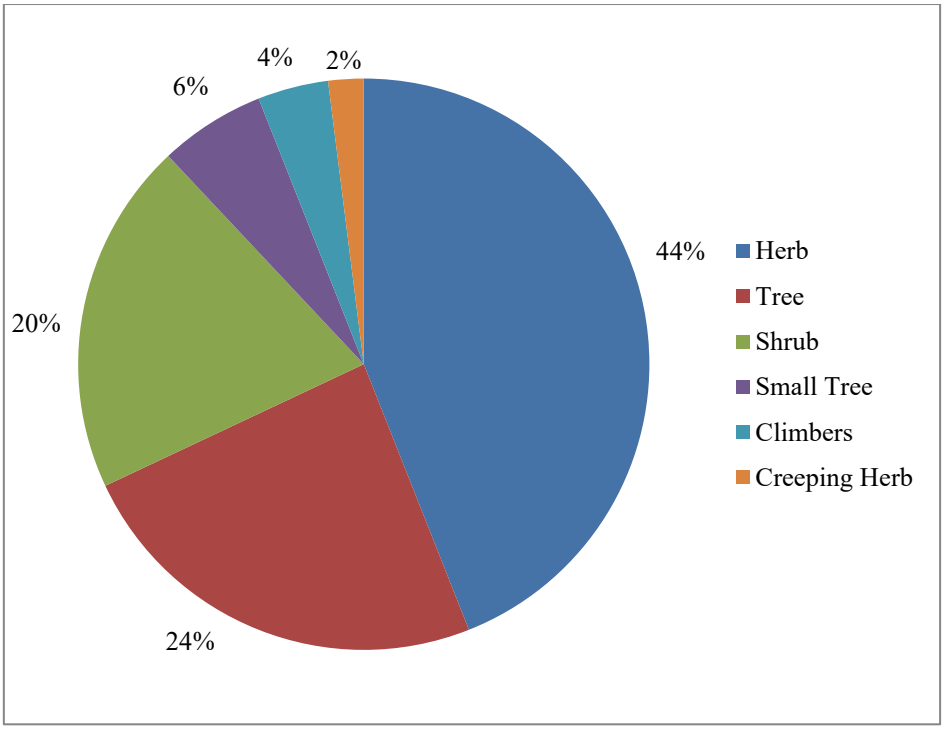

Fig 3: Percentage of Growth from Analysis

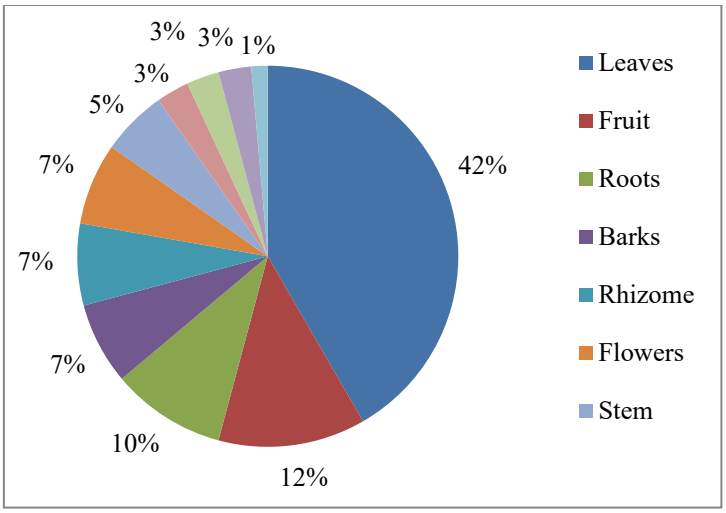

Fig 4: Percentage of plant part utilization analysis

Mode of ethnomedicine medicine preparation:

The Bodo community has relied on various locally available plants for medicinal purposes since time immemorial. Their rich ethnobotanical knowledge includes the preparation and application of herbal medicines, many of which continue to play a vital role in traditional healthcare practices. Some of these remedies and their methods of preparation are described in the following section.

In Jaundice:

Fig 5: Photograph during (a) Plant part collection, (b) and (c) Conversation with ojah and (d) Plant parts used for the processing of medicine

Firstly, the root of the Thazhuthama, rhizome of *zingiberzerumbetand* the leaves of the boss plants were collected (Figure 5). Small piece of each plant part were taken and the pieces were combined and tied together and entered in the coccon of silk worm. The prepared bundle is then worn around the necklace for 3-4 days.

Fig 6: (a) and (b) Collection of plant parts, (c) plant parts prepared for grinding, (d) Grinding, (e) Paste and (f) Squeezing the paste for juice collection

In Constipation

Firstly, the leaves and stem of bitter vine are collected and thoroughly washed with clean water. Then the stem and leaves are cut in small piece and grounded into soft, smooth paste. The prepared paste is squeezed to extract the juice (Figure 6). Approximately one spoonful of the extracted juice is mixed with half glass of water and consumed orally.

Fig 7: (a)-(f) showing the different steps of medicine preparation

In Skin disease

Firstly, the leaves of wild fern, Neem and pale knotweed are collected and thoroughly washed with clean water. Next the leaves are taken and ground for few minutes and the ground part are transferred into clean container with water and let it boil for 10 -15 minute. After boiling for 10-15 minutes, the decoction is allowed to cool down and then strained (Figure 7). The strained liquid for about 1 glass is mixed with one bucket of water and used as a medicinal bath.

In Pneumonia disease

Firstly, the leaves and flower of *Hypericum japonicum*, Rupaphuli and bark of Laidolor plant is taken and washed properly then they are grinded together with black Pepper, Elaichi, Laung and made a fine paste after this the paste is dried. Then it is consumed my mixing one tablespoon of the paste with one glass of hot water and consumed till fully recovered.

The findings indicate that traditional medicinal practices in Dhemaji District depend heavily on renewable plant materials, particularly leaves. This pattern demonstrates a practical approach to resource utilization and highlights the rich ethno medicinal knowledge preserved within the community. Documentation of such information is important for safeguarding traditional knowledge and may provide a foundation for future phytochemical and pharmacological studies aimed at validating the therapeutic potential of these medicinal plants.

Conclusion

Present study documented the traditional medicinal knowledge of the Bodo community in Dhemaji District, Assam, and recorded 50 medicinal plant species belonging to diverse families that are used for the treatment of various human ailments. The findings revealed that local people continue to rely on plant-based remedies for managing common health problems such as digestive disorders, respiratory diseases, skin infections, diabetes, jaundice, wounds, and urinary complaints. The study also highlighted the use of different plant parts, with leaves being the most frequently utilized component, followed by fruits, roots, bark, rhizomes, and flowers.

Conflict of Interest

The authors declare no conflicts of interest regarding the publication of this manuscript.

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