



Ethnobotany of Traditional Medicinal Plants in the Lumban Sipahutar Community, North Sumatra, Indonesia

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Abstract

Community knowledge regarding the use of traditional medicinal plants represents an important component of local wisdom that should be documented to support the conservation of biodiversity and the preservation of traditional healthcare systems. This study aims to inventory the medicinal plant species utilized by the people of Lumban Sipahutar, North Sumatra, Indonesia, and to document their botanical classification, plant parts used, preparation methods, and traditional medicinal applications. The research employed an ethnobotanical approach using a qualitative descriptive method. Data was collected through field observations, in-depth interviews, documentation, and morphological identification of plant specimens, which were subsequently classified taxonomically to the species level. The findings identified 16 medicinal plant species traditionally used by the local community for healthcare purposes. These species belong to various botanical families, with leaves being the most frequently utilized plant part, followed by rhizomes, stems, roots, fruits, and flowers. The plants are commonly prepared by boiling, pounding, infusion, or direct application. Most species are traditionally used to treat digestive disorders, respiratory ailments, fever, and wound-related conditions. The findings demonstrate that the people of Lumban Sipahutar continue to preserve a traditional healthcare system based on local biological resources, highlighting its potential contribution to biodiversity conservation and the development of phytopharmaceutical research in Indonesia.

Keywords: Ethnobotany; Medicinal Plants; Lumban Sipahutar; Traditional Knowledge.

Abstrak: Pengetahuan masyarakat mengenai pemanfaatan tanaman obat tradisional merupakan bagian penting dari kearifan lokal yang perlu didokumentasikan sebagai upaya pelestarian keanekaragaman hayati dan sistem kesehatan tradisional. Penelitian ini bertujuan menginventarisasi spesies tanaman obat yang dimanfaatkan oleh masyarakat Lumban Sipahutar, Sumatera Utara, serta mendokumentasikan klasifikasi botani, bagian tanaman yang digunakan, metode pengolahan, dan khasiatnya. Penelitian menggunakan pendekatan etnobotani dengan metode deskriptif kualitatif. Data dikumpulkan melalui observasi lapangan, wawancara mendalam, dokumentasi, serta identifikasi morfologi tanaman yang kemudian diklasifikasikan secara taksonomi hingga tingkat spesies. Hasil penelitian

mengidentifikasi 16 spesies tanaman obat yang dimanfaatkan masyarakat sebagai pengobatan tradisional. Tanaman tersebut berasal dari berbagai famili botani dengan bagian yang paling banyak digunakan adalah daun, diikuti rimpang, batang, akar, buah, dan bunga. Pengolahan dilakukan melalui perebusan, penumbukan, penyeduhan, atau penggunaan secara langsung. Sebagian besar tanaman dimanfaatkan untuk mengatasi gangguan pencernaan, gangguan pernapasan, demam, serta perawatan luka. Temuan ini menunjukkan bahwa masyarakat Lumban Sipahutar masih mempertahankan sistem pengobatan tradisional berbasis sumber daya hayati lokal yang berpotensi mendukung konservasi keanekaragaman hayati dan pengembangan penelitian fitofarmaka di Indonesia.

Kata Kunci: *Etnobotani; Tanaman Obat; Lumban Sipahutar; Pengetahuan Tradisional.*

INTRODUCTION

Local wisdom in utilizing biodiversity as traditional medicinal ingredients represents a form of indigenous ecological knowledge that develops through long-term interactions between humans and their natural environment (Franco & Mustaqim, 2021). From an ethnobotanical perspective, this knowledge not only represents traditional healing practices but also reflects community adaptation systems to ecological, cultural, and health conditions shaped across generations. In many developing nations, knowledge of medicinal plants remains a vital component of primary healthcare systems, particularly in rural communities with limited access to modern healthcare facilities. This condition indicates that medicinal plants are not merely sources of natural ingredients but are integral components of local knowledge systems that contribute to community health resilience while simultaneously supporting biodiversity conservation (Febriyanti et al., 2026).

In North Sumatra, the presence of tens of thousands of plant species offers significant potential for developing traditional medicine based on local resources. This biological wealth must be accompanied by adequate documentation of community knowledge regarding its utilization (Rambey et al., 2024). Most knowledge concerning species identification, plant parts used, preparation techniques, dosage, and therapeutic indications is still transmitted orally through families or customary leaders. This oral transmission system renders ethnobotanical information highly vulnerable to erosion driven by social changes, modernization, a shift toward modern medical services, and declining engagement of the younger generation in traditional healing practices. Consequently, the loss of local knowledge not only diminishes the cultural heritage of the community but also threatens to eradicate biological information of strategic value for pharmaceutical development, plant conservation, and public health (Silalahi et al., 2015).

A wealth of traditional medicinal plant knowledge is also found within the Lumban Sipahutar community in North Sumatra, which continues to preserve the tradition of using various plant species to treat diverse health issues. Various plant types are utilized based on empirical experiences passed down through generations within daily community practices. This knowledge encompasses species identification, selection of utilized plant parts, preparation techniques, methods of administration, and beliefs regarding therapeutic efficacy. However, this knowledge remains largely locked within the community's collective memory and has not been scientifically documented. This condition poses a critical issue, as changes in social structure, increased population mobility, and the dominance of modern healthcare systems could accelerate the loss of local ethnobotanical knowledge, which serves as a core component of the community's cultural identity.

Numerous ethnobotanical studies in Indonesia have successfully inventoried various types of medicinal plants utilized by indigenous peoples and local communities across North Sumatra (Gani et al., 2024; Rambey et al., 2024; Sari et al., 2025; Sitanggang et al., 2022; Ulfa et al., 2026). However, documentation of traditional medicinal plants within the Lumban Sipahutar community remains highly limited. Consequently, comprehensive scientific data delineating species composition, plant families, utilized plant parts, processing techniques, administration methods, and the types of ailments treated based on local knowledge are currently unavailable. This limitation highlights a critical research gap that needs to be addressed, given that every community possesses distinct ecological and cultural characteristics that shape unique variations in ethnobotanical knowledge.

Addressing this gap, this study aims not only to establish a comprehensive inventory of traditional medicinal plants used by the Lumban Sipahutar community but also to analyze their utilization patterns through an ethnobotanical lens. The analysis is structured to uncover the relationship between plant species diversity, utilized plant parts, preparation techniques, administration modes, and disease indications as a representation of indigenous ecological knowledge. Therefore, this research provides a significant scientific contribution by offering a systematic documentation of the ethnobotanical knowledge of the Lumban Sipahutar community, which has been underreported in scientific literature. The findings are expected to enrich ethnobotanical studies in Indonesia, support community-based biodiversity conservation efforts, and serve as a foundation for future pharmacological research, phytomedicine development, and policies on preserving local wisdom.

METHOD

This study employed a qualitative approach with an ethnobotanical design to document local community knowledge regarding the utilization of traditional medicinal plants in Lumban Sipahutar, North Sumatra. The ethnobotanical approach was selected because it captures the direct relationship between the community and the plant resources utilized in their traditional healing system, while simultaneously documenting empirical knowledge developed through intergenerational transmission. The research was conducted among community members who actively practice the use of medicinal plants as part of family healthcare efforts (*Tanaman Obat Keluarga*/TOGA—Family Medicinal Plants).

The study site was in the Lumban Sipahutar region, North Sumatra, characterized by a rural landscape with a relatively high level of floral diversity. These ecological conditions support the growth of various plant species utilized by the community as traditional medicinal sources. The well-preserved state of these biological resources contributes to the ongoing practice of plant-based medicine, which has been passed down through generations and remains integrated into the community's local knowledge system.

Data sources were obtained directly from the traditional healing practices still maintained by the local community. Research informants were selected through purposive sampling, targeting individuals with extensive knowledge and experience in identifying, preparing, and utilizing traditional medicinal plants. These included community leaders, traditional healers (*pengobat tradisional*), and community members who actively use medicinal plants in their daily lives. Data collection techniques involved field observations, in-depth interviews, documentation, and direct identification of the utilized plant species.

Each encountered plant species was documented using photography and morphological character observations to support the botanical identification process. Identification was based on vegetative and generative characters observed in the field, after which specimens were taxonomically classified from the levels of Kingdom, Division, Class, Order, Family, Genus, down to Species. In addition to botanical identification, the collected ethnobotanical information included local plant names, plant parts utilized, processing techniques, modes of administration, and the types of illnesses or health disorders believed to be treated based on the empirical experience of the community.

The obtained data were analyzed using a qualitative descriptive method involving data reduction, categorization of information into ethnobotanical metrics, data presentation via narratives and inventory tables, and drawing conclusions. The analysis focused on the relationships between plant species diversity, botanical characteristics, utilized plant parts, processing techniques, and their utilization patterns within the traditional

healing system of the Lumban Sipahutar community. Through this approach, this study not only generates a comprehensive inventory of medicinal plant species but juga elucidate the local knowledge system underlying the sustainable use of biodiversity as a source of traditional medicine.

RESULTS AND DISCUSSION

Characteristics of the Study Area

The study was conducted in Lumban Sipahutar Village, Sipahutar District, North Tapanuli Regency, North Sumatra Province (Figure 1). Geographically, this area is part of the Bukit Barisan highland landscape, characterized by an undulating to hilly topography, relatively cool air temperatures, high annual rainfall, and high humidity levels that favor the growth of diverse tropical vegetation. These ecological characteristics create a suitable habitat for various wild and cultivated plant species utilized by the local community as sources of food, spices, and traditional medicine. Consequently, the environmental conditions of Lumban Sipahutar serve as a primary factor determining the abundant availability of biological resources utilized in traditional healing practices.

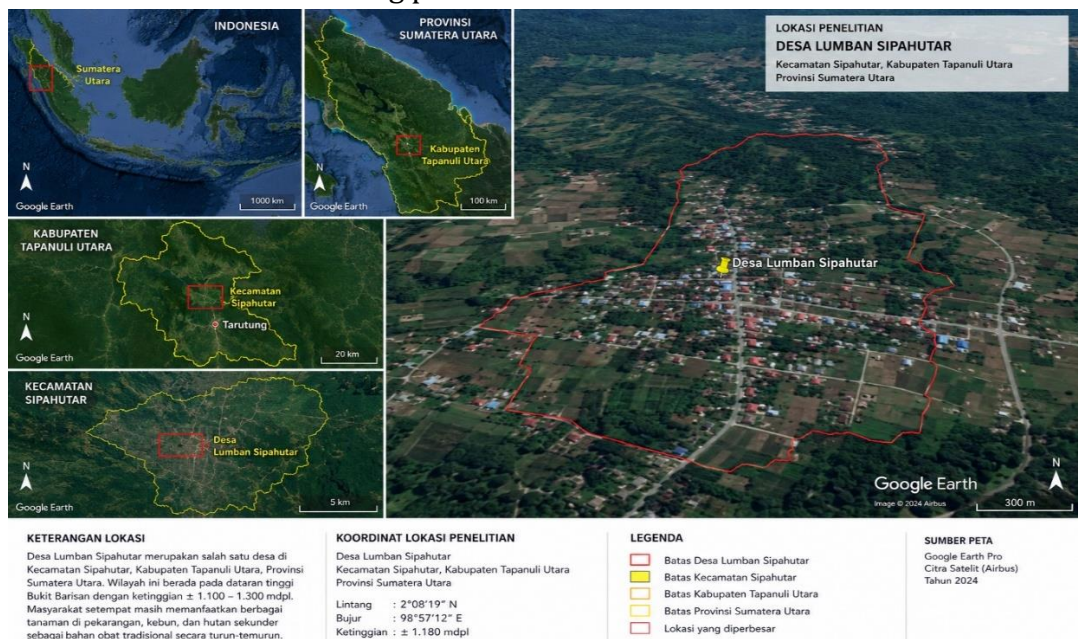


Figure 1. Study Location of Medicinal Plants

The presence of diverse vegetation types in home gardens, community orchards, agricultural lands, and shrublands enables local communities to source medicinal plants independently of modern drug distribution networks. Field observations indicate that most medicinal plant species utilized by the community are sourced from their immediate surroundings, ensuring relatively convenient access to raw therapeutic materials. This dynamic suggests that traditional healing practices in Lumban Sipahutar operate on the principle of *ecological proximity*, characterized by the utilization of plant species that are either naturally available or actively

cultivated near residential settlements. Such patterns illustrate a reciprocal relationship between local environmental characteristics and the indigenous knowledge systems developed within the community.

The utilization of medicinal plants in Lumban Sipahutar is shaped not only by species availability but also by the empirical experiences of the community, transmitted across generations. Interview data reveal that the community maintains a family-based healthcare system, relying on Family Medicinal Plants (*Tanaman Obat Keluarga*/TOGA) as a primary resort for managing minor health ailments. This traditional knowledge encompasses the identification of plant species, the selection of therapeutic parts, the determination of appropriate preparation methods, and the application modes tailored to specific illnesses. Consequently, medicinal plants are viewed not merely as biological resources but as integral elements of the cultural knowledge system embedded in the community's daily life.

The inventory compiled in this study demonstrates that the community utilizes diverse plant species based on empirical experiences validated through routine daily application. Each species was documented through direct observation of morphological characteristics, visual recording, and taxonomic identification to the species level. This approach yields data that not only confirm the botanical identity of the plants but also illustrate the correlations among vernacular names, utilized parts, processing techniques, and therapeutic indications defined by local knowledge. Such documentation is highly critical, as most of this information was previously transmitted solely through oral tradition, making it highly susceptible to loss due to diminishing intergenerational transmission.

Therefore, the study area serves not merely as a site for data collection, but as an ecological and social space that sustains the community's ethnobotanical practices. This perspective underscores that biodiversity conservation must be aligned with the preservation of local knowledge to ensure both continue to support public health resilience in the future.

Table 1: Inventory of Medicinal Plants in Lumban Sipahutar, North Sumatra, Indonesia

Scientific Name / Family	Vernacular Name	Part Used	Therapeutic Efficacy / Ailments Treated	Preparation Method (Application)
 Orthosiphon	Kumis Kucing	Leaves	Kidney stones, urinary tract infections (UTIs), diabetes mellitus, hypertension	Utilized directly as family medicinal plants (Tanaman Obat Keluarga/TOGA)

<i>aristatus</i> (Lamiaceae) 	Bawang Dayak	Bulbs	Hypertension, hypercholesterolemia, diabetes mellitus, immune system disorders, inflammation, infections	Thinly slice 3–5 cloves and steep in hot water (infusion)
<i>Eleutherine bulbosa</i> (Iridaceae) 	Pandan Kuning	Roots / Leaves	Joint pain, rheumatism, abdominal cramps	Decoction of roots or leaves
<i>Pandanus veitchii</i> (Pandanaceae) 	Sintrong, Junggul	Leaves	Stomachache, gastrointestinal disorders, influenza, nasal congestion, wound healing	Crushed leaves applied as a poultice (external/topical application)
<i>Crassocephalum crepidioides</i> (Asteraceae) 	Jambu Biji, Jambu Klutuk	Leaves	Diarrhea, dengue fever (to increase platelet count), abdominal cramps, wounds, hyperpigmentation (dark spots), hypercholesterolemia	Leaf decoction (oral administration) / Crushed leaves (topical application)
<i>Psidium guajava</i> L. (Myrtaceae)				

 Erigeron sumatrensis (Asteraceae)	Jelantir	Leaves	Headache, dizziness, flatulence, mild diarrhea, minor wounds, skin rashes, muscle pain/rheumatism	Crushed leaves applied topically to the skin
 Cymbopogon citratus (Poaceae)	Serai, Sereh	Whole plant	Flatulence, abdominal cramps, diarrhea, headache, joint pain, stress relief/relaxation, detoxification	Aromatherapy or consumed orally for its diuretic effects
 Euphorbia hirta (Euphorbiaceae)	Patikan Kebo, Tanaman Asma	Sap / Leaves	Asthma, bronchitis, dysentery, intestinal parasites, boils, eczema, warts	Sap or leaf decoction applied topically to the affected areas/wounds
 Peperomia pellucida (Piperaceae)	Sirih Cina, Suruhan	Whole plant (primarily leaves)	Gout, headache, swelling/edema, gastritis, acne, boils, abscesses, urinary tract infections (UTIs)	Decoction (oral administration) / Crushed leaves (topical application)

 Plantago major L. (Plantaginaceae)	Daun Sendok, Daun Urat	Leaf extract	Urinary tract infections (UTIs), kidney stones, expectorant (cough relief), diarrhea, constipation, external wound inflammation	Processed as an extract
 Cnidoscolus aconitifolius (Euphorbiaceae)	Pepaya	Leaves	Gastrointestinal/intestinal disorders, anemia, malaria, dengue fever, blood glucose regulation	Not specified
 Ageratum conyzoides L. (Asteraceae)	Bandotan, Babadotan	Leaves	Incised wounds (to stop bleeding), diarrhea, nausea, gastric acid disorders, fever, cough, acne, eczema, rheumatism	Finely crushed and applied topically to wounds / Decoction administered orally
 Ocimum tenuiflorum Linn. (Lamiaceae)	Rukuruku, Kemangi Hutan	Leaves / Sap	Digestive disorders, common cold/flatulence, fever, aphthous ulcers (canker sores), galactagogue (promoting lactation), body odor, acne	Decoction (oral administration), culinary spice, or sap (topical application)

	Pegagan, Daun Kaki Kuda	Leaves	Cognitive/memory enhancement, varicose veins, gastritis, flatulence, stress, anxiety, insomnia	Not specified
Centella asiatica (L.) Urban. (Apiaceae)	Gulma Siam	Leaves	Incised wounds/burns, gastritis, gastric acid disorders, diabetes mellitus, gastrointestinal spasms, vertigo	Fresh leaves are crushed and applied topically, or consumed as a decoction
	Chromolaena odorata (Asteraceae)	Leaves	Headache, minor wounds, insect bites, gastrointestinal disorders, bleeding	Not specified (utilized directly)
	Situduh Langit	Leaves	Headache, minor wounds, insect bites, gastrointestinal disorders, bleeding	Not specified (utilized directly)
Erigeron sumatrensis (Asteraceae)				

Source: Field Observations

Among the 16 identified species, a distinct dominance of the Asteraceae family was observed (including *Crassocephalum crepidioides*, *Erigeron sumatrensis*, *Ageratum conyzoides*, and *Chromolaena odorata*). An intriguing taxonomic finding is the use of distinct vernacular names—namely Jelantir and Situduh Langit—for a single botanical species, *Erigeron sumatrensis*. This phenomenon highlights the ethnobotanical sociolinguistic richness of the Lumban Sipahutar community, where minor morphological variations or distinct growth stages of the same plant are represented by specific names and therapeutic applications within the local lexicon. Furthermore, processing methods dominated by boiling (decoction) and

crushing (topical application) demonstrate an empirical understanding within the community that aligns with the principles of extracting active compounds (such as flavonoids and tannins) that dissolve easily in high-temperature solvents.

Traditional Medicinal Plant Utilization in Lumban Sipahutar, North Sumatra

Traditional ethnobotanical practices in the Lumban Sipahutar community demonstrate the vital role of the local environment in supporting indigenous pharmacological knowledge. The diversity of the Asteraceae family (*Crassocephalum*, *Erigeron*, *Ageratum*, *Chromolaena*) dominates the inventory. The community's knowledge in administering these plants—whether through decoction extraction, topical crushing, or infusion—reflects an empirical understanding of the release of active compounds such as flavonoids, polyphenols, saponins, and tannins. Future modern phytochemical and pharmacological validations, both *in vivo* and *in vitro*, are highly recommended to standardize the dosage and safety profile of these specific plants.

The research findings also indicate that the utilization of medicinal plants by the community prioritizes readily accessible plant parts, such as leaves, rhizomes, stems, fruits, and roots. These components are processed using simple techniques, including boiling, pounding, squeezing, steeping, or direct application, depending on the characteristics of the plant and the type of ailment treated. The simplicity of these preparation methods indicates that the traditional healthcare system developed in Lumban Sipahutar is built upon the efficient utilization of local resources without requiring complex technologies. This condition concurrently illustrates how the community has developed forms of ecological adaptation aligned with their living environment (Rahayu et al., 2024).

These findings reinforce the ethnobotanical perspective that the relationship between a community and plants is not only grounded in biological aspects but is also shaped by cultural factors, collective experiences, and local ecological conditions (Kholibrina & Aswandi, 2021; Silalahi & Nisyawati, 2019). The floral diversity available in Lumban Sipahutar serves as the foundation for the traditional healthcare system that persists to this day. Therefore, documenting medicinal plant species and their utilization patterns is highly significant, serving not only as a biodiversity inventory but also as an effort to preserve local knowledge that holds potential for herbal medicine development, biological resource conservation, and the strengthening of wisdom-based healthcare systems.

Based on the regional characteristics and the inventory results, it can be understood that the traditional healing practices of the Lumban Sipahutar community result from a dynamic interaction between the natural

environment, plant resource availability, and the indigenous knowledge system transmitted across generations.

CONCLUSIONS

The ethnobotanical knowledge of the community in Lumban Sipahutar, North Sumatra, is represented by the utilization of 16 identified medicinal plant species. These plants are integrated into the family healthcare system to manage a broad spectrum of ailments, ranging from mild infections and external wounds to chronic metabolic diseases. Conservation efforts for the habitats of these plants are imperative. Further pharmacological research, encompassing both preclinical and clinical trials, is required to scientifically standardize the dosage, efficacy, and validate the safety of bioactive compounds from the species utilized by the Lumban Sipahutar community.

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