

Ethnobotanical Analysis of Medicinal Plant Utilization by Local Communities

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ABSTRACT

This study aims to analyze the use of medicinal plants by local communities in the Toraut area, Bogani Nani Wartabone National Park, using an ethnobotanical approach. This research was conducted in Toraut Village, Dumoga Barat District, Bolaang Mongondow Regency. A total of 30 respondents were selected using a purposive sampling method (Singh et al., 2020). Data were collected through interviews with respondents and analyzed descriptively quantitatively using the Informant Consensus Factor (FKI) and Fidelity Level (FK). The results of the analysis showed a very high context value (FKI = 1.00) in seven disease categories, such as body odor, sore throat, bone fractures, and kidney disease, which were dominated by certain species such as Forest Betel (*Piper caducibracteum*), Sesewanua (*Clerodendron* sp.), and Forest Starfruit (*Averrhoa bilimbi*). The highest FK value (100%) was found in certain species-benefit pairs, namely Kayu Arang (*Cratoxylon celebicum*) for diarrhea and vomiting and Mayana (*Coleus atropurpureus*) to increase stamina. Most species showed low to moderate FK values, indicating their multi-indication nature. The species with the highest frequency of mention—Sesewanua, Forest Betel, Tiger Grass, Forest Starfruit, and Forest Mangosteen—are key plants that play a significant role in traditional medicinal practices. These findings emphasize the importance of conservation efforts, pharmacological validation, and preservation of local knowledge to support the sustainable use of medicinal plants.

Key words: Ethnobotany; Utilization of Medicinal Plants; Local Communities; Bogani Nani Wartabone National Park

ABSTRAK

Penelitian ini bertujuan untuk menganalisis pemanfaatan tumbuhan obat oleh masyarakat lokal di kawasan Toraut, Taman Nasional Bogani Nani Wartabone, dengan menggunakan pendekatan etnobotani. Penelitian ini dilakukan di Desa Toraut, Kecamatan Dumoga Barat, Kabupaten Bolaang Mongondow. Sebanyak 30 responden dipilih menggunakan metode purposive sampling (Singh dkk., 2020). Data dikumpulkan melalui wawancara dengan responden dan dianalisis secara deskriptif kuantitatif menggunakan Faktor Konsensus Informan (FKI) dan Tingkat Kesetiaan (FK). Hasil analisis menunjukkan nilai konteks sangat tinggi (FKI = 1,00) pada tujuh kategori penyakit, seperti bau badan, sakit tenggorokan, patah tulang, dan penyakit ginjal, yang didominasi oleh spesies tertentu seperti Sirih Hutan (*Piper caducibracteum*), Sesewanua (*Clerodendron* sp.), dan Belimbing Hutan (*Averrhoa bilimbi*). Nilai FK tertinggi (100%) ditemukan pada pasangan spesies-manfaat tertentu, yaitu Kayu Arang (*Cratoxylon celebicum*) untuk diare dan muntah serta Mayana (*Coleus atropurpureus*) untuk meningkatkan stamina. Sebagian besar spesies menunjukkan nilai FK rendah hingga sedang, yang menunjukkan sifat multi-indikasinya. Spesies dengan frekuensi penyebutan tertinggi—Sesewanua, Sirih Hutan, Rumput Harimau, Belimbing Hutan, dan Manggis Hutan—merupakan tumbuhan kunci yang berperan penting dalam praktik pengobatan tradisional. Temuan ini menekankan pentingnya upaya konservasi, validasi farmakologis, dan pelestarian pengetahuan lokal untuk mendukung pemanfaatan tumbuhan obat yang berkelanjutan.

Kata Kunci: Etnobotani; Pemanfaatan Tumbuhan Obat; Masyarakat Lokal; Taman Nasional Bogani Nani Wartabone

INTRODUCTION

An ethnobotanical analysis of the use of medicinal plants by local communities in Toraut, Bogani Nani Wartabone National Park, highlights the close relationship between culture and the environment. Medicinal plant use is influenced by

resource availability, tradition, and access to modern medicine (Porto et al., 2023). Historically, the use of medicinal plants has been ongoing for thousands of years, with indigenous communities worldwide relying on these natural resources for primary healthcare. The World Health Organization (WHO) estimates that approximately

80% of the world's population utilizes herbal medicine, underscoring the global significance of this practice (Silva et al., 2023). The role of traditional medicinal plants in health systems is particularly prominent in regions such as Uganda and India, where community-specific applications have been documented (Ugwu et al., 2023); (Kaphungkui et al., 2024). This traditional system represents a holistic approach to health and well-being, integrating the physical, emotional, and spiritual dimensions, as documented in various studies of cross-cultural indigenous healing practices (Dababneh, 2025).

Communities in Toraut rely on biodiversity for medicinal purposes, but modernization and globalization threaten the preservation of indigenous knowledge (Soren et al., 2023); (Mufungizi et al., 2025). The loss of this knowledge, combined with biodiversity decline, challenges conservation and the sustainability of traditional health (Mbelebele et al., 2024). Documenting ethnobotanical practices is essential for conserving medicinal plants, ensuring sustainable resource use, and supporting community well-being (Cita et al., 2021). Furthermore, recognizing and preserving traditional knowledge empowers communities to face environmental and economic challenges while strengthening cultural heritage (Woldearegay & TESO, 2023).

Ethnobotanical analysis of medicinal plants represents a crucial interface between traditional ecological knowledge and contemporary scientific practice. This research focuses on the importance of medicinal plant use in local communities, particularly in the Toraut region of Bogani Nani Wartabone National Park. Previous research has shown that medicinal plants play a significant role in traditional medicine practices and public health (Suardi et al., 2023); (Rahardjo et al., 2022). Efforts to preserve ethnobotanical knowledge regarding medicinal plants in the area are important considering the large number of potential plant species that are poorly documented and maintained, which could result in the loss of valuable information for future generations (Kinasih et al., 2021); (Suteky et al., 2020). Indigenous communities often possess unique insights into the medicinal properties of local plants, developed through generations of cultural practices and interactions with the environment (Hu et al., 2020); (Monagas & Trujillo, 2024). Preserving these practices is crucial, as they not only contribute to biodiversity conservation but also provide a foundation for the development of modern medicine and pharmaceutical practices

(Elfrida et al., 2021); (Suwardi et al., 2020). Considering sustainability aspects, a thorough understanding of ethnobotany across the region is crucial for maintaining and effectively utilizing local resources (Ismail et al., 2023)-(Mistriani et al., 2023).

The urgency of this research lies in promoting traditional medicinal plants as natural alternatives to chemical drugs, protecting local genetic resources as cultural heritage and supporting SDGs for health and well-being all (Mistriani et al., 2023), (Putri & Apsari, 2023); (Rahardjo et al., 2022); (Suardi et al., 2023); (Permatananda, 2020). Ethnobotanical studies are vital for documenting indigenous knowledge, conserving threatened species amid climate change and biodiversity loss (Frenne et al., 2021). Therefore, ethnobotanical studies play a crucial role in documenting traditional knowledge and conserving plant species threatened by human activities such as deforestation and urbanization, and fostering collaboration with local communities for sustainable strategies (Suwardi et al., 2020); (Arjona-García et al., 2021); (Xiong et al., 2020); (Fadhillah et al., 2021). Global research highlights both the richness of traditional medicinal plant use and the challenges of poor documentation, as seen in the Himalayas Kerman, Iran and the Dayak Iban in Indonesia (Haq et al., 2021); (Hosseini et al., 2021); (Supiandi et al., 2021). However, many studies overlook the difficulties communities face in preserving this knowledge, creating gaps between tradition and effective conservation practices.

The novelty of this research lies in four aspects: (1) an interdisciplinary and participatory approach (2) aggregating practical challenges and solutions (3) in-depth qualitative analysis using ICF and FL (4) evidence-based policy recommendations. This will involve the creation of a collaborative framework that brings together researchers, local governments, and communities to support more effective conservation actions (Pallie et al., 2020); (Mandakh et al., 2020). With an interdisciplinary approach combining ethnobotanical expertise, robust data analysis methodology, and active community engagement, this research is expected to significantly contribute to the understanding and preservation of medicinal plant use in Toraut, Bogani Nani Wartabone National Park. The innovations offered will not only enrich the field of ethnobotany but also have a direct, beneficial impact on local communities who rely on their traditional knowledge. Therefore, ethnobotanical analysis of medicinal plant use by the Toraut community plays a crucial role in both

cultural preservation and biodiversity conservation. This analysis will provide insights into how traditional knowledge can be harmonized with modern scientific approaches, potentially bridging customary practices with contemporary health frameworks. Based on this problem formulation, the objective of this study is to analyze and document the ethnobotany of medicinal plant utilization by local communities in the Toraut area of Bogani Nani Wartabone National Park.

MATERIALS AND METHODS

Study Area

This research was conducted in the Toraut area of Bogani Nani Wartabone National Park (TNBNW) (Figure 1), which is administratively part of Toraut Village, Dumoga Utara District, Bolaang Mongondow Regency, North Sulawesi Province. The research site is located within the management area of the West Dumoga Resort, Doloduo National Park Management Section II, Bogani Nani Wartabone National Park (TNBNW).

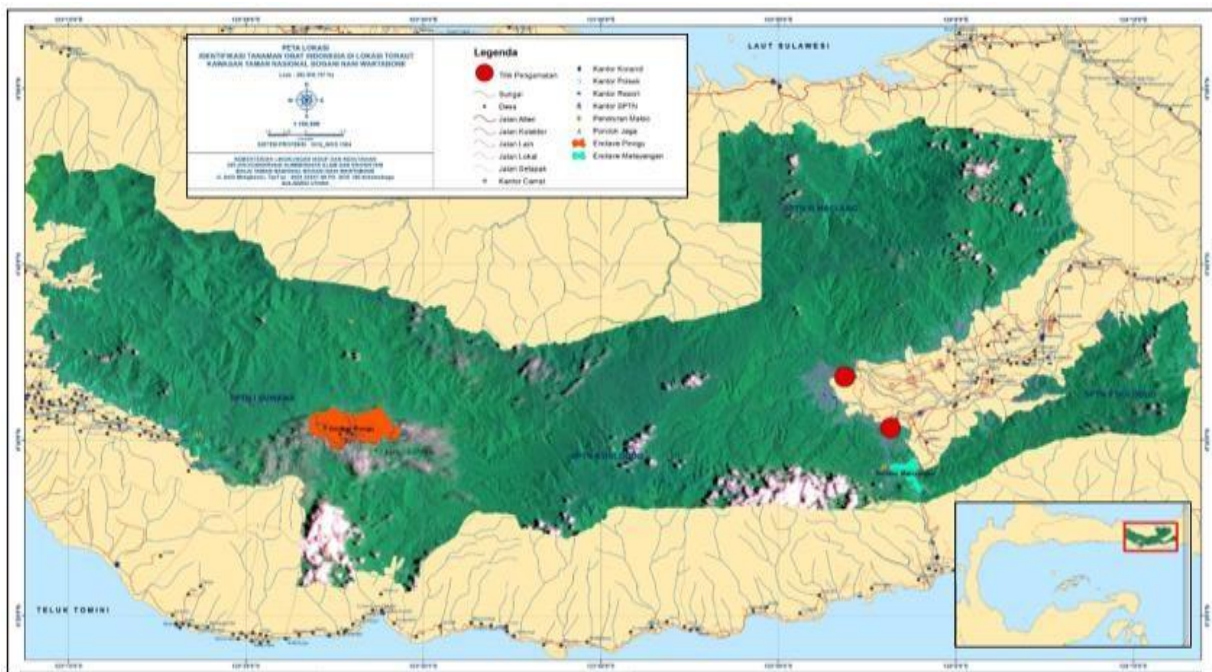


Figure 1. Research Location Map

Procedure

Data Collection

This research was conducted in Toraut Village, Dumoga Barat District, Bolaang Mongondow Regency. The sample size was strategically determined based on an initial qualitative assessment and community engagement. A total of 30 respondents were selected using a purposive sampling method (Singh et al., 2020). During the study, the researchers carried out preparation, literature review, observation, interviews, focus group discussions (FGDs), and specimen collection to explore and understand the cultural context and traditional healing practices of the local community (Fadhilah et al., 2021).

Data Processing

Qualitative data were analyzed using thematic

content analysis. Semi-structured interviews and discussions were transcribed, coded, and categorized to identify key themes on plant use, preparation methods, and cultural significance. Data validation was conducted by assessing coherence and saturation to ensure the themes accurately reflected local perspectives (Chakale et al., 2022).

Data Analysis

Quantitative data were analyzed using the Informant Consensus Factor (ICF) and Fidelity Level (FL) calculations to evaluate the importance of the plant species and to assess community perspectives on medicinal plants (Hu et al., 2020). The ICF is calculated using the formula:

$$ICF = \frac{Nur - Nt}{Nur - 1}$$

Explanation :

Nur :

Total number of reports of use for a specific

Nt : disease category.
: Number of medicinal plant species mentioned for a specific disease category by all informants.

Interpretation used : ICF value close to 1: Indicates high agreement/consensus among informants regarding the use of medicinal plants for that disease.

ICF value close to 0 : Indicates high disagreement among informants regarding the use of medicinal plants for that disease.

FL is determined using the formula:

$$FL = \frac{Np}{N} \times 100\%$$

Explanation :
Np : Number of informants who mentioned the use of a particular plant species for a particular disease.

N : Total number of informants who mentioned the use of that species for any disease.
Interpretation:

High FL value : Indicates that the species is frequently used by informants to treat the disease.

Low FL value : Indicates that the species is rarely used by informants to treat the disease. Analysis of the summary of quantitative data results for FL can be seen in Table 2.

The ICF is calculated by comparing the number of reports of plant use for a specific condition to the total number of informants, which reveals plants that are universally recognized and trusted within the community (Ajaib et al., 2020). FL indicates the proportion of informants who mention a particular plant for a specific condition, highlighting its cultural significance and reliability in healing practices (Bastidas-Bacca et al., 2023).

RESULT AND DISCUSSION

Distribution of Medicinal Plants in the Toraut National Park (BNWNP)

Medicinal plants in Toraut National Park (TNBNW) are generally distributed solitarily and almost evenly throughout the area. Using a coordinate map, a spatial picture of the distribution of medicinal plants is obtained. In the southern region, they are distributed in four paths: path 1 recorded 18 encounters, path 2 with 11, path 3 with 6, and path 4 with 8, with the largest concentrations in quadrants 1 and 2. Meanwhile, in the northern region there are three paths: path 1 with 14 encounter points, along path 2 with 12, and path 3 with 20 encounter points, which by quadrant reach quadrant 2. These findings indicate a relatively even distribution, but with certain concentration points that are important for conservation efforts and sustainable use (Poneke et al., 2025).

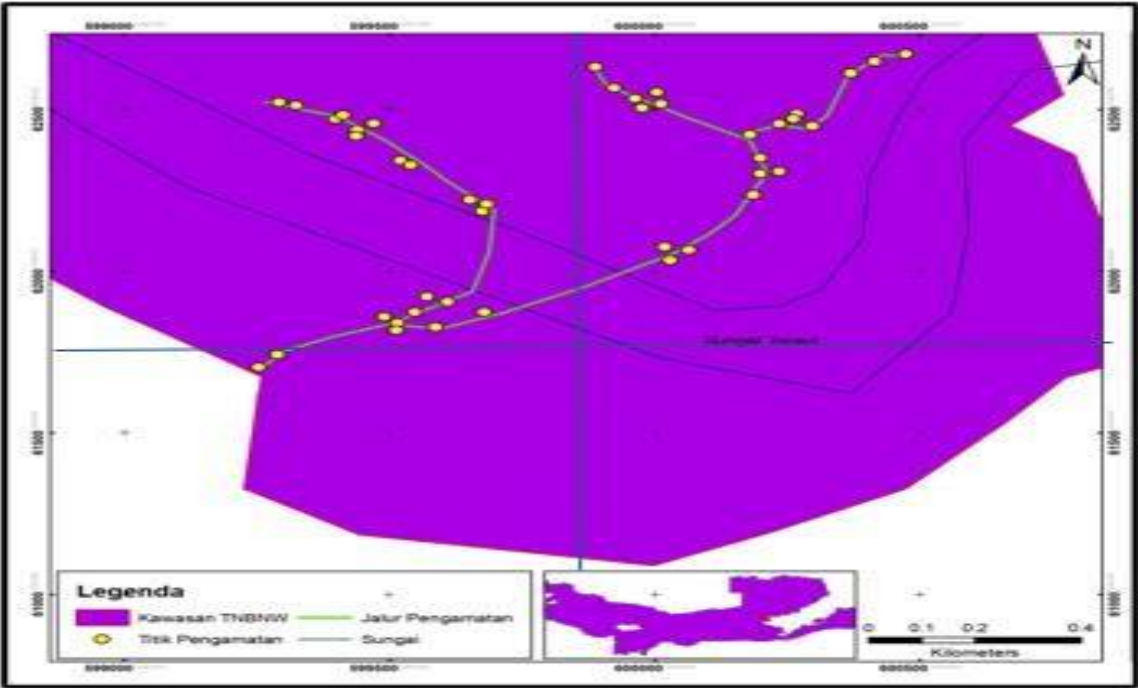


Figure 2. Distribution of Medicinal Plants in the Southern Part of the Toraut National Park (BNWNP), Source: Wildy V. Poneke et al., 2025

Informant consensus factor (ICF)

The primary function of the ICF is to identify the medicinal plants most frequently mentioned and agreed upon by informants in the Toraut community. This helps distinguish plants widely recognized for their medicinal properties from those rarely used. A high ICF value indicates strong consensus among informants, reflecting the plant's cultural importance and potential effectiveness in treating specific ailments. The ICF has been used effectively to estimate community agreement regarding the use of specific plants for specific ailments (Kazancı et al., 2020).

By measuring the level of community agreement, the ICF helps uncover culturally

significant traditional practices in traditional medicine. Interview results can be aligned with indigenous peoples' health perspectives, reflecting their collective knowledge systems. If a plant is consistently cited for treating a specific condition with a high ICF value, this indicates strong knowledge of the plant within the community and merits further investigation regarding its processing and application methods (Sousa et al., 2023).

Analysis of the summary of quantitative data results for determining the ICF, as can be seen in Table 1 and Figure 1.

Table 1. ICF Calculation Results

No	Benefits / Diseases	Nur	Nt	ICF
1	Maintains liver function	5	1	1.00
2	Maintains female genital health	5	1	1.00
3	Eliminates body odor	15	1	1.00
4	Treats sore throats	6	1	1.00
5	Treats broken bones	12	1	1.00
6	Treats boils	5	1	1.00
7	Treats kidney problems	10	1	1.00
8	Relieves fever / heat	11	2	0.90
9	Treats high blood pressure	10	2	0.89
10	Strengthens teeth and gums	10	2	0.89
11	Treats malaria	8	2	0.86
12	Helps control blood sugar	7	2	0.83
13	Treats wounds	18	4	0.82

No	Benefits / Diseases	Nur	Nt	ICF
14	Treats toothache	5	2	0.75
15	Treats diarrhea	5	2	0.75
16	Reduces cholesterol	5	2	0.75
17	As an antioxidant supplement and restores stamina	8	3	0.71
18	Treats diabetes	14	5	0.69
19	Treats stomach ulcers	4	2	0.67
20	Treats rheumatism	7	3	0.67
21	Increases libido	4	2	0.67
22	Treats skin diseases	9	4	0.63
23	Restores stamina for women after childbirth	6	3	0.60
24	Relieves swelling / bruising / body aches	6	3	0.60
25	Treats itching, hemorrhoids, and ulcers	3	2	0.50
26	Increases stamina and maintains body stability and vitality	10	6	0.44

The highest Informant Consensus Factor (ICF = 1) indicates very strong agreement among informants on specific plant uses. Forest Betel (*Piper caducibracteum*) was cited for body odor, sore throats, and female genital health; Sesewanua/Tambai (*Clerodendron* sp.) for treating

broken bones; Forest Starfruit (*Averrhoa bilimbi*) for kidney problems; Tagalolo (*Ficus septicum*) for boils; and *Cinnamomum culilawan* for maintaining liver function. These results highlight key species with highly specific medicinal applications in the Toraut community.

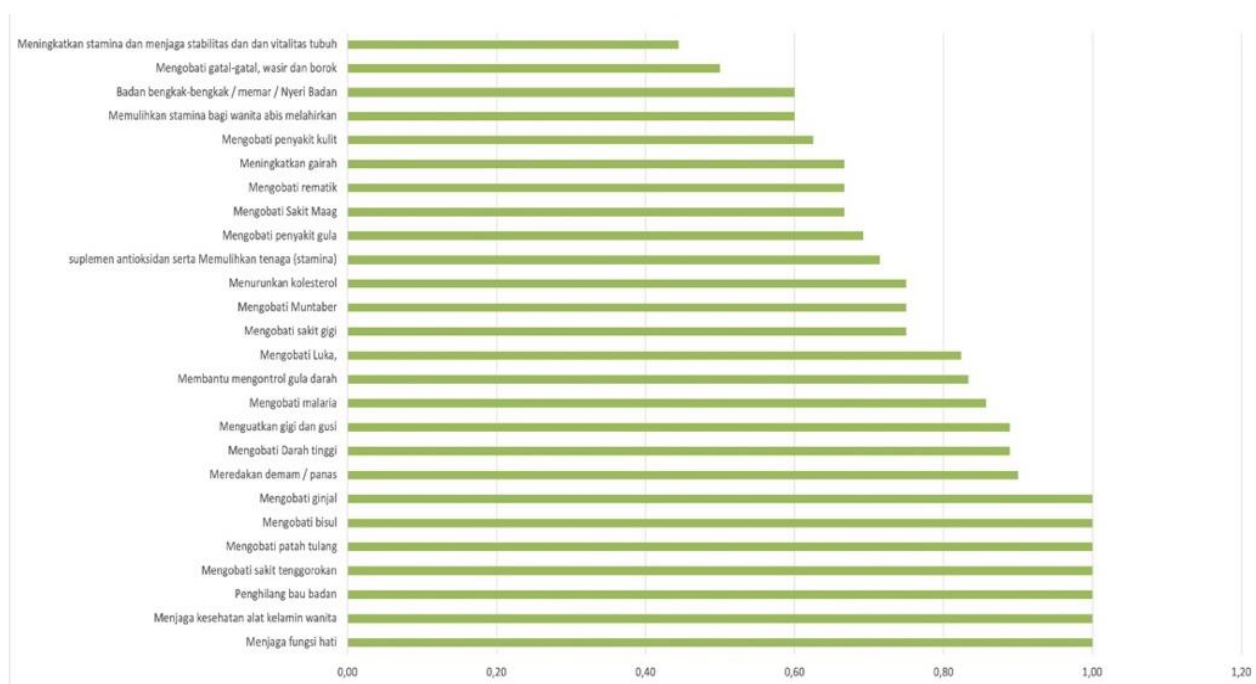


Figure 3. ICF of Local Community Medicinal Plant Utilization

Other high ICFs: Relieving fever (ICF $\approx$ 0.90), Treating high blood pressure ($\approx$ 0.89), Strengthening teeth and gums ($\approx$ 0.89), Treating malaria ($\approx$ 0.86), Controlling blood sugar ($\approx$ 0.83), and Healing wounds ($\approx$ 0.82). Strong consensus (ICF=1) across seven types of benefits indicates a strong preference among informants, with one species dominant for a particular indication (e.g., Forest Betel Leaf for body odor and sore throat, Sesewanua for broken bones, and Starfruit for kidney

disease). This implies strong validation of the tradition for further pharmacological testing. Other benefits, such as those for wounds, fever, high blood pressure, malaria, and blood sugar control, showed a high ICF. Although multi-species, reflecting diversity, there is still agreement on a number of key species.

Fidelity Level (FL)

This analysis is used to measure the percentage of informants who mentioned the use of a particular plant species to treat a specific disease.

Table 2. FL Calculation Results

Species Code	Manfaat	Np	N	FL (%)	Species Name
4	Treating Diarrhea	4	4	100.00	Charcoal Wood (<i>Cratoxylon celebicum</i>)
14	Increasing stamina and maintaining body stability and vitality	2	2	100.00	Mayana (<i>Coleus atropurpureus</i>)
7	Swelling/bruising/body aches	1	1	100.00	Goat Wood (<i>Garuga floribunda</i>)
16	Increasing stamina and maintaining body stability and vitality	1	1	100.00	Moringa (<i>Moringa oleifera</i>)
13	Strengthening teeth and gums	9	12	75.00	Areca nut (<i>Areca catecu</i>)
3	Treating wounds	15	27	55.56	Tiger Grass (<i>Lantana camara</i> L.)
9	Treating high blood pressure	6	11	54.55	Yellow String (<i>Arcangelisia flava</i>)
12	Treating malaria	6	12	50.00	Egg Wood (<i>Alstonia scholaris</i> R. Br.)
6	Eliminating body odor	15	32	46.88	Forest Betel (<i>Piper caducibracteum</i>)
10	Treating kidney problems	10	23	43.48	Forest Starfruit (<i>Averhoa bilimbi</i>)
11	Treating boils	5	12	41.67	Tagalolo (<i>Ficus septicum</i> Burm.)
2	Treating broken bones	12	33	36.36	Sesewanua/Tambai (<i>Clerodendron</i> sp.)
11	Treating diabetes	4	12	33.33	Tagalolo (<i>Ficus septicum</i> Burm.)
2	Relieving fever/heatiness	10	33	30.30	Sesewanua/Tambai (<i>Clerodendron</i> sp.)
1	Treating rheumatism	5	17	29.41	English: Cinnamomum culilawan (<i>Cinnamomum culilawan</i>)
1	Maintaining liver function	5	17	29.41	Cinnamomum culilawan (<i>Cinnamomum culilawan</i>)
5	Helps control blood sugar	6	21	28.57	Forest Mangosteen (<i>Garcinia bancana</i> Miq.)
5	Antioxidant supplement and restores energy (stamina)	6	21	28.57	Forest Mangosteen (<i>Garcinia bancana</i> Miq.)
11	Treating skin diseases	3	12	25.00	Tagalolo (<i>Ficus septicum</i> Burm.)
5	Treating diabetes	4	21	19.05	Forest Mangosteen (<i>Garcinia bancana</i> Miq.)
6	Treating sore throats	6	32	18.75	Forest Betel (<i>Piper caducibracteum</i>)
9	Treating malaria	2	11	18.18	Yellow String (<i>Arcangelisia flava</i>)
9	Increasing libido	2	11	18.18	Yellow String (<i>Arcangelisia flava</i>)
1	Treating diabetes	3	17	17.65	Cinnamomum culilawan (<i>Cinnamomum culilawan</i>)
1	Increasing stamina and maintaining body stability and vitality	3	17	17.65	Forest Starfruit (<i>Averhoa bilimbi</i>)
10	Treating high blood pressure	4	23	17.39	Pulai/Egg Wood (<i>Alstonia scholaris</i> R. Br.)
12	Increasing stamina and maintaining body stability and vitality	2	12	16.67	Areca Nut (<i>Areca catecu</i>)
13	Increasing libido	2	12	16.67	Forest Betel (<i>Piper caducibracteum</i>)
6	Maintaining female genital health	5	32	15.63	Tiger Grass (<i>Lantana camara</i> L.)
3	Restoring stamina for women after childbirth	4	27	14.81	Forest Mangosteen (<i>Garcinia bancana</i> Miq.)
5	Reducing cholesterol	3	21	14.29	Sesewanua/Tambai (<i>Clerodendron</i> sp.)
2	Body	4	33	12.12	Tiger Grass (<i>Lantana camara</i> L.)

Species Code	Manfaat	Np	N	FL (%)	Species Name
	swelling/bruising/pain				
	Body				
3	Treats Stomach Ulcers	3	27	11.11	Tiger Grass (<i>Lantana camara</i> L.)
3	Treats Skin Diseases	3	27	11.11	Forest Betel Leaf (<i>Piper caducibracteum</i>)
6	Treats Toothache	3	32	9.38	Yellow String (<i>Arcangelisia flava</i>)
9	Relieves Fever	1	11	9.09	Forest Starfruit (<i>Averhoa bilimbi</i>)
10	Treats Diabetes	2	23	8.70	Forest Starfruit (<i>Averhoa bilimbi</i>)
10	Treats Toothache	2	23	8.70	Forest Starfruit (<i>Averhoa bilimbi</i>)
10	Lowers Cholesterol	2	23	8.70	Pulai/Kayu Telor (<i>Alstonia scholaris</i> R. Br.)
12	Treats Wounds	1	12	8.33	Charcoal Wood (<i>Cratogeomys celebicum</i>)
12	Treats Itching, Hemorrhoids, and Ulcers	1	12	8.33	Pulai/Eggwood (<i>Alstonia scholaris</i> R. Br.)
12	Treats Skin Diseases	1	12	8.33	Pulai/Eggwood (<i>Alstonia scholaris</i> R. Br.)
12	Treats Rheumatism	1	12	8.33	Pulai/Eggwood (<i>Alstonia scholaris</i> R. Br.)
13	Body Swelling/Bruising/Body Pain	1	12	8.33	Areca nut (<i>Areca catechu</i>)
6	Treats Itching, Hemorrhoids, and Ulcers	2	32	6.25	Forest betel (<i>Piper caducibracteum</i>)
2	Treats Skin Diseases	2	33	6.06	Clerodendron sp. Starfruit (<i>Cinnamomum culilawan</i>)
1	Antioxidant Supplement and Restores Stamina	1	17	5.88	Forest Mangosteen (<i>Garcinia bancana</i> Miq)
5	Strengthens Teeth and Gums	1	21	4.76	Forest Mangosteen (<i>Garcinia bancana</i> Miq)
5	Increases Stamina and Maintains Body Stability and Vitality	1	21	4.76	Forest Starfruit (<i>Averhoa bilimbi</i>)
10	Helps Control Blood Sugar	1	23	4.35	Forest Starfruit (<i>Averhoa bilimbi</i>)
10	Restores Stamina for Women After Childbirth	1	23	4.35	Forest Starfruit (<i>Averhoa bilimbi</i>)
10	Increase stamina and maintain body stability and vitality	1	23	4.35	Tiger Grass (<i>Lantana camara</i> L.)
3	Treat rheumatism	1	27	3.70	Tiger Grass (<i>Lantana camara</i> L.)
3	Antioxidant supplement and restore energy (stamina)	1	27	3.70	Forest Betel Leaf (<i>Piper caducibracteum</i>)
6	Treat wounds,	1	32	3.13	Clerodendron sp.
2	Restore stamina for women after childbirth	1	33	3.03	Clerodendron sp.
2	Treat wounds,	1	33	3.03	Clerodendron sp.
2	Treat diarrhea	1	33	3.03	Clerodendron sp.
2	Treat stomach ulcers	1	33	3.03	Clerodendron sp.
2	Treat diabetes	1	33	3.03	Pulai/Eggwood (<i>Alstonia scholaris</i> R. Br.)

The Fidelity Level (FL) analysis highlighted species with highly specific uses. *Cratogeomys celebicum* showed 100% FL for treating diarrhea, Mayana and Moringa both had 100% FL for

increasing stamina, and *Garuga floribunda* had 100% FL for swelling, bruising, and body aches. Other species showed lower but notable specificity: Areca nut for strengthening teeth and

gums (75% FL), Tigergrass for treating wounds (55.6% FL), Yellow Rope for high blood pressure (54.5% FL), *Alstonia scholaris* for malaria (50% FL), Forest Betel for eliminating body odor

(46.9% FL), and Forest Starfruit for kidney disease (43.5% FL). These results indicate both highly specific and multi-indication uses of medicinal plants in Toraut traditional practices.

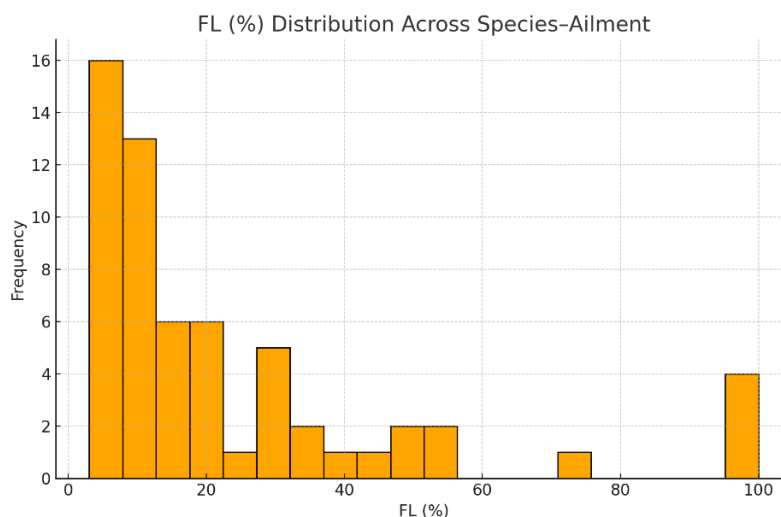


Figure 4. Cross-relationship between species frequency values and FL values

Analysis of 60 species–benefit pairs revealed a mean FL of 23.3%, median 14.6%, upper quartile 29.4%, and 90th percentile 54.6%, indicating that most species have multi-indicative uses, while a few are highly specific. High-FL “mainstay” species include Kayu Arang for diarrhea (100%), Pinang Tongkat for teeth and gums (75%), Tiger Grass for wounds (55.6%), Tali Kuning for high blood pressure (54.5%), and Kayu Telur for malaria (50%). Frequently mentioned species—Sesewanua (33), Forest Sirih (32), Tiger Grass (27), Forest Starfruit (23), and Forest Mangosteen (21)—play key roles in traditional medicinal practices, highlighting the need for conservation and cultivation efforts to manage utilization pressure.

CONCLUSION

The study found a very high informant consensus (ICF = 1) across seven ailment categories, indicating strong agreement on specific plant species for issues such as body odor, broken bones, kidney disease, sore throats, boils, liver function, and female genital health. High consensus was also observed for fever, high blood pressure, malaria, wounds, and blood sugar, highlighting key species widely used by local communities. Fidelity Level (FL) analysis showed some species with 100% FL, such as Kayu Arang for diarrhea, Mayana and Moringa for stamina, and Kayu Kambing for body aches, while most

species had low to medium FL, reflecting multi-indication use. The most frequently mentioned species, including Sesewanua, Forest Betel, Tiger Grass, Forest Starfruit, and Forest Mangosteen, play a central role in Toraut traditional medicine and may face high utilization pressure.

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