



RESEARCH PAPER

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Ethnomedicinal plant knowledge of the Manobo indigenous people in Agusan del Sur, Philippines

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ABSTRACT

This study aimed to document and analyze the medicinal plant species utilized by local residents in the selected municipalities of Agusan del Sur, specifically Bunawan, Trento, and Loreto. A total of ninety-four (94) key informants with substantial knowledge of traditional healing practices were purposively selected and interviewed using semi-structured questionnaires. The survey documented ninety-four (94) medicinal plant species used for various health conditions. Leaves were identified as the most frequently utilized plant part. Decoction was the predominant method of preparation, whereas infusion was rarely practiced. Internal application was more common than external use, with oral ingestion (drinking) representing the primary mode of administration. For external treatments, rubbing or topical application in the form of ointment was most frequently reported. In terms of growth forms, herbs and vines comprised the largest proportion of medicinal plants cited. Most species were described as commonly encountered within the local environment. Overall, the findings demonstrate the continued reliance of communities in Agusan del Sur on accessible plant resources for primary healthcare and emphasize the importance of preserving indigenous ethnomedicinal knowledge for future pharmacological research and conservation efforts.

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INTRODUCTION

Medicinal plants and herbs have been used for many centuries as a source of people's drugs for the treatment and prevention of disease, disorders and the promotion of good health. These plants do not have only nutritional value but have ritual or magical values (Newman *et al.*, 2000). According to World Health Organization (2003), it is estimated that up to 80% of the population depends exclusively on the plants for their health and healing. The information and folk knowledge regarding the medicinal and therapeutic uses of indigenous plants materials have been handed down from generation through verbal communication. In the Philippines, ethnobotanical studies are relatively few, with some focusing on well-known indigenous groups. Despite many ethnomedicinal that were performed all over the world, a relatively few documentations in ethnobotanical plants in the Philippines that neglected the knowledge of traditional agriculturist and forest dwellers (Boscolo, 2005).

The studies of the tribal indigenous knowledge of plants constitute an important and preliminary aspect of ethnobotanical research. These people manage and conserve significant amounts of biological resources useful for industry and world community (Medeiros *et al.*, 2007). The study of medicinal plants for traditional use by local people can lead to valuable information, allowing research to be done based on empirical knowledge that should be tested scientifically. For that, there should be an analysis of medicinal plants in several aspects: anthropological, social, chemical, pharmacological, botanical, ecological, agronomic and others (Boscolo, 2005). Agusan del Sur is a land locked province of the Philippines located in the Caraga Region in Mindanao. It consists of thirteen (13) municipalities and having an area of 8,966 square kilometres (3,462 sq mi). It has vast of forested area where diverse flora and fauna found specially the medicinal plants. More of the people in the area are still using medicinal plants for medical purposes. However, there was no research effort conducted to assess the medicinal plants used by the Agusanons. Thus, this

study will be carried out to identify plant species used for medicinal purposes by the Manobos in Agusan del Sur living in the Municipality of Bunawan, Trento and Loreto, Agusan del Sur.

This study was used to persuade the Local Government Unit in implementing protection and security of the medicinal plants in province of Agusan del Sur. Moreover, this study will provide baseline information about medicinal plants and may greatly vary as they conduct related studies.

MATERIALS AND METHODS

Study sites

The ethnobotanical survey was conducted in the selected municipalities of the province of Agusan del Sur namely Bunawan, Trento and Loreto during June to September 2023.

Bunawan is a municipality situated in the northeastern part of the Province of Agusan del Sur, in the Caraga Administrative Region, Mindanao, Philippines. It lies approximately 50 km southeast of Butuan City and about 15 km north of the provincial capital, Prosperidad. The municipality is geographically located at approximately 8° 10' 00" North latitude and 125° 59' 00" East longitude. Bunawan has a total land area of about 1,373.20 km², making it one of the larger municipalities in Agusan del Sur and a significant component of the Agusan Marsh area. On the otherhand, Trento is a landlocked municipality located in the eastern part of the Province of Agusan del Sur, within the Caraga Administrative Region (Region XIII), Mindanao, Philippines. It is situated approximately 130 km southeast of Butuan City and about 45 km east of the provincial capital, Prosperidad. Geographically, Trento lies at around 8° 03' 00" North latitude and 126° 03' 00" East longitude. The municipality has a total land area of approximately 581.40 km² and is predominantly agricultural, serving as one of the province's important food-producing areas. Loreto is a landlocked municipality located in the western part of the Province of Agusan del Sur, within the Caraga Administrative Region (Region XIII), Mindanao,

Philippines. It is situated approximately 30 km west of the provincial capital, Prosperidad, and about 80 km south of Butuan City. Geographically, Loreto lies at approximately 8° 11' 00" North latitude and 125° 51' 00" East longitude. The municipality has a total land area of about 1,000 km², characterized largely by agricultural lands, forested areas, and river systems that support farming and inland fisheries.

Study population and ethnobotanical data collection

In all research areas, a total of ninety-four (94) local residents aged 30–82 years were engaged as informants based on their recognized knowledge of traditional medicinal plants.

Data were gathered through semi-structured interviews, a method widely employed in Philippine ethnobotanical research to document indigenous and local knowledge systems.

The demographic profile of each informant, including age, sex, educational attainment, and occupation, was recorded to contextualize knowledge distribution across socio-demographic variables. Key informants were selected using purposive sampling, particularly traditional healers, elders, and individuals acknowledged by the community for their expertise in ethnomedicine. Additional respondents were chosen through random sampling to enhance representativeness and minimize selection bias.

Ethnomedicinal data documented during the study included the local names of medicinal plants, plant parts used, harvesting methods, preparation techniques, ailments treated, routes of administration, supplementary ingredients, and growth status (wild or cultivated).

Knowledge on the therapeutic applications and traditional uses of ethnomedicinal plants was systematically recorded following standard ethnobotanical documentation practices in the Philippines. Interviews were conducted through informal and conversational approaches to encourage

spontaneous responses and reduce respondent discomfort, in recognition of culturally appropriate research engagement with local and indigenous communities.

Photographs of plant specimens were taken in situ during field surveys. Botanical identification was conducted through consultation of authoritative Philippine floras and relevant taxonomic literature. Ethical protocols were strictly observed in accordance with Philippine ethnobotanical research guidelines. Prior informed consent was obtained from all participants, and the study was conducted with the knowledge and approval of the National Commission on Indigenous Peoples (NCIP) in Agusan del Sur, ensuring respect for indigenous knowledge systems and compliance with national ethical standards.

Specimen collection

Samples of the medicinally utilized plant parts were collected for taxonomic verification. Detailed field observations were conducted, and the habitat, morphological features, and reproductive structures of each species were documented through photographic records and descriptive notes. Voucher specimens were prepared and preserved by immersion in denatured alcohol to ensure specimen integrity for subsequent examination.

Ethnobotanical data analysis

Ethnobotanical data obtained through semi-structured interviews and field observations were systematically organized and analyzed using descriptive statistical methods. Frequencies and percentages were employed to summarize demographic characteristics of informants and to describe patterns of medicinal plant use, including plant parts utilized, modes of preparation, ailments treated, and routes of administration.

RESULTS AND DISCUSSION

Community status of the respondents

Fig. 1 illustrates the distribution of respondents according to community status, showing that the majority are Residents (52%), followed by Tribal

Leaders (23%), Baylan (16%), and Elders (9%). The predominance of residents suggests that the dataset largely reflects the perspectives of general community members who are directly affected by local policies, programs, and day-to-day socio-cultural practices. This is methodologically important, as residents typically represent the broader population base and provide insights into lived experiences, community needs, and grassroots-level realities. Studies in community-based and indigenous research emphasize the value of resident participation in generating inclusive and representative data, particularly when assessing awareness, perceptions, or policy impacts (Israel *et al.*, 2010). The substantial proportion of Tribal Leaders (23%) strengthens the analytical depth of the data. Tribal leaders often serve as formal or informal decision-makers, mediators, and custodians of customary laws and governance structures. Their participation enhances the credibility of the findings, as leadership perspectives are critical in understanding how policies, rights, and programs are interpreted and implemented within indigenous communities (Cornell and Kalt, 2007). The inclusion of Baylan (16%), who traditionally function as spiritual leaders, healers, or ritual specialists in many Philippine indigenous communities, provides an essential cultural dimension. Their presence in the respondent pool indicates that the study captures not only administrative or social viewpoints but also spiritual and cultural interpretations that influence community norms, values, and acceptance of interventions. Literature highlights that spiritual leaders play a significant role in shaping collective beliefs and behaviors, particularly in indigenous knowledge systems (Jocano, 1999). Although Elders (9%) constitute the smallest proportion, their participation remains significant. Elders are widely recognized as repositories of indigenous knowledge, oral history, and customary practices. Even with a smaller numerical representation, their insights are often disproportionately influential in interpreting community dynamics, cultural continuity, and intergenerational knowledge transmission (UNESCO, 2017). The lower percentage may reflect demographic

realities, availability, or participation constraints rather than diminished importance.



Fig. 1. Community status of the respondents

Overall, the distribution demonstrates a balanced representation across social, leadership, spiritual, and cultural roles within the community. This diversity enhances the robustness of the data by integrating multiple perspectives, which is essential for evidence-based analysis, culturally responsive policy formulation, and the development of programs that are socially acceptable and contextually grounded.

Age of the respondents

Fig. 2 shows that the largest proportion of respondents belongs to the 50–59 years old group (28%), followed by those below 40 years old (26%) and 40–49 years old (23%).

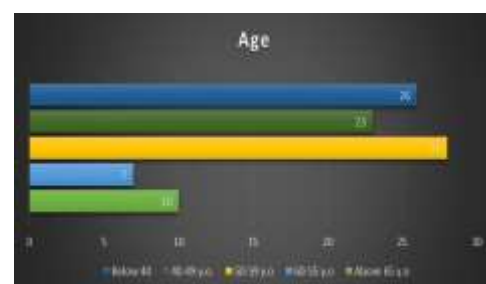


Fig. 2. Age of the respondents

Respondents aged above 65 years comprise 10%, while the 60–65 years old group has the smallest share (7%). The data indicate that the majority (51%) are within the 40–59 years bracket, suggesting that the study largely reflects the perspectives of middle-aged individuals who are typically in their peak productive and professional years. Middle adulthood is often associated with accumulated experience, stable cognitive

functioning, and active participation in community or institutional roles (Santrock, 2019).

The moderate representation of younger respondents (<40 years) introduces generational diversity, while the smaller proportion of older adults (60+) may limit the influence of senior perspectives. Overall, the age distribution suggests a mature and experienced respondent base, which may enhance the reliability and depth of the findings.

Sex of the respondents

Fig. 3 illustrates the sex distribution of the respondents. The majorities are male (63%), while female respondents account for 37% of the total sample. The data indicate a male-dominated respondent population. This imbalance suggests that the findings may largely reflect male perspectives, experiences, and decision-making patterns. In social and behavioral research, sex composition is a significant demographic variable because it can influence attitudes, access to resources, participation levels, and knowledge systems (Creswell and Creswell, 2018).

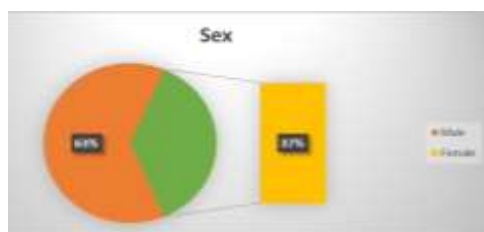


Fig. 3. Sex of the respondents

The lower proportion of female respondents (37%) may imply underrepresentation, which could be attributed to structural, cultural, or occupational factors depending on the study context. Gender-based participation disparities are commonly observed in sectors where men traditionally dominate leadership or technical roles (World Economic Forum, 2023). From a methodological standpoint, while the sample provides insight into the dominant group, the unequal distribution may limit the generalizability of findings across sexes. Ensuring more balanced

representation in future studies may enhance inclusivity and strengthen comparative analysis.

Overall, the sex distribution suggests that the study's results are shaped primarily by male respondents, with moderate female participation contributing to diversity of perspectives.

Occupation of the respondents

Fig. 4 shows that the majority of respondents are farmers (37%), followed by housewives (24%), fishermen (17%), entrepreneurs (10%), and government employees (6%). The dominance of farmers indicates that the sample is largely composed of individuals engaged in primary agricultural activities, suggesting that the study findings are strongly influenced by agricultural livelihoods. This reflects the typical occupational structure of rural communities, where farming remains a principal source of income and subsistence (FAO, 2022). The presence of housewives and fishermen further highlights the community's dependence on household-based and natural resource-dependent occupations. The smaller proportion of entrepreneurs and government employees suggests limited engagement in formal or diversified employment sectors. Overall, the occupational distribution indicates a predominantly agriculture-based respondent population, which is essential in interpreting the study results within a rural socio-economic context.

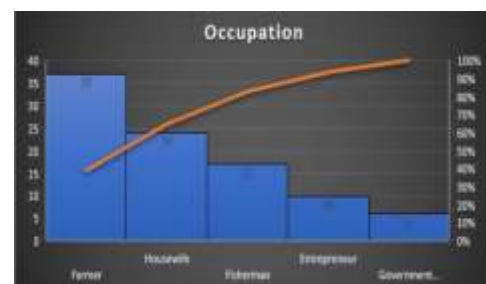


Fig. 4. Occupation of the respondents

Educational attainment of the respondents

Fig. 5 shows that the largest proportion of respondents are elementary graduates (32%), followed closely by elementary undergraduates

(30%). Meanwhile, high school undergraduates comprise 13%, college undergraduates 11%, high school graduates 8%, and only 6% are college graduates. The data indicate that the majority of respondents have basic-level education, with 62% having only elementary education (graduate or undergraduate). This suggests limited access to higher educational opportunities within the community. Educational attainment is a key socio-economic indicator, as it influences employment opportunities, income levels, and access to information (UNESCO, 2021).

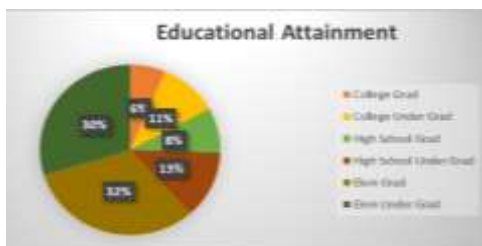


Fig. 5. Educational attainment of the respondents

The relatively small percentage of college graduates (6%) implies that professional or highly skilled representation is limited. Overall, the findings reflect a population with predominantly low to moderate educational attainment, which is important in interpreting knowledge levels, decision-making capacity, and participation in development programs.

Plant parts used for medicinal purposes

Fig. 6 illustrates the status of plant parts utilized by the respondents. The majority of plant materials are used in their fresh form (92%), while only a small proportion are utilized in dried form (6%) or categorized as other forms (2%). This finding suggests a strong preference for freshly harvested plant parts, which is common in traditional and ethnobotanical practices. Fresh plant materials are often believed to retain higher potency and bioactive compounds compared to dried preparations (WHO, 2013). The minimal use of dried forms may indicate limited storage practices, immediate availability of plant resources, or reliance on locally accessible vegetation.

The predominance of fresh plant use also reflects the community’s close interaction with their natural environment, where plants are readily collected and prepared for immediate application. Overall, the data highlight a traditional utilization pattern emphasizing freshness over processed or preserved forms.

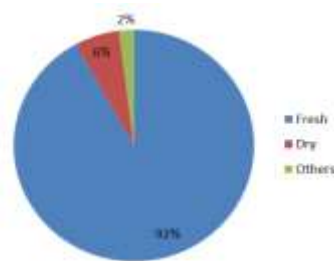


Fig. 6. Plant parts status

Plant parts used for medicinal purposes

Fig. 7 shows that leaves (43) are the most frequently used plant part for medicinal purposes, followed by stem bark (22) and stems (13). Other parts used include roots (6), fruits (5), flowers (2), and rhizomes (2), while minimal or no use was reported for seeds, latex, whole plants, and bulbs. The predominance of leaves is consistent with ethnobotanical studies, which report that leaves are commonly utilized because they are readily accessible, renewable, and rich in bioactive compounds (Giday *et al.*, 2009). Harvesting leaves is also less destructive compared to roots or whole plants, supporting sustainable use of medicinal species.



Fig. 7. Plant parts used for medicinal purposes

The notable use of stem bark and stems indicates additional reliance on structural plant parts, which may contain concentrated phytochemicals. Overall, the findings reflect a plant-use pattern that prioritizes availability, efficacy, and sustainability in traditional medicinal practices.

Plant parts preparation

Fig. 8 shows that decoction (33%) is the most commonly used method of preparation, followed by paste (28%) and heating or calcinating (17%). Other methods include latex application (12%), infusion (5%), squeezing (4%), and chewing (1%). The predominance of decoction indicates a strong reliance on boiling plant materials to extract active compounds, a method widely practiced in traditional medicine due to its effectiveness in releasing water-soluble phytochemicals (WHO, 2013). The frequent use of paste suggests topical applications for wounds, skin infections, or localized conditions.



Fig. 8. Plant parts preparation

Less common methods such as chewing and squeezing reflect simpler, immediate forms of preparation. Overall, the findings demonstrate a preference for practical and accessible preparation techniques rooted in traditional medicinal knowledge.

Mode of application of ethnomedicinal plants

Fig. 9 indicates that medicinal plants are applied slightly more externally (52%) than internally (48%). The nearly equal distribution suggests a balanced use of plant-based remedies for both topical and systemic treatments. The slightly higher external application may reflect the common treatment of skin conditions, wounds, and localized ailments through direct application such as paste or latex. External use is often preferred in traditional medicine due to perceived safety and reduced risk of systemic side effects (WHO, 2013).

Meanwhile, the substantial proportion of internal application indicates continued reliance on decoctions and infusions for treating internal disorders. Overall, the findings demonstrate a

diversified and comprehensive approach to traditional medicinal practices within the community.

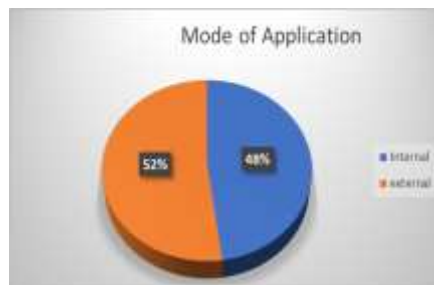


Fig. 9. Mode of application

Internal application

Fig. 10 shows that the predominant method of internal application is drinking (42 responses; 93%), followed by chewing and swallowing (3 responses; 7%). Minimal to no responses were recorded for chewing and spitting the residue and eating by mixing with food. The overwhelming preference for drinking suggests that most plant-based remedies are prepared as decoctions or infusions, which are commonly administered orally for systemic treatment. Oral intake through drinking is widely practiced in traditional medicine due to its efficiency in delivering water-soluble bioactive compounds (WHO, 2013).



Fig. 10. Internal application

The limited use of chewing indicates that direct consumption of raw plant parts is less common, possibly due to taste, potency, or preparation preferences. Overall, the findings highlight those internal medicinal practices are largely liquid-based and preparation-intensive.

External application

Fig. 11 shows that external application methods are almost equally distributed between rubbing ointment

(51%) and tie-on/hold-on application (49%). In terms of frequency, rubbing ointment accounts for 25 responses, while tie-on/hold-on has 24 responses. The near-equal distribution indicates that respondents commonly use both direct topical rubbing and attachment methods (e.g., placing or binding plant materials on the affected area). Rubbing ointment suggests preparation of plant extracts or paste for absorption through the skin, while tie-on methods reflect traditional practices of applying fresh plant parts directly to wounds, swelling, or localized pain. This balanced use demonstrates a diversified approach to external treatment, emphasizing practical and experience-based healing methods in traditional medicine (WHO, 2013).



Fig. 11. External application

Plants administration route

Fig. 12 indicates that the most common route of administration is oral (43 responses), followed by topical (29) and dermal (20) applications. Inhalation (2) is rarely practiced, while nasal administration (0) was not reported. The predominance of oral administration reflects the common use of decoctions and infusions for systemic treatment, allowing bioactive compounds to circulate throughout the body. This aligns with traditional medicinal practices where drinking herbal preparations is a primary therapeutic approach (WHO, 2013).

Topical and dermal routes also account for a substantial proportion, indicating frequent treatment of localized conditions such as wounds, inflammation, and skin disorders. The minimal use of inhalation and absence of nasal administration suggest that respiratory-based treatments are less emphasized in the community.

Overall, the findings demonstrate a strong reliance on oral remedies, complemented by external applications, highlighting a comprehensive yet predominantly ingestion-based medicinal practice.

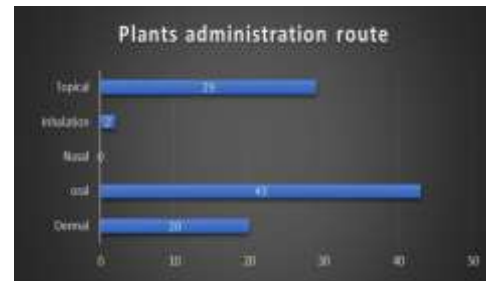


Fig. 12. Plants administration route

Degree of abundance of the ethnobotanical plants

Based on the informants' knowledge about the abundance and scarcity of the medicinal plants in the area, they were described it commonly, occasionally and rarely encountered.

Fig. 13 shows that the majority of medicinal plants are commonly encountered (51%), followed by those rarely encountered (38%), while 11% are occasionally encountered.

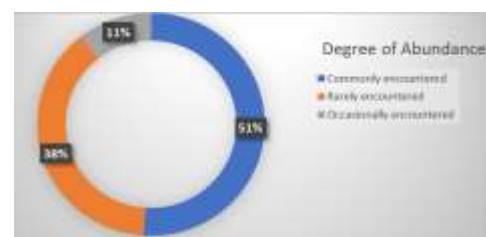


Fig. 13. Degree of abundance

The predominance of commonly encountered species suggests that most medicinal plants used by respondents are readily available in their local environment. This accessibility supports continuous utilization and reflects a strong interaction between the community and surrounding plant resources. However, the considerable proportion of rarely encountered species (38%) may indicate emerging concerns regarding resource availability, possible overharvesting, or environmental changes.

According to the World Health Organization (2013), sustainable harvesting and conservation practices are essential to maintain the availability of medicinal plant resources.

Overall, the findings suggest that while many species remain accessible, a significant number may require conservation attention to ensure long-term sustainability.

Table 1. Documented ethnomedicinal plants and their uses

Vernacular name	Scientific name	Ailment treated/ uses
Asunting	<i>Cassia alata</i>	Ringworm, insect bites, scabies, and eczema
Guava	<i>Psidium guajava</i>	Anti bacterial, wounds
Water Lily	<i>Eichhornia crassipes</i>	Anti-inflammatory, antimicrobial,
Bangkal	<i>Nauclea orientalis</i>	Abdominal pain, animal bites and wounds
Saku	sp 1	Treat for diarrhea, Relief of stomach ache / stomach problem/ disorder
Bongwas	sp 2	Fever
Tambo	<i>Phragmites australis</i>	Herb for diabetes, breast cancer, insect bites
Bayabas	<i>Psidium guajava</i>	Disinfect wound
Bagon	<i>Lunasia amara</i>	Cleaning wounds
Talimughat	<i>Grewia laevigata</i>	Cramps and Spasms, Muscle Pain
Gabon	<i>Blumea balsamifera</i>	Soften cough
Kalabo	<i>Origanum vulgare</i>	Soften cough
Tuba tuba	<i>Jatropha curcas</i>	Muscle Pain, Treat diarrhea, cough remedy, Skin bite and other animal bites
Balete	<i>Ficus balete</i>	Bone fracture
Tundan Leaves	<i>Musa acuminata</i>	Muscle pain
Panyawan	<i>Tinospora rumphii</i>	Relief toothache, Diabetes
Gemilina	<i>Gmelina arborea</i>	Rheumatism
Gabon	<i>Blumea balsamifera</i>	Relief cough, Rheumatism
Handilica	<i>Bryophyllum pinnatum</i>	Boils, Wounds
Mayana	<i>Coleus scutellarioides</i>	Treat diarrhea, antimicrobial
Tambal uli	<i>Anodendron borneense</i>	Gastrointestinal infection
Tagbak	<i>Alpinia malaccensis</i>	Paralyzes/stroke, fever
Langkoas	<i>Alpinia galanga</i>	Relief cough
Talimughat	<i>Grewia laevigata</i>	Headache, fever, muscle pain
Bila bila	<i>Eleusine indica</i>	Wound, stomache
Tawa tawa	<i>Euphorbia hirta</i>	Relief stomache, Relief fever, Relief Dengue fever
Albutra	<i>Arcangelisia flava</i>	Antibacterial, antifungal, antidiabetic
Kalingag	<i>Cinnamomum mercado</i>	Rheumatism, headaches, stomache
Anonotong	<i>Cyathea contaminans</i>	Snake bite
Lunas Bagon	<i>Piper nigrum</i>	Snake bites,
Albahaka	<i>Ocimum campechianum</i>	Antidiarrhea, stomache disorder
Orchid	<i>Phalaenopsis</i> spp.	Migraine. Headache
Water Lily	<i>Eichhornia crassipes</i>	Fever, Sunburn
Anonang	<i>Cordia blancoi</i>	relief fever, Relief Tootache
Bangkal	<i>Nauclea orientalis</i>	Relief stomache, relief itchiness
Bitan ag	<i>Kleinhovia hospita</i>	Bruise and sprain, Muscle pain, SunBurn,
Banaba	<i>Lagerstroemia speciosa</i>	Lower blood sugar levels, anticancer,treat UTI, Treat Diarrhea, Analgesic, pain reliever
Water Lily	<i>Eichhornia crassipes</i>	Rleif headche, soften cough, sunburn,give cooling effect,muscle pain, rheumatism
Hilbas	<i>Artemisia vulgaris</i>	Relief stomache, relief fever
Duwaw	<i>Curcuma longa</i>	Anti imflammatory, antibacterial
Cadia	<i>Cadia purpurea</i>	Wound, antibacterial
Atay atay	<i>Graptophyllum pictum</i>	soufeten cough, relief cough, relief from headache, indigestion problem and even irritation from insect bites
Tambo	<i>Phragmites vulgaris</i>	Antibacteria, antiinflammatory
Buyo	<i>Piper betle</i>	Pain relief, antiinflammatory, rheumatism, relief cough
Alugbati	<i>Basella alba</i>	Diinfect wound,
Tanglad	<i>Cymbopogon citratus</i>	Helping cure jaundice, relieving gastric ulcers, lowering blood pressure
Sambong	<i>Blumea balsamifera</i> L.	Treat urinary infection, reduces high blood pressure
Cogon	<i>Imperata cylindrica</i>	Improvement of urination, anti-inflammatory, antibacterial
Cobra vine	<i>Ipomoea nil</i>	Antibacterial, antifungal, antidiabetic

Ethnomedicinal plants species and their uses

The inventory revealed diverse plant species used to treat a wide range of ailments including dermatological conditions, gastrointestinal disorders, respiratory illnesses, musculoskeletal problems, metabolic diseases, and infections (Table 1). The documented plants demonstrate strong reliance on locally available flora for treating common illnesses. Many species cited are known in pharmacological literature to contain bioactive compounds with antimicrobial, anti-inflammatory, antidiabetic, and analgesic properties. The recurrence of certain species (e.g., *Psidium guajava*, *Blumea balsamifera*, *Eichhornia crassipes*) suggests high cultural significance and therapeutic value within the community. The wide range of treated ailments indicates a well-developed traditional knowledge system addressing both common and complex health conditions.

CONCLUSION

The leaves were the most commonly utilized part of the plants. Moreover, decoction with is the most common method of preparation used by the people while infusion with of the respondents is rarely used. For the mode of application, internal application is more frequently employed than the external application. In the internal application, drinking is the most commonly used way in taking the medicine. For the external, rubbing or ointment is the most frequently used. In terms of administration route, most of the medicine was used through oral application. In the analysis of growth forms, it revealed that herb/vine has the highest type of frequently used medicinal plants. Majority of the medicinal plants were commonly encountered.

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