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Ethnopharmacological Notes on the Medicinal Plants Used by the B'laan People of Southeastern Mindanao, The Philippines

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Abstract

The rise of multidrug-resistant pathogens has intensified global interest in traditional medicinal knowledge. This study documented the ethnomedicinal plants used by the B'laan Indigenous community in Lapuan, Davao Occidental, Philippines. Tribal healers and Indigenous experts were interviewed to investigate the ethnomedicinal plants, plant parts used, methods of preparation, ailments treated, and routes of administration. The specimens were collected, pressed, dried, labeled, and identified using taxonomic keys, with confirmation from expert botanists. Quantitative indices, including Use Value (UV), Fidelity Level (FL), and Informant Consensus Factor (ICF), were calculated to assess the frequency and consistency of plant use. The findings reveal a total of 24 plant species belonging to 19 families of ethnomedicinal plants used by the B'laan. Leaves were the most commonly used plant part, boiling was the predominant preparation method, and ingestion was the primary route of administration. Heliotropium indicum L. recorded the highest UV (0.16), primarily used to treat cough, postpartum conditions, sore eyes, and wounds. Six plants, including Curcuma longa L. used for stomach aches, Artemisia vulgaris L. for cough, Momordica charantia L. for diabetes, Gossypium herbaceum L. and Hibiscus rosa-sinensis L. for wounds, and Piper betle L. for dermal itchiness, had FL values of 100%. ICF analysis revealed the highest consensus in treating infectious and parasitic diseases. These findings highlight the B'laan community's reliance on medicinal plants for primary healthcare. Further research is recommended to preserve their ethnobotanical heritage, explore the pharmacological potential of these species, and encourage similar studies among other Indigenous communities in the Philippines.

Keywords: *Ethnobotany, medicinal plant, Indigenous people, B'laan, Mindanao*

INTRODUCTION:

Approximately 25% of all prescribed drugs are derived from plants, underscoring their vital role in the pharmaceutical industry. In many developing countries, about 80% of the population still relies on traditional medicine for primary healthcare. Indigenous communities, in particular, have long depended on traditional knowledge systems to adapt and thrive in changing environments (Pizon et al., 2016). Despite the advancement of modern medicine, many nations continue to support the use of herbal remedies due to challenges such as limited accessibility, high costs, and the perceived side effects of synthetic drugs in global markets (Monteros & Geducos, 2021). The World Health Organization (WHO) has reported that around 60% of the global population depends on medicinal plants for healthcare (Farnsworth, 1993, 2007). Globally, there are an estimated 35,000 to 70,000 species of medicinal plants (Schipmann et al., 2005), with approximately 7,000 species found in South Asia (Karki & William, 1999) and about 6,500 in Southeast Asia (Burns, 1998; Madulid, 1989).

In the Philippines, plant taxonomist Eduardo Quisumbing published Medicinal Plants of the Philippines in 1951, a seminal reference documenting the palliative and curative uses of native flora (Quisumbing, 1951; Gutierrez, 2018). A more recent study identified around 1,500 medicinal plant species currently used across the country (Belgica et al., 2021). Of these, 120 species have been scientifically validated for their efficacy (Eusebio & Umali, 2004), including many listed among the top 100 medicinal plants used to treat cuts, wounds, infections, and various other diseases (Dapar et al., 2020a; Galvez-Tan & Sia, 2014). Many of these plants possess both mechanical and chemical defense mechanisms that protect them from herbivores. Interestingly, the same chemical compounds that deter herbivores often exhibit pharmacological properties beneficial to human health. Indigenous communities have long harnessed these properties to treat a wide range of ailments, including headaches, stomach aches, coughs, colds, toothaches, skin conditions, urinary tract infections, chickenpox, and dysentery (Tantengco et al., 2018).

Alternative medicine remains widespread, with indigenous plant resources often serving as the only available therapeutic option (Non-Cabrera et al., 2018). The beliefs, traditions, and ethnomedicinal knowledge of indigenous cultures play a vital role in promoting wellness, including disease diagnosis, treatment, and prevention (Dapar & Alejandro, 2020b). This has prompted numerous ethnobotanical studies, which not only serve as a foundation for novel drug discoveries but also help preserve traditional knowledge, typically passed down orally through generations (Olowa & Demayo, 2015). One such indigenous group is the B'laan, a non-Islamic community residing in Davao del Sur and South Cotabato on Mindanao Island, Philippines. Traditionally hunters and gatherers, the B'laan people rely heavily on nature and its resources. Their healing practices often combine medicinal plant use with prayers and rituals (Alinsug et al., 2022).

The present study aims to document the ethnomedicinal plants used by the B'laan community in Barangay Lapuan, Don Marcelino, Davao Occidental, Philippines. Specifically, it seeks to identify the medicinal plant species used, collect data on the plant parts utilized, methods of preparation, and the ailments treated, describe the modes of administration, and validate the community's traditional knowledge and practical applications of these medicinal plants.

MATERIALS AND METHODS

Place and Time of Study

The study was conducted in Barangay Lapuan, Don Marcelino, Davao Occidental, Philippines, located approximately 177 kilometers south of Davao City, at coordinates 6°09'11.6" N and 125°38'32.9" E. This area is home to the B'laan Indigenous community, known for their traditional use of medicinal plants to treat various illnesses. Data collection took place over seven non-consecutive days within two weeks in August 2021.

Entry Protocol

Prior to data collection, the researchers submitted a letter of intent to the Mandatory Indigenous Peoples' Representative of Barangay Lapuan to request permission to conduct the study. A similar letter was also sent to the National Commission on Indigenous Peoples (NCIP). Additionally, a Wildlife Gratuitous Permit (WGP) was secured from the Department of Environment and Natural Resources (DENR) to authorize the collection of medicinal plant samples.

Selection of Participants

A total of 24 key informants from the B'laan community, aged between 20 and 70 years, were interviewed. Participants were selected using purposive (non-probability) sampling, based on criteria established by Waay-Juico et al. (2018) and Guevara et al. (2018). This method allowed the researchers to intentionally select individuals with specific knowledge or experience relevant to the study (Umartani and Nahdi, 2021). Local healers or tribal healers were automatically included as key informants due to their recognized expertise and role as custodians of Indigenous medicinal knowledge (Jima & Megersa, 2018).

Research Instrument

Data were collected through key informant interviews using a semi-structured questionnaire composed of open-ended questions. The questionnaire was validated by three experts prior to use and was designed to elicit detailed responses aligned with the study's objectives. The questions were adapted from Buwa-Komoren et al. (2019), who conducted a similar ethnobotanical study in Seymour, South Africa.

Interview Process

The interview methodology followed the approach of Waay-Juico et al. (2018), employing semi-structured, one-on-one interviews with each key informant. The interviews focused on gathering information about (1) the plant parts used, (2) methods of preparation, and (3) the ailments or diseases treated. Interviews were conducted at times and locations preferred by the informants. The questionnaire was administered in the local Bisaya language, and all responses were audio-recorded using a mobile phone.

Plant Collection

Plant collection procedures were adapted from the Australian National Herbarium (2015). Damaged specimens were avoided, and underground parts such as roots and bulbs were carefully excavated. Specimens were collected with flowers or fruits when possible to aid in identification. Each plant was documented in a field notebook and photographed with a digital camera. Documentation included the plant's common name, collector's name and number, date, GPS coordinates, habitat description, and other notes. Collections were made on sunny days, following the recommendations of Smith and Chinnappa (2015). Specimens were stored in large plastic bags during collection.

Plant Pressing and Drying

Immediately after collection, plants were pressed and dried to prevent wilting. Specimens were placed between folded sheets of newspaper, which were then sandwiched between two 12" × 18" cardboard sheets secured with elastic straps. Each newspaper sheet was labeled with a collection number corresponding to the field notebook (Simpson, 2019). The specimens were transported to the Botanical Laboratory of Central Mindanao University (CMU) in Musuan, Bukidnon.

Identification of Medicinal Plants

Plant identification was conducted using online taxonomic and pictorial keys from reputable sources such as Co's Digital Flora of the Philippines (Pelser et al., 2011), as referenced by Nuñeza et al. (2021). Selected pressed specimens were also sent to CMU, where a plant taxonomy expert confirmed the species identification.

Ethical Considerations

Prior to conducting the study, the researchers adhered strictly to established ethical standards. Throughout the research process, considerations regarding confidentiality and informed consent were carefully observed. Due to the sensitive nature of the study, no personal information was collected during the interviews. Key informants were given the freedom to decline or voluntarily respond to questions. The researchers made no attempt to influence or alter the beliefs of the B'laan community. Instead, they emphasized the importance of respecting Indigenous knowledge systems and acknowledged that community members were well aware of potential ethical concerns that could arise during the fieldwork. The collection of plant specimens, even in small quantities, can have ecological impacts. Therefore, the researchers took steps to minimize environmental disturbance and implemented appropriate conservation practices. Given that some plant species are rare or have restricted distributions, the researchers ensured compliance with relevant environmental regulations.

Data Analysis

Use Value (UV)

Use value (UV) is a quantitative measure that reflects the relative importance of a plant species based on the number of uses cited and the number of informants who mentioned it. According to Zenderland (2019), UV helps identify the most culturally significant species within a community. It is calculated using the formula:

$$\mathbf{UV=(\sum U_i)/\ N}$$

Where:

- $\mathbf{U_i}$ = number of uses mentioned by each informant for a given species
- **N** = total number of informants

Fidelity Level

Fidelity Level (FL) is a metric used to identify which plant species are most preferred by key informants for treating specific ailments. Medicinal plants that are frequently cited for a particular condition tend to have higher FL values than those mentioned for a variety of uses. FL is calculated as the percentage of informants who report using a specific plant species for the same primary purpose. This measure helps assess both the cultural significance and the perceived therapeutic effectiveness of a species in traditional medicine (Khan et al., 2014).

An FL value close to 100% indicates strong agreement among informants and suggests that the plant is highly preferred for a specific use. Conversely, lower FL values imply that the plant is used for a broader range of purposes or lacks consensus regarding its primary application.
The formula used is shown below:
FL %= (N_p/N) x 100
Where:

- **N_p** = number of informants who cited the plant for the same major ailment
- **N** = total number of informants who mentioned the plant for any use

Informant Consensus Factor (ICF)
The Informant Consensus Factor (ICF) is used to assess the degree of agreement among informants regarding the use of medicinal plants for specific categories of ailments (Faruque et al., 2018). A high ICF value indicates a strong consensus, suggesting that a few plant species are widely recognized and consistently used for treating a particular health condition. Conversely, a low ICF value implies a lack of agreement, with informants citing a broader range of plants for the same ailment, which may reflect either diverse traditional knowledge or uncertainty about the most effective remedies.
The ICF is calculated using the formula:
ICF=(N_{ur}- N_t)/(N_{ur}-1)
Where:

- **N_{ur}** = the total number of use reports for a particular disease category
- **N_t** = the number of plant species used for that category

RESULTS AND DISCUSSION

Table 1. List of Ethnomedicinal Plants used by the B'laan Indigenous Community in Barangay Lapuan, Davao Occidental, the Philippines.

Family	Scientific Name	Common Name	Plant Part Used	Manner of Preparation	Ailments/ Diseases	Manner of Administration
ACANTHACEAE	Andrographis paniculata (Burm.f.) Nees	Serpentina	Leaves	Boiled	Diarrhea, Diabetes, Cough	Ingestion
ANNONACEAE	Annona muricata L.	Labana	Leaves	Boiled	Urinary Tract Infections (UTIs)	Ingestion
ASTERACEAE	Blumea balsamifera (L.) DC.	Gabon	Leaves, Root	Decoction, Boiled	Cough	Ingestion
BORAGINACEAE	Heliotropium indicum L.	Elephant Plant	Leaves, Root	Decoction, Direct Usage, Syrup	Sore Eyes, Postpartum, Cough, Wounds	Ingestion, Topical
COMPOSITAE	Artemisia vulgaris L.	Dahong Maria	Leaves	Boiled	Cough	Ingestion
COSTACEAE	Costus sp.	Insulin plant	Stem, Leaves, Root, Whole Plant	Decoction, Pounded	Diabetes, Fever, Cough	Ingestion
CUCURBITACEAE	Momordica charantia L.	Ampalaya	Leaves	Boiled	Diabetes	Ingestion

EUPHORBIACEAE	Jatropha gossypiifolia L.	Kota	Flower	Poultice	Diabetes, Wounds, Skin Diseases	Topical
	Euphorbia hirta L.	Tawa-tawa	Leaves, Whole Plant	Decoction, Boiled	Fever	Ingestion
LAMIACEAE	Ocimum tenuiflorum L.	Tulsi	Leaves, Root, Seed, Flower, Whole Plant	Decoction, Direct Usage, Pounded	Hypertension, Diarrhea	Ingestion, Topical
	Coleus blumei (L.) Benth.	Mayana	Leaves	Poultice, Boiled	Dysmenorrhea, Wounds, Anemia	Ingestion
	Origanum vulgare L.	Kalabo	Leaves	Boiled, Inhalation	Cough	Ingestion
	Vitex negundo L.	Lagundi	Leaves, Root, Whole Plant	Decoction, Boiled	Cough	Ingestion
LAURACEAE	Persea americana Mill.	Avocado	Leaves	Boiled	Stomachache	Ingestion
MALVACEAE	Hibiscus rosa-sinensis L.	Gumamela	Leaves, Root, Flower	Pounded	Wounds	Topical
	Gossypium herbaceum L.	Gapas	Bark	Direct Usage, Boiled	Wounds	Topical
MENISPERMACEAE	Tinospora rumphii Boerl.	Panyawan	Leaves	Direct Usage, Boiled, Pounded, Syrup	Sore Eyes, Throat	Topical
MORINGACEAE	Moringa oleifera Lam.	Kamunggay	Leaves	Direct Usage, Boiled	Wounds	Ingestion, Topical
MYRTACEAE	Psidium guajava L.	Bayabas	Leaves	Boiled	StomachAche, Wounds	Ingestion
PIPERACEAE	Piper betle L.	Buyo	Leaves	Direct Usage, Boiled, Pounded	Dermal Itchiness	Topical
POACEAE	Cymbopogon citratus (DC.) Stapf.	Tanglad	Stem, Root	Decoction, Boiled	Asthma, Hypertension	Ingestion

RUBIACEAE	Coffea arabica L.	Kape	Leaves, Seed	Infusion	Digestive Problems, Diarrhea	Ingestion
SAPOTACEAE	Chrysophyllum cainito L.	Kaimito	Bark, Leaves, Seed, Fruit	Decoction	Laryngitis, Pneumonia	Ingestion, Topical
ZINGIBERACEAE	Curcuma longa L.	Luyang dilaw	Root	Decoction, Boiled	StomachAche, Body Pains	Ingestion

This study documented a total of 24 ethnomedicinal plant species from 19 families used by the B'laan Indigenous community in Barangay Lapuan. These findings offer valuable insights into the community's traditional healthcare practices and their deep-rooted knowledge of medicinal flora.

A comparable ethnobotanical survey by Alinsug et al. (2022) focused on the B'laan community in the Mt. Matutum Protected Landscape in Southern Mindanao. Although both studies involve the same Indigenous group, the geographical separation—one community in Southern and the other in Southeastern Mindanao—suggests the possibility of distinct ethnobotanical practices. This underscores the importance of conducting localized studies, as environmental conditions and plant availability can shape unique healing traditions and usage patterns even within the same ethnolinguistic group.

Among the 24 species identified, the family Lamiaceae was the most represented, with four species: Vitex negundo L., Origanum vulgare L., Ocimum tenuiflorum L., and Coleus blumei (L.) Benth. Notably, V. negundo L., commonly known as Lagundi, is officially recognized by the Philippine Department of Health (DOH) for its medicinal properties, particularly in treating cough and asthma. Khan et al. (2013) confirmed its bronchodilator effects, while Boy et al. (2018) reported that it contains bioactive compounds such as phlobatannins, carbohydrates, tannins, glycosides, volatile oils, resins, balsams, flavonoids, and saponins. These are used to treat ailments including cough, asthma, pharyngitis, rheumatism, boils, diarrhea, and dyspepsia. These uses align with the B'laan community's traditional applications.

Other DOH-approved plants also used by the B'laan include Blumea balsamifera (L.) DC. (for cough), Psidium guajava L. (for wounds and stomachache), and Momordica charantia L. (for diabetes) (Boy et al., 2018). These overlaps suggest that traditional knowledge often precedes formal scientific validation. However, discrepancies between DOH-approved uses and B'laan applications highlight the need for further research to uncover additional therapeutic potentials.

The study recorded the use of ethnomedicinal plants to treat 20 common ailments, including anemia, asthma, body pains, cough, dermal itchiness, diabetes, diarrhea, digestive issues, dysmenorrhea, fever, hypertension, laryngitis, pneumonia, postpartum conditions, skin diseases, sore eyes, sore throat, stomachache, urinary tract infections (UTIs), and wounds. This underscores the B'laan people's reliance on plant-based remedies as a primary healthcare strategy, often preceding formal medical intervention. Such practices reflect a deeply embedded cultural knowledge system that integrates ecological familiarity with therapeutic application. As Da Silva et al. (2024) emphasize, understanding these dynamics can reveal how communities adapt their healing practices to local resources and health needs, offering valuable insights for both ethnobotany and integrative healthcare research.

The B'laan utilize a wide range of plant parts, including leaves, roots, stems, flowers, whole plants, bark, seeds, and fruits. Preparation methods vary and include boiling, decoction, pounding, direct application, poultice, infusion, syrup, and inhalation. Among the preparation methods, boiling was the most widely used due to its perceived therapeutic efficacy compared to other methods such as decoction, pounding, or infusion. This finding is consistent with the study by Olowa and Demayo (2015) among the Muslim Maranaos in Iligan City, where boiling leaves was the preferred method for treating common symptoms. According to the World Health Organization (2019), boiling enhances product quality, prevents microbial contamination, detoxifies harmful compounds, and improves medicinal efficacy by softening plant tissues, denaturing enzymes, and breaking down certain chemicals.

These diverse practices reflect adaptive strategies to maximize the therapeutic potential of local flora. Similar practices were observed among the Indigenous Panay Bukidnon in Lambunao, Iloilo, Panay Island, where knowledge is passed down through oral traditions influenced by cultural and religious

beliefs (Cordero et al., 2025). Leaves were the most commonly used plant part, attributed to their availability and effectiveness. In some cases, more than one plant part was used for treatment, a pattern also observed in North Cotabato, where traditional healers frequently used leaf extracts for internal consumption (Rubio and Naïve, 2018).

The most common routes of administration were ingestion and topical application. Ingestion had the highest utilization rate among the B'laan, with medicinal plants typically prepared by boiling and consumed as sap or infusions three times daily. This method supports the sustainable use of plant resources, ensuring their continued availability. Topical application followed as the second most common route. The dual use of some plants, both orally and topically, suggests a flexible approach to treatment. This is consistent with findings from Guevara and Garcia's (2018) Ethnobotanical study of the Matigsalug tribe in Barangay Baganihan, Davao City, where ingestion was also the most prevalent method of administration.

Use Value

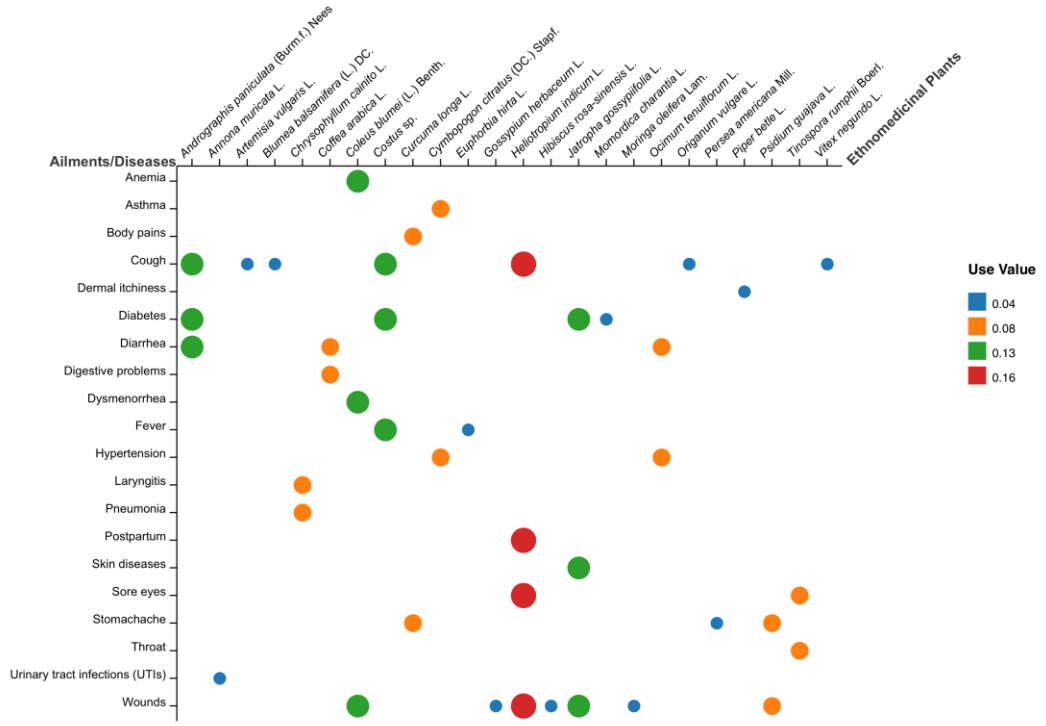

Figure 1. Use value (UV) of the ethnomedicinal plants used by the B'laan people in Barangay Lapuan, Don Marcelino, Davao Occidental, the Philippines.

The frequency with which each medicinal plant was mentioned by the participants was used to calculate its Use Value (UV), a metric that reflects the relative importance and cultural significance of an ethnomedicinal plant species. A higher UV indicates more frequent or diverse uses of a plant within the community.

As shown in Figure 1, Heliotropium indicum L. (Boraginaceae) emerged as the most frequently cited ethnomedicinal plant among the B'laan community, with a UV of 0.16. Traditionally, it is used to treat a variety of ailments, including cough, wounds, sore eyes, and postpartum complications. Its medicinal efficacy is attributed to its anti-inflammatory and diuretic properties (Afroz Shoily et al., 2025). The plant is typically prepared as a decoction of the whole plant and administered orally, particularly for kidney-related conditions (Quisumbing, 1951; Sarkar et al., 2021).

In contrast, several species recorded the lowest UV of 0.04, including Vitex negundo L., Blumea balsamifera (L.) DC., Euphorbia hirta L., Annona muricata L., Moringa oleifera Lam., Artemisia vulgaris L., Origanum vulgare L., Gossypium herbaceum L., Persea americana Mill., Momordica charantia L., Piper betle L., and Hibiscus rosa-sinensis L. These were followed by species with a UV of 0.08, such as Cymbopogon citratus (DC.) Stapf., Psidium guajava L., Curcuma longa L., Coffea arabica L., Tinospora rumphii Boerl., Ocimum tenuiflorum L., and Chrysophyllum cainito L.

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Meanwhile, species like Andrographis paniculata (Burm.f.) Nees, Costus sp., Coleus blumei (L.) Benth., and Jatropha gossypiifolia L. had intermediate UVs of 0.13.

Medicinal plants with higher use values are often considered more culturally significant and widely utilized, making them prime candidates for further pharmacological investigation (Asiimwe et al., 2021). Prioritizing these species for scientific validation ensures that limited research and conservation resources are directed toward plants with high therapeutic potential. This approach not only supports drug discovery efforts but also contributes to the preservation and recognition of Indigenous knowledge systems.

Fidelity Level (FL)

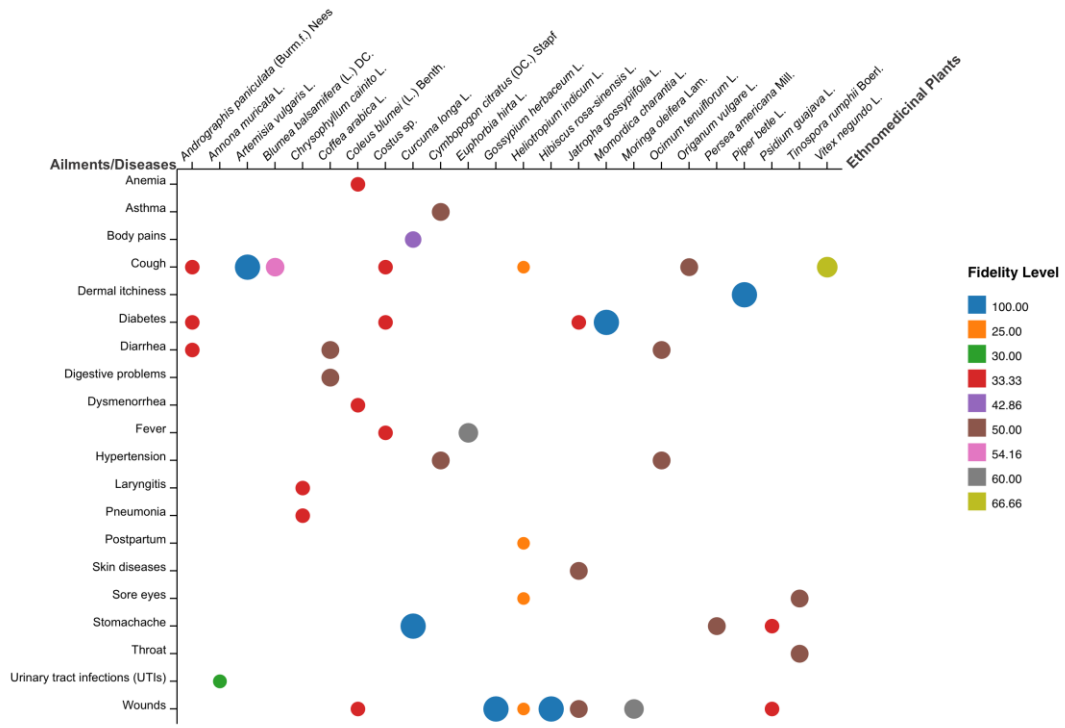

Figure 2. Fidelity levels of the ethnomedicinal plants used by the B'laan people in Barangay Lapuan, Don Marcelino, Davao Occidental, Philippines.

The Fidelity Level (FL) represents the percentage of informants who consistently use a particular plant species for the same primary purpose, serving as a measure of its cultural relevance and specificity in treating certain ailments (Khan et al., 2014). In this study, six medicinal plant species exhibited the highest FL of 100%, indicating unanimous agreement among B'laan informants regarding their use for specific conditions. These include Curcuma longa L. for stomachache, Artemisia vulgaris L. for cough, Gossypium herbaceum L. for wounds, Momordica charantia L. for diabetes, Piper betle L. for dermal itchiness, and Hibiscus rosa-sinensis L. for wounds. Such high fidelity suggests these plants are deeply embedded in the community's traditional healing practices and are perceived as highly effective.

Following these, Vitex negundo L. had an FL of 66.66% for treating cough, while Euphorbia hirta L. and Moringa oleifera Lam. recorded FL values of 60% for fever and wounds, respectively. Several other species had FL values of 50%, including Cymbopogon citratus (DC.) Stapf. for hypertension and asthma, Origanum vulgare L. for cough, Coffea arabica L. for diarrhea and digestive issues, Persea americana Mill. for stomachache, Tinospora rumphii Boerl. for sore throat and sore eyes, Ocimum tenuiflorum L. for hypertension and diarrhea, and Jatropha gossypiifolia L. for skin diseases and wounds. Additional species showed moderate FL values, such as Curcuma longa L. with 42.86% for body pains, and 33.33% for species like Jatropha gossypiifolia L. (diabetes), Psidium guajava L. (wounds and stomachache), Andrographis paniculata (Burm.f.) Nees (cough, diabetes, and diarrhea), Costus sp. (cough, fever, and diabetes), Coleus blumei (L.) Benth. (anemia, wounds, and dysmenorrhea), and Chrysophyllum cainito L. (laryngitis and pneumonia). Lastly, Annona muricata L. had an FL of 30% for urinary tract infections (UTIs).

Interestingly, Heliotropium indicum L., which had the highest Use Value (UV) in the study, showed relatively low FL values of 25% for cough, postpartum conditions, wounds, and sore eyes. This suggests that while the plant is widely used for multiple purposes, there is less consensus among informants regarding a single dominant use. Such findings highlight the importance of using both UV and FL metrics in ethnobotanical research. While UV reflects the frequency and versatility of plant use, FL reveals the cultural consistency of specific applications. Together, these measures provide a more nuanced understanding of the medicinal significance of plant species within Indigenous healthcare systems.

Informant Consensus Factors (ICF)

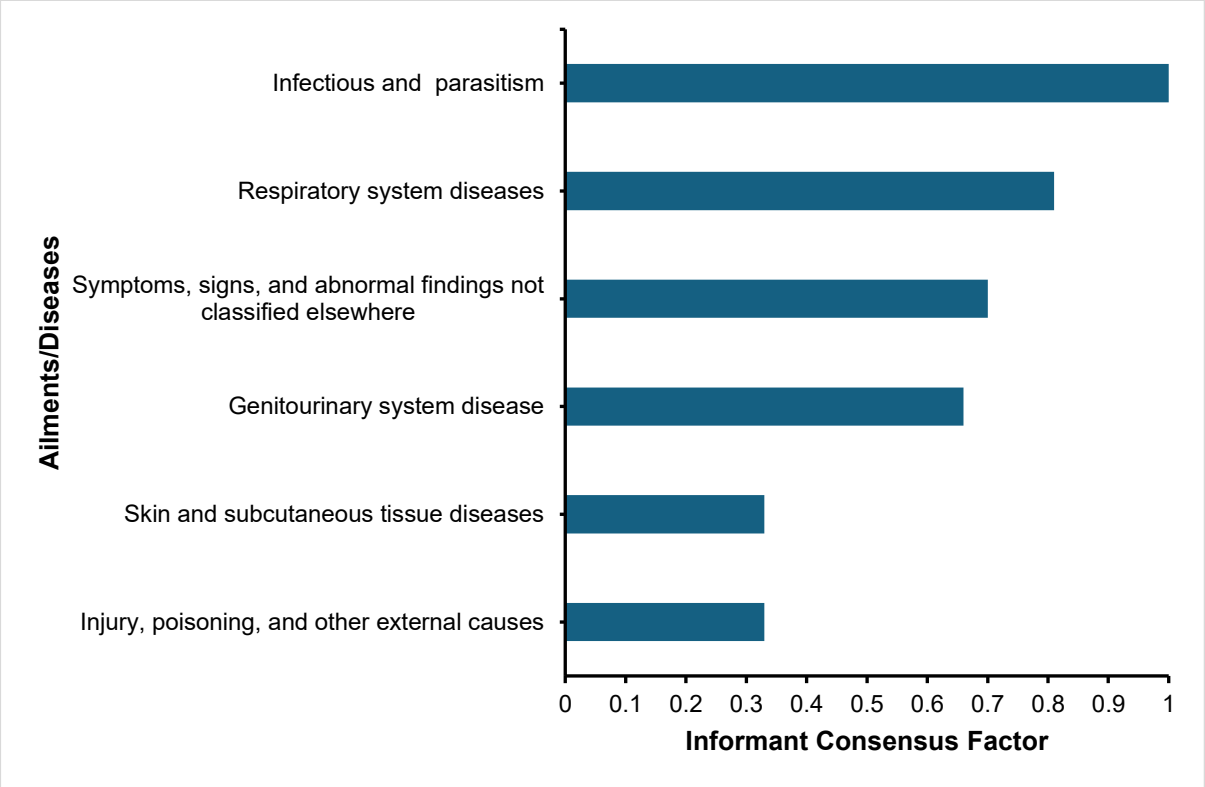

Figure 3. Informant Consensus Factor (ICF) per Ailment Category.

Figure 3 presents the Informant Consensus Factor (ICF) values, categorized by disease groups. The highest ICF value of 1.00 was recorded for infectious and parasitic diseases**,** indicating strong agreement among informants and suggesting that a significant portion of the B'laan community's ethnomedicinal knowledge is focused on treating these conditions. Notably, Andrographis paniculata (Burm.f.) Nees, Coffea arabica L., and Ocimum tenuiflorum L. were cited for treating diarrhea, a key condition within this category.

The second highest ICF value, 0.81, was associated with respiratory system diseases, treated with 11 different ethnomedicinal plants. These include remedies for cough, asthma, and pneumonia—conditions that are prevalent and often severe. According to Lawal et al. (2020), respiratory illnesses such as chronic obstructive pulmonary disease (COPD), asthma, occupational lung diseases, and pulmonary hypertension affect millions globally and are a leading cause of morbidity and mortality, especially among children under five. These diseases are common in both developed and developing countries and are often linked to risk factors such as air pollution, smoking, occupational exposure to toxins, and recurrent childhood infections. In the B'laan community, respiratory ailments are commonly treated using decoctions and boiled preparations of plants such as Vitex negundo L., Blumea balsamifera (L.) DC., Cymbopogon citratus (DC.) Stapf., Artemisia vulgaris L., Origanum vulgare L., Andrographis paniculata (Burm.f.) Nees, Costus sp., and Heliotropium indicum L.

Diseases categorized under "symptoms, signs, and abnormal clinical findings not elsewhere classified" had an ICF of 0.70, treated with 16 plant species. Other categories included genitourinary system diseases (ICF = 0.66), injury and poisoning, and skin and subcutaneous tissue diseases, both with ICF values of 0.33.

The classification of ailments in this study follows the World Health Organization's International Classification of Diseases (ICD-10), which includes a wide range of categories such as infectious and parasitic diseases, respiratory and circulatory system diseases, digestive disorders, skin conditions, and

more. However, some categories—such as eye diseases, pregnancy and postpartum conditions, endocrine and metabolic disorders, blood diseases, and digestive system diseases—had an ICF of zero, indicating no consensus or reported use of ethnomedicinal plants for these conditions within the community.

The widespread use of plant-based remedies among the B'laan reflects a long-standing tradition rooted in observation, experience, and oral transmission of knowledge. As Van Wyk and Wink (2017) noted, ethnobotanical practices are often the result of generations of empirical research within Indigenous communities. Medicinal plants not only serve therapeutic purposes but also play a vital role in sustaining ecosystems and cultural heritage. Jamshidi-Kia et al. (2018) emphasized that plants have coexisted with humans since ancient civilizations and have been integral to the development of early medical systems.

Medicinal ethnobotany remains one of the most actively explored fields in the Philippines. Despite the country's remarkable biodiversity and the richness of its traditional healing knowledge, only a small portion of medicinal plant species have been subjected to rigorous scientific validation (Dapar & Alejandro, 2020a, b). The present study involving the B'laan Indigenous community represents a meaningful contribution to this growing body of research. As the first documented ethnobotanical investigation in this locality, it offers a valuable reference for understanding the medical practices of an understudied Indigenous group in the Philippines. According to Demetillo et al. (2019), this knowledge has traditionally been preserved and transmitted orally across generations. However, the erosion of oral traditions observed in many Indigenous communities poses a threat to the continuity of this cultural heritage. By documenting the B'laan's ethnomedicinal practices, this study not only helps safeguard their traditional knowledge but also lays a strong foundation for future pharmacological research, biodiversity conservation, and the integration of Indigenous healing systems into broader healthcare frameworks.

CONCLUSION

This ethnobotanical study highlights the B'laan community's extensive and well-preserved knowledge of medicinal plants. A total of 24 species from 19 plant families were documented, all used to treat a variety of common ailments and diseases. These plants, readily available in the local environment, play a vital role in the community's primary healthcare practices, underscoring the importance of local flora in sustaining traditional healing systems. While the study identified a limited number of species, the list could be expanded through deeper ethnographic engagement and continued fieldwork. The findings emphasize the complementary nature of Indigenous and mainstream medical systems. They not only reflect the B'laan's deep ecological knowledge and cultural connection to their environment but also highlight the urgency of preserving such knowledge amid ongoing cultural and ecological changes. To ensure the sustainability of these practices, several actions are recommended. Community-based conservation initiatives should be established to protect the natural habitats of medicinal plants, particularly those with high cultural and therapeutic value. Educational programs are also essential to pass on ethnobotanical knowledge to younger generations, helping to reinforce cultural identity and continuity in the face of modernization. Moreover, stronger policy support is needed to safeguard Indigenous intellectual property rights and formally recognize the value of traditional knowledge systems. Scientific research should be encouraged to explore the pharmacological potential of these plants, potentially leading to the development of culturally rooted healthcare solutions. Crucially, the B'laan community must be actively involved in all stages of research and conservation to ensure that efforts are respectful, inclusive, and beneficial to them. By implementing these strategies, the ethnobotanical heritage of the B'laan can be preserved and appreciated, contributing to both cultural resilience and plant conservation.

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