

# Medicinal plants for digestive system disorders in Tebing Batu Village, Sambas District, West Kalimantan, Indonesia

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**Abstract.** Panjaitan RGP, Kurniasi A, Wahyuni ES, Panjaitan HDS, Ningsih K, Titin, Ali SS. 2025. Medicinal plants for digestive system disorders in Tebing Batu Village, Sambas District, West Kalimantan, Indonesia. *Biodiversitas* 26: 5647-5658. Disorders in the digestive system occur when the organs involved in the digestive process experience problems, which can disrupt their function and lead to symptoms such as bloating, diarrhea, gastritis, and Gastroesophageal Reflux Disease (GERD). One treatment for addressing digestive system disorders is the use of medicinal plants. This study aimed to inventory and document the use of medicinal plants for treating digestive system disorders by the community of Tebing Batu Village, Sebawi Sub-district, Sambas District, West Kalimantan, Indonesia. The method used in this study was qualitative descriptive. This study employed a qualitative method using purposive sampling as the selected technique. The results of the study indicate that there are 17 species of medicinal plants used to treat digestive system disorders, which include kalimaok (*Ageratum conyzoides*), sirsak (*Annona muricata*), pendaraan (*Cyanthillium cinereum*), kunyit (*Curcuma longa*), durian (*Durio zibethinus*), maram dapat (*Elephantopus scaber*), kencur (*Kaempferia galanga*), singkong (*Manihot esculenta*), cengkodok (*Melastoma malabathricum*), mengkudu (*Morinda citrifolia*), pandan (*Pandanus amaryllifolius*), ambing buah (*Phyllanthus amarus*), sirih (*Piper betle*), singkil (*Premna serratifolia*), jambu biji (*Psidium guajava*), sapu cina (*Scoparia dulcis*), saudagar (*Strachium sparganophorum*), which are classified into 13 families, with the most represented family being Asteraceae. The most commonly treated digestive disorders using the plants are stomachache and diarrhea. The most commonly used part is the leaf, while the most common processing technique is pounding. This study highlights the richness of local community knowledge in utilizing medicinal plants to treat digestive disorders. This study highlights the community's close relationship with nature and the importance of preserving local knowledge to be passed down to future generations.

**Keywords:** Digestive system disorders, inventory, medicinal plants

## INTRODUCTION

The digestive system is essential for maintaining overall health by breaking down food, absorbing nutrients, and eliminating unneeded waste products (Sensoy 2021; Tome 2024). Optimal function requires a healthy and balanced diet, while poor eating habits—such as high-fat and high-sugar consumption combined with low fiber intake—can increase the risk of digestive disorders (Arnone et al. 2022; Khorasaniha et al. 2023). Disorders occur when digestive organs experience functional problems, resulting in symptoms such as bloating (Martin-Biggers 2024), diarrhea (Chavda et al. 2024), and Gastroesophageal Reflux Disease (GERD) (Lee and Kim 2022). Dyspepsia and diarrhea are among the most common digestive problems globally, including in Indonesia (Andika and Safitri 2023; Sanjaya et al. 2023). Dyspepsia affects about 40-50% of Indonesians, placing the country third worldwide after the United States and the United Kingdom (Herman and Lau 2020). In West Kalimantan, Indonesia, in 2023, 34,641 diarrhea cases occurred across all age groups, accounting for 25.5% of the total estimated sufferers (138,541 people) (Health Office of West Kalimantan Province 2023).

Management strategies for digestive disorders include chemical treatments with pharmaceutical drugs and herbal approaches using medicinal plants (Vinarov et al. 2021; Asra et al. 2023). Chemical medications require careful monitoring due to potential long-term side effects such as kidney failure (Dzidic-Krivic et al. 2024) and liver damage (Tiwari et al. 2025). Herbal treatments are increasingly popular for their milder side effects, wide availability, and relatively lower costs (Hayati 2024). Studies have shown that plants such as jambu bigek (*Psidium guajava*) (Rambey et al. 2024), kencur (*Kaempferia galanga*) (Panjaitan 2024a), kunyit (*Curcuma longa*), and sirih (*Piper betle*) (Rambey et al. 2024; Tsurayya et al. 2025) possess properties beneficial for treating digestive ailments.

Indonesia, as a mega-biodiverse nation, offers significant potential for plant utilization across various needs (Fajar et al. 2024; Raunsay et al. 2025). Plants serve diverse functions for local communities, including food (Asfaw et al. 2023), traditional ceremonies (Sutrisno et al. 2020), cosmetics (Sari et al. 2024), women's reproductive health (Oktavia et al. 2023), and traditional medicine (Supiandi et al. 2023; Gani et al. 2024; Panjaitan et al. 2024c). Traditional medicine has long been part of Indonesian culture (Fadhilah et al. 2023).

West Kalimantan, in particular, harbors rich biodiversity that supports ethnomedicinal practices, including for digestive disorders (Panjaitan et al. 2024a).

Ethnobotanical research has documented numerous medicinal plants used in West Kalimantan. Yusro et al. (2019) reported that the Dayak Iban in Kapuas Hulu District utilize at least 21 plant species to treat diarrhea, abdominal pain, and constipation. In Bunut Sub-district, Sanggau District, 31 species from 25 families are traditionally employed for digestive disorders (Ningsih et al. 2020). In Parit Raja Village, Sambas District, 36 species have been identified for similar purposes (Mamdu'ah et al. 2022). However, these studies are often localized and have not covered other communities with comparable traditions.

Traditional medicine represents an important form of local wisdom in Indonesia, offering an alternative to maintain health. Nonetheless, traditional knowledge about medicinal plants is declining due to competition with modern medicine, perceived as more practical and fast-acting (Albar et al. 2025). This trend is evident in Tebing Batu Village, Sebawi Sub-district, Sambas District, West Kalimantan. Located in a fertile lowland tropical region dominated by forests, agricultural lands, and plantations, the village's environment supports diverse tropical vegetation, including many medicinal plants. This ecological richness is a vital asset for sustaining traditional medicinal knowledge.

Most Tebing Batu residents depend on agriculture and plantations for their livelihoods. Some villagers continue to use traditional remedies for mild illnesses, particularly digestive disorders. However, interest among younger generations is waning, raising concerns about the potential loss of this cultural heritage. Although medicinal plant use

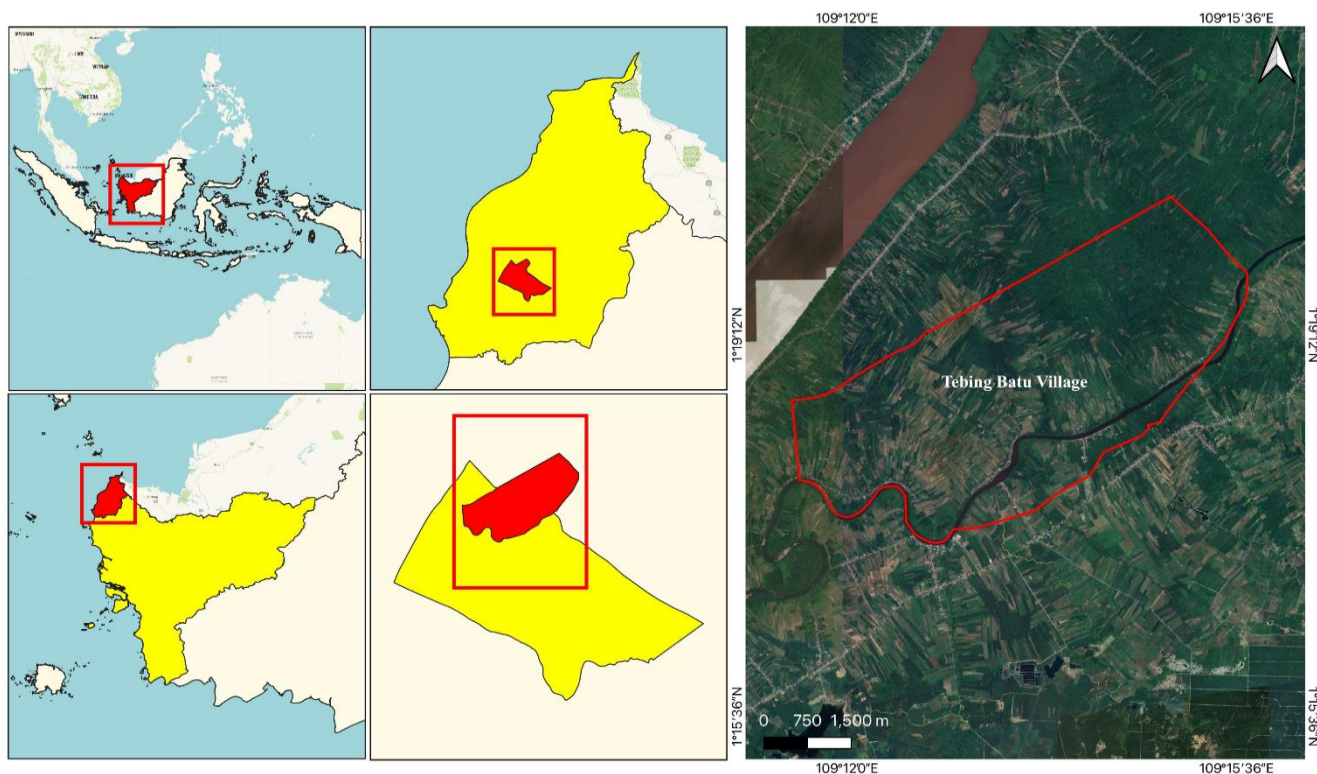
persists, no systematic inventory has been undertaken in Tebing Batu. Documentation is crucial to preserve both cultural heritage and natural resources (Elfrida et al. 2021).

This study therefore focuses on compiling an inventory of medicinal plant diversity in Tebing Batu Village, identifying plant parts used, and documenting preparation methods for treating digestive disorders. The research aims to identify, document, and preserve traditional medicinal knowledge still practiced in the community, especially for managing digestive system ailments.

## MATERIALS AND METHODS

### Study area

This study was conducted from September to October 2024 in Tebing Batu Village, Sebawi Sub-district, Sambas District, West Kalimantan, Indonesia (Figure 1). Based on its location, Tebing Batu Village borders other villages such as to the north with Tempatan Village and Sambas Sub-district, to the east with Sebawi Village and Semajang Village, to the south with Sepuk Tanjung Village, and to the west with Sebangun Village. Tebing Batu Village has a population of 3,027 people, consisting of 1,564 males and 1,463 females. The residents of Tebing Batu Village include ethnic groups such as Malay, Javanese, and Chinese. The village covers an area of 24.6 km<sup>2</sup> and comprises three hamlets: Sebatu Barat Hamlet, Sebatu Timur Hamlet, and Tebing Rubuh Hamlet (Central Bureau of Statistics of Sambas District 2024b).



**Figure 1.** Map of the research area in Tebing Batu Village, Sebawi Sub-district, Sambas District, West Kalimantan Province, Indonesia

Tebing Batu Village, located in Sebawi Sub-district, Sambas District, is a lowland area with an elevation ranging from 50 to 200 meters above sea level. The region is dominated by forested areas, plantations, and agricultural land. Common soil types found in the area include alluvial soil, red-yellow podzolic soil, and organosol, which are generally fertile and support the growth of tropical vegetation (Central Bureau of Statistics of Sambas District 2024a, b; Sambas District Health Department 2024). The area has a tropical climate with daily temperatures ranging from 24°C to 32°C and annual rainfall of approximately 2,500-3,000 mm (Central Bureau of Statistics of Sambas District 2024a, b). These favorable environmental conditions make agriculture the main livelihood of the community, where the majority of residents work as farmers and plantation workers, with primary commodities including citrus, oil palm, rice, and rubber (Diarty et al. 2024). The patterns of land use and the types of cultivated crops reflect the community's dependence on natural conditions and the soil fertility potential of the region.

#### Data collection

This study focuses on identifying the species of medicinal plants, their local names, their benefits, the parts used, the processing methods, and the usage instructions for medicinal plants to address digestive system disorders. The research methodology employed was qualitative, utilizing triangulation, which involves the combination of interview techniques, field observations, and documentation (Mitak et al. 2023; Panjaitan et al. 2024b). Informants were selected using purposive sampling, a technique where informants are chosen based on specific criteria, namely residents of Tebing Batu Village who work as traditional healers and have knowledge about the use of traditional medicine. A total of five informants were selected, consisting of two males aged between 47 and 64 years and three females aged between 46 and 91 years. All informants are of Malay ethnicity and reside in Tebing Batu Village. In addition to treating digestive system disorders, the informants are also capable of addressing other illnesses. This study was conducted with the informed consent of all participants, who agreed to take part and provide information after receiving a full explanation of the research objectives, methods, and benefits. Interviews were conducted with traditional healers in Tebing Batu Village using an interview sheet, and the results were recorded. According to the informants, the number of people seeking treatment each month varies, as traditional healing is not their primary profession but rather a secondary activity carried out alongside their main work as farmers or gardeners. Nevertheless, the informants estimated that approximately 10-50% of those who seek treatment suffer from digestive system disorders. Subsequently, field observations were carried out at the research site to collect plant samples used by informants to address digestive system disorders, as well as to document the plants obtained from the interviews and field observations. The plant samples collected were then made into dry herbarium specimens for plant identification. Plant identification was conducted at the Biology Laboratory, Faculty of Mathematics and Natural Sciences, Universitas

Tanjungpura, Pontianak, West Kalimantan with letter number 167/A/LB/FMIPA/UNTAN/2024. The plant names were scientifically verified through Plants of the World Online to ensure accuracy using accepted scientific nomenclature.

#### Data analysis

The data analysis in this study is qualitative descriptive analysis. The data obtained from informants were verified by comparing them with information from other informants to ensure data accuracy and consistency (Panjaitan et al. 2024b). Following the data verification process, the collected data were compiled and thoroughly analyzed to produce a comprehensive descriptive account. The information obtained from informants, including local names, plant benefits, parts used, processing methods, and traditional medicine usage instructions, is presented descriptively, accompanied by images and tables displaying the results of the interviews. Species identification was conducted at the Biology Laboratory, Faculty of Mathematics and Natural Sciences, Universitas Tanjungpura, Indonesia.

## RESULTS AND DISCUSSION

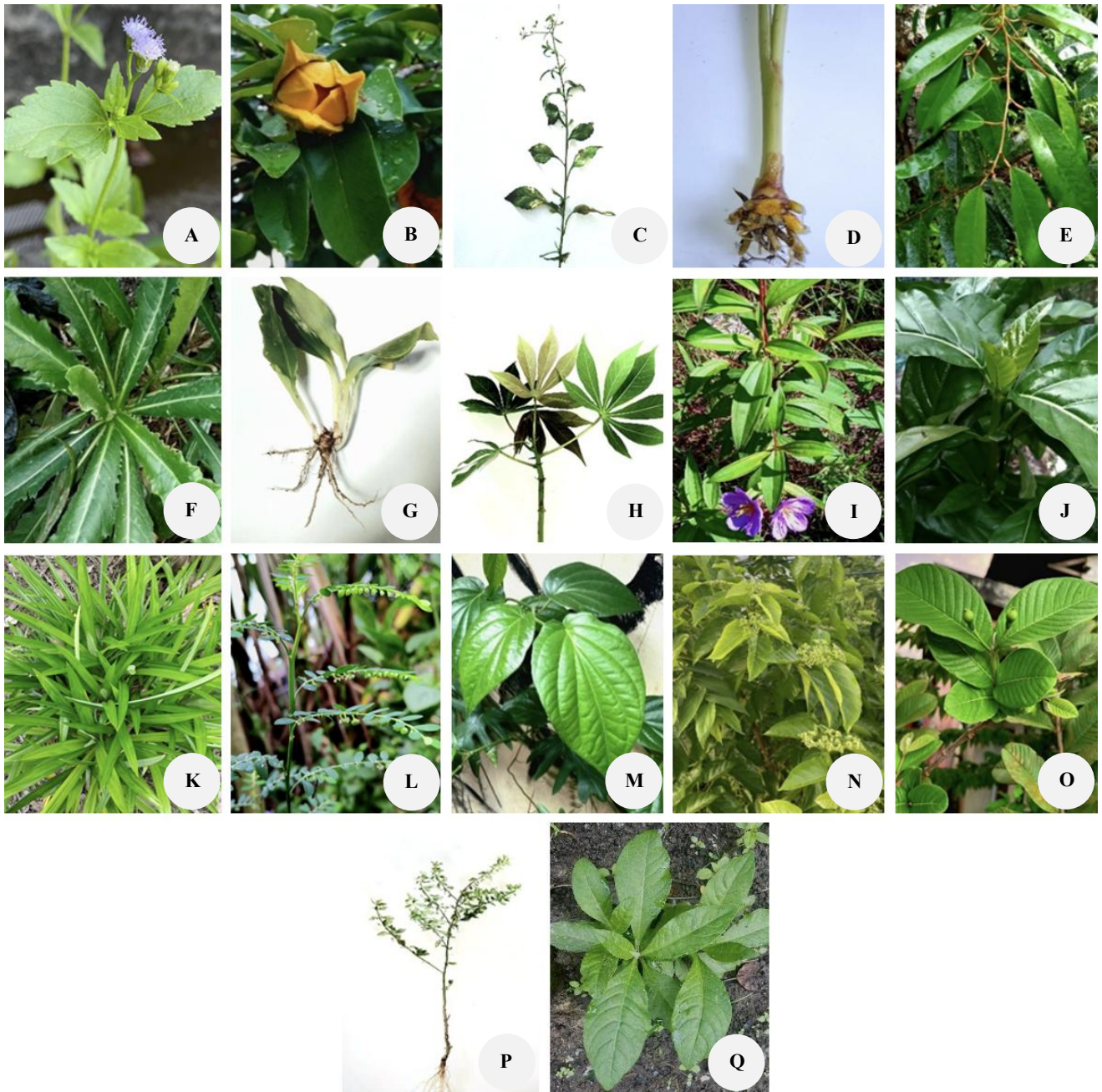
#### Medicinal plants used to address digestive system disorders

Digestive system disorders occur when the organs involved in the digestive process experience problems, which can disrupt their function and cause symptoms such as bloating (Martin-Biggers 2024), diarrhea (Chavda et al. 2024), and GERD (Lee and Kim 2022). To address these digestive system disorders, medicinal plants can be used. Based on interviews with traditional healers regarding medicinal plants for digestive system disorders in Tebing Batu Village, 17 species of plants from 13 families were identified (Table 1 and Figure 2). Among all the plants mentioned, the species most frequently cited by informants is kalimaok, identified by 3 out of 5 informants (Table 2). This indicates that kalimaok (*Ageratum conyzoides*) is the most commonly used plant in the treatment of digestive system disorders by the local community and is believed to have high cultural value and effectiveness based on local beliefs. These plants originate from various families, with 3 species classified as monocots belonging to the families Pandanaceae and Zingiberaceae, and 14 species classified as dicots, which are distributed among the families Annonaceae, Asteraceae, Euphorbiaceae, Lamiaceae, Malvaceae, Melastomataceae, Myrtaceae, Phyllanthaceae, Piperaceae, Plantaginaceae, and Rubiaceae. The most commonly used family is Asteraceae. This is due to the fact that Asteraceae species are easily found around home yards, are easy to grow, and possess medicinal properties. In addition, plants from the Asteraceae family are known to contain bioactive compounds such as essential oils, phenolic acids, lignans, polysaccharides, saponins, polyphenolic compounds, and sterols (Rolnik and Olas 2021). This family is also recognized for its anti-inflammatory, antimicrobial, antioxidant, diuretic activities, and its ability to accelerate wound healing (Rolnik and Olas 2021).

**Table 1.** Medicinal plant species as for digestive system disorders in Tebing Batu Village, Sebawi Sub-district, Sambas District, West Kalimantan, Indonesia

Family	Scientific name	Local name	Plant part used	Benefits	Method of processing	Dosage
Annonaceae	<i>Annona muricata</i>	Sirsak	Leaf	Constipation	Take 3-7 sirsak leaves, wash them clean, then crush them and apply to the stomach.	1 time per day
Asteraceae	<i>Ageratum conyzoides</i>	Kalimaok	Leaf	Nausea and vomiting and diarrhea Stomachache	Take 7 leaves of kalimok, wash them clean, or you can add 2-3 leaves of singkong and singkil, then crush them and apply to the stomach. Take 7 leaves of kalimaok, wash them clean, then crush them and add 1 glass of water. Wait until the leaves settle at the bottom of the glass, and the water can be consumed.	2 times per day
Asteraceae	<i>Elephantopus scaber</i>	Maram Dapat	Leaf	Stomachache and diarrhea Nausea and vomiting	Take 2 leaves of Maram Dapat, wash them clean, then crush them and add 1 glass of water. Wait until the leaves settle at the bottom of the glass, and the water can be consumed. Take 2 leaves of Maram Dapat, wash them clean, then crush them and apply to the stomach.	2 times per day
Asteraceae	<i>Struchium sparganophorum</i>	Saudagar	Leaf	Stomachache and diarrhea	Take 2-4 leaves of Saudagar and add them with Kalimaok leaves, then crush them and apply to the stomach.	2 times per day
Asteraceae	<i>Cyanthillium cinereum</i>	Pendaraan	Leaf	Diarrhea and stomachache	Take 2-7 leaves of Pendaraan, wash them clean, then crush them and apply to the stomach.	2 times per day
Euphorbiaceae	<i>Manihot esculenta</i>	Singkong	Leaf	Stomachache and vomiting	Take 2-3 leaves of singkong, singkil, and kalimok, wash them clean, then crush them and apply to the stomach.	1 time per day
Lamiaceae	<i>Premna serratifolia</i>	Singkil	Leaf	Stomachache and vomiting	Take 2-3 leaves of singkong, singkil, and kalimok, wash them clean, then crush them and apply to the stomach.	1 time per day
Malvaceae	<i>Durio zibethinus</i>	Durian	Leaf	Bloody stool Constipation	Take 3 durian tips, wash them clean, then crush them and apply to the anus. Take 7 leaves of durian, wash them clean, then pour warm water over them and apply to the stomach or waist.	1 time per day 3 times per day
Melastomataceae	<i>Melastoma malabathricum</i>	Cengkodok	Leaf	Diarrhea and gastroenteritis	Take 3 leaves of cengkodok, wash them clean, add a little salt, then eat.	1 time per day
Myrtaceae	<i>Psidium guajava</i>	Jambu Bigek	Leaf	Stomachache and diarrhea	Take 3-7 leaves of jambu bigek, wash them clean, add a little salt, then eat.	1 time per day
Pandanaceae	<i>Pandanus amaryllifolius</i>	Pandan	Leaf	Bloating Constipation	Take 1 old pandan leaf, wash it clean, then slice it. After that, boil it with a glass of water and drink. Take 1 pandan leaf, wash it clean, then crush it and apply it to the stomach that feels pain.	2 times per day
Phyllanthaceae	<i>Phyllanthus amarus</i>	Ambing Buah	Leaf	Gastritis Toothache	Take Ambing Buah leaves, wash them clean, then boil with 2 glasses of water until it boils down to 1 glass of water, then drink. Take Ambing Buah leaves, wash them clean, then mix with 1 clove of shallot, crush them, and apply to the painful area.	until feeling better
Piperaceae	<i>Piper betle</i>	Sirih	Leaf	Stomachache	Take 1-3 Sirih leaves, wash them clean, then crush them and apply to the stomach.	2 times per day
Plantaginaceae	<i>Scoparia dulcis</i>	Sapu Cine	Whole plant	Toothache	Take 1 whole plant, wash it clean, then boil it with a glass of water until it boils, and drink.	2 times per day
Rubiaceae	<i>Morinda citrifolia</i>	Mengkudu	Leaf	Stomachache, nausea and vomiting, and gastritis	Take 1 noni leaf, wash it clean, then burn it over the fire until it wilts and apply or rub it onto the stomach.	1 time per day

Zingiberaceae	<i>Curcuma longa</i>	Kunyit	Rhizome	Gastritis and acid reflux	Take the kunyit rhizome, wash it clean, and peel off the outer skin. Then, slice the kunyit into 3-7 pieces, boil or steep it with 1 glass of warm water and add a little salt. Another method is to grate the kunyit rhizome, squeeze out the juice, add warm water and a little salt, then drink.	3 times per day
Zingiberaceae	<i>Kaempferia galanga</i>	Cakkor	Leaf	Facilitate bowel movements and reduce excess body weight	Take 1-3 leaves of cakkor, wash them clean, then eat them directly or use them as a side dish with a meal.	1 time per day



**Figure 2.** Various species of plants that can address digestive system disorders in Tebing Batu Village, Sambas District, West Kalimantan, Indonesia. A. Kalimaok (*Ageratum conyzoides*), B. Sirsak (*Annona muricata*), C. Pendaraan (*Cyanthillium cinereum*), D. Kunyit (*Curcuma longa*), E. Durian (*Durio zibethinus*), F. Maram Dapat (*Elephantopus scaber*), G. Kencur (*Kaempferia galanga*), H. Singkong (*Manihot esculenta*), I. Cengkodok (*Melastoma malabathricum*), J. Mengkudu (*Morinda citrifolia*), K. Pandan (*Pandanus amaryllifolius*), L. Ambing Buah (*Phyllanthus amarus*), M. Sirih (*Piper betle*), N. Singkil (*Premna serratifolia*), O. Jambu Biji (*Psidium guajava*), P. Sapu Cina (*Scoparia dulcis*), Q. Saudagar (*Struchium sparganophorum*)

**Table 2.** Frequency distribution of plant species mentioned by informants

Local name	Informant					Total
	1	2	3	4	5	
Sirsak				√		1
Kalimaok	√	√	√			3
Maram dapat		√				1
Saudagar		√	√			2
Pendaraan	√					1
Singkong	√					1
Singkil	√					1
Durian	√		√			2
Cengkodok					√	1
Jambu bigek					√	1
Pandan	√					1
Ambing Buah	√				√	2
Sirih				√		1
Sapu cine				√		1
Mengkudu		√				1
Kunyit	√				√	2
Kencur					√	1

Based on the results of the study conducted in Tebing Batu Village, the parts of plants used by the community to treat digestive system disorders include leaves, rhizomes, and whole plants; however, the most commonly used plant organ is the leaf (Table 1). This aligns with Qamariah et al. (2020) and Panjaitan et al. (2024c), who states that leaves are frequently used as medicinal ingredients because they are easier to harvest and do not damage other parts of the plant. Furthermore, Zhang et al. (2022) also mention that leaves contain phytochemicals such as alkaloids, essential oils, flavonoids, and tannins, which are beneficial as medicines and are stored in the leaf tissues. This study also revealed that the most common processing method is by pounding, as this method is widely preferred due to the fact that most of the plants are used as external medicine.

During the collection of plant samples in the field, observations were also made regarding the habitat and habitus of the plants. Based on their growth forms, the species found consist of herbs, lianas, shrubs, trees, and bushes (Figure 3). Herbaceous plants include kalimaok (*A. conyzoides*), kunyit (*C. longa*), pendaraan (*Cyanthillium cinereum*), maram dapat (*Elephantopus scaber*), cakkor (*K. galanga*), ambing buah (*Phyllanthus amarus*), sapu cina (*Scoparia dulcis*), and saudagar (*Struchium sparganophorum*). The type with a liana habit is sirih (*P. betle*). Meanwhile, shrub plants include singkong (*Manihot esculenta*), pandan (*Pandanus amaryllifolius*), and singkil (*Premna serratifolia*). Plants with a tree habit include sirsak (*Annona muricata*), durian (*Durio zibethinus*), mengkudu (*Morinda citrifolia*), and jambu biji (*P. guajava*). Additionally, one species of plant with a shrub habit that was found is cengkodok (*Melastoma malabathricum*). Observations also indicated that the medicinal plants utilized by the community of Tebing Batu Village originate from various habitat types. The majority grow wild around residential areas and develop naturally without special care. Additionally, some plants are deliberately cultivated by the community, typically planted in home yards or garden plots. This diversity in habitat and growth forms reflects the

abundant natural resources that are readily accessible to the community, comprising both wild flora and cultivated plants.

### The benefits of medicinal plants for digestive system health

Several studies on medicinal plants have been conducted in West Kalimantan, documenting a wide variety of species. For instance, in Temau Village, Embaloh Hulu District, Kapuas Hulu District, 58 species of medicinal plants have been recorded (Supiandi et al. 2023). Additionally, in Balai Harapan Village, Tempunak District, Sintang District, 24 species of medicinal plants used for male and female reproductive health have been identified. These plants are traditionally utilized by the local Dayak and Javanese communities (Panjaitan et al. 2024d). The results of the study indicate that the practice of using plants as traditional medicine remains an important part of the community's local wisdom. In line with this, the study identified 17 types of plants utilized by the community as traditional remedies for treating digestive system disorders.

The results of interviews with traditional healers indicate that the people of Tebing Batu Village use sirsak leaves (*A. muricata*) to address digestive system disorders, particularly difficulties with bowel movements. In addition, in Liwu Metingki Village, Muna District, Southeast Sulawesi Province, soursop leaf decoction is traditionally used to treat fever (Hamzah et al. 2022). Furthermore, soursop leaves have demonstrated pharmacological activities, including antioxidant and antimicrobial properties (Nurmiati et al. 2024). Qualitative phytochemical tests conducted by Nguyen et al. (2020) revealed that soursop leaves contain various beneficial compounds such as alkaloids, flavonoids, phenols, saponins, tannins, and terpenoids.

Kalimaok leaves (*A. conyzoides*) have numerous health benefits and are commonly used in traditional medicine. This study indicates that kalimaok leaves are used to treat diarrhea, stomach pain, and vomiting. These findings are consistent with the study by Navia et al. (2022), which reported that kalimaok leaves are used by the community in Serbajadi Sub-district, East Aceh District, Aceh Province, to treat fever, flu, and stomachaches. The use of kalimaok leaves has also been recorded among the Dayak Linoh people in Nobal Village, Sungai Tebelian Sub-district, Sintang District, West Kalimantan, where they are traditionally applied to treat blister wounds caused by falls (Julung et al. 2023). Research conducted by Boonman et al. (2023) further demonstrated that kalimaok leaves possess pharmacological activities as antibacterial and antifungal agents. Moreover, phytochemical analysis by Warsinah and Baroroh (2020) revealed that kalimaok leaves contain beneficial compounds such as carbohydrates, essential oils, glycosides, saponins, and tannins.

The people of Tebing Batu Village use maram dapat leaves (*E. scaber*) to relieve diarrhea, nausea, relieve stomach pain, and vomiting. In addition, the study by Dewi et al. (2024) reported that the Akit ethnic community in Teluk Setimbul Hamlet, Pasir Panjang Village, Meral Sub-district, Karimun District, Riau Islands, utilizes maram leaves to treat inflammation and pain. Pharmacologically,

maram leaves have been found to exhibit various biological activities, including antibacterial, anticancer, and antiviral properties (Christina et al. 2022). Furthermore, Junairiah et al. (2021) revealed that qualitative phytochemical analysis showed maram leaves contain compounds such as alkaloids, flavonoids, saponins, and terpenoids.

As part of traditional medicine, saudagar leaves (*S. sparganophorum*) are used by the people of Tebing Batu Village to relieve stomach pain and diarrhea. This is in line with the findings of Nikmatullah et al. (2018), who reported that the Baduy Dalam community in Cikeusik, Kanekes Village, Leuwidamar Sub-district, Lebak District, Banten Province, also uses saudagar leaves to treat fever, headaches, and stomachaches. In addition, research by Dkhil et al. (2021) demonstrated that ethanolic extracts of saudagar leaves may serve as an antimalarial agent. The saudagar plant is also known to possess pharmacological activities such as antioxidant properties and contains various beneficial compounds, including alkaloids, flavonoids, phenolics, sterols, and terpenoids (Francis et al. 2024).

Various species of plants have been utilized to treat different ailments by communities in various regions. Pendaraan leaves (*C. cinereum*) are an example of a plant used by the people of Tebing Batu Village to address diarrhea and stomach pain. In line with the findings of Widhiantara et al. (2024), it has been reported that the community in Bali, Indonesia, uses pendaraan leaves as an antidote for diarrhea and a fever reducer. Additionally, the Malaynon Ati people in Brgy. Cubay Sur, Malay, Aklan, Philippines, utilize pendaraan leaves to treat injuries and poisoning (Cordero et al. 2020). All parts of this plant have been reported to exhibit pharmacological activities such as antimicrobial and antibacterial properties (Roy et al. 2022). Qualitative phytochemical analysis by Vijayakumar and Gangaprasad (2019) showed that methanol extracts from all parts of the pendaraan plant contain active compounds, including alkaloids, carotenoids, flavonoids, saponins, and terpenoids.

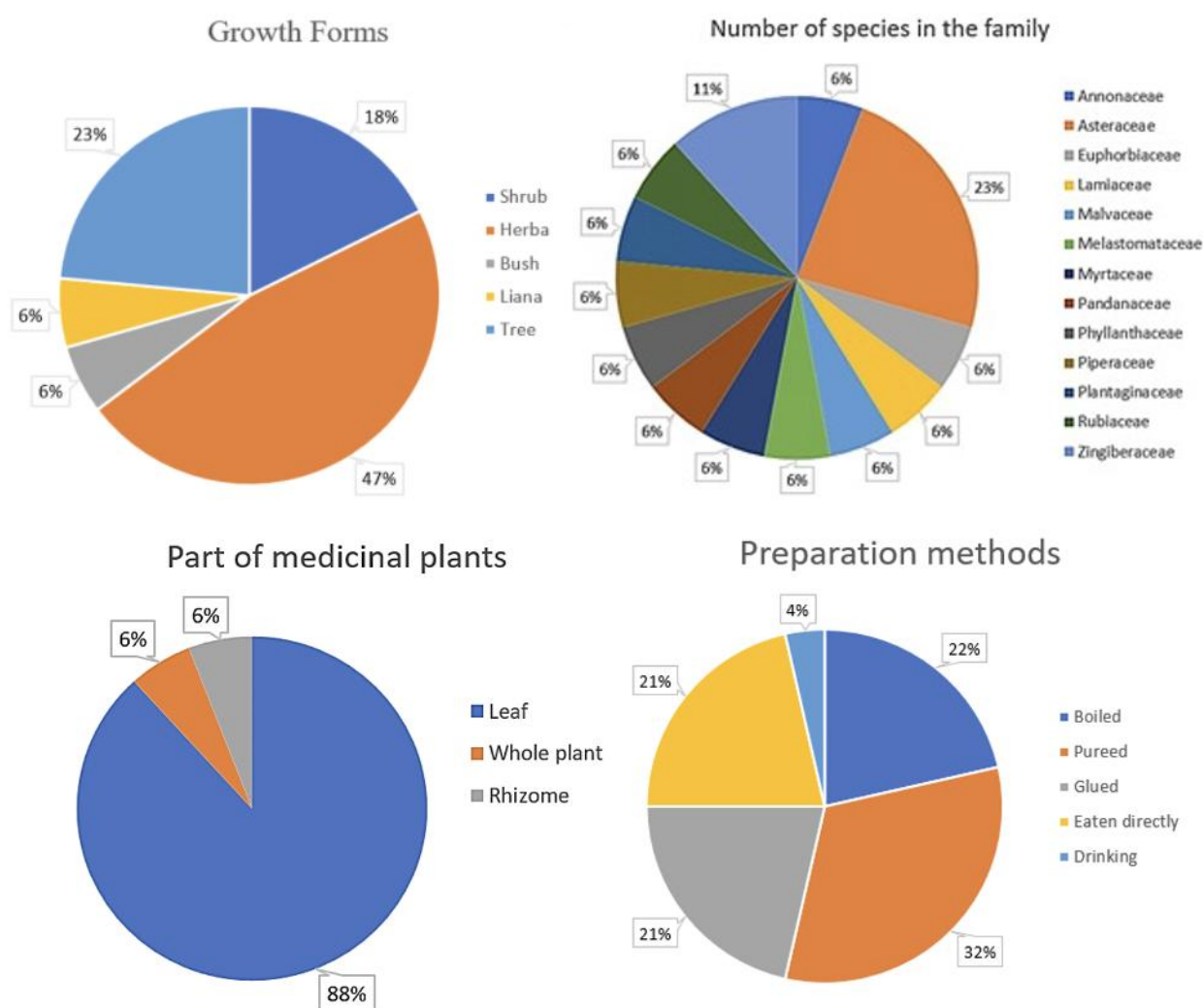


Figure 3. Number of species of each growth form, family, part used, and processing method

Singkong leaves (*M. esculenta*) are used in traditional medicine by the people of Tebing Batu Village to address digestive system disorders such as stomach pain and vomiting. Additionally, Tambaru et al. (2023) reported that in Mellangkenapadang and Paladan Villages, Sesenapadang Sub-district, Mamasa District, West Sulawesi, cassava leaves are used as an anti-hepatitis remedy. In Jambur Labu Village, Birem Mayeum Sub-district, East Aceh District, Aceh, cassava leaves are utilized to treat rheumatism (Elfrida et al. 2021). Pharmacologically, cassava leaves have demonstrated antibacterial activity (Buendia et al. 2022). Furthermore, phytochemical analysis by Clemen-Pascual et al. (2022) revealed that cassava leaves contain active compounds such as alkaloids, flavonoids, glycosides, and tannins.

Several communities in West Kalimantan use singkil leaves (*P. serratifolia*) in traditional medicine to address various health issues. This study indicates that in Tebing Batu Village, singkil leaves are used to relieve stomach pain and vomiting. However, research by Panjaitan et al. (2024a) revealed that in Kubu Padi Village, Kuala Mandor B Sub-district, Kubu Raya District, West Kalimantan, the community uses singkil leaves to treat constipation and reduce body odor. Additionally, in Suka Maju and Tamao Villages, Putussibau Sub-district, Kapuas Hulu District, West Kalimantan, singkil leaves are consumed as a food source rich in nutrients such as carbohydrates, fat, and protein (Purwayantie and Suryadi 2020). Singkil leaves have also been reported to exhibit antioxidant and antidiabetic activities (Timotius et al. 2018). Phytochemical analysis by Saptu et al. (2024) showed that singkil leaves contain bioactive compounds such as alcohols, flavonoids, phenols, and polyphenols.

In addition to its fruit, which is frequently consumed, durian leaves (*D. zibethinus*) can also be utilized in traditional medicine to alleviate various health complaints. Several areas in West Kalimantan use durian leaves as medicine; for example, in Tebing Batu Village, Sebawi Sub-district, Sambas District, the community uses durian leaves to treat bloody stools and constipation. In line with this, the community in Temau Village, Embaloh Hulu Sub-district, also uses durian leaves to treat acute dysentery with mucus and blood, as well as diarrhea (Susanti et al. 2023). Furthermore, water extracts of durian leaves have been shown to exhibit antidiabetic activity (Aruan et al. 2019). Additionally, qualitative phytochemical analysis by Aruan et al. (2019) revealed that durian leaf extracts contain various secondary metabolites such as flavonoids, glycosides, steroids, and terpenoids.

Cengkodok (*M. malabathricum*) is a plant whose leaves are used by the people of Tebing Batu Village to treat diarrhea and dysentery. Research conducted by Panjaitan et al. (2024a) revealed that in Kubu Padi Village, Kuala Mandor B Sub-district, Kubu Raya District, West Kalimantan, cengkodok leaves are used as a natural antibacterial and can stop bleeding. Additionally, the community in Aek Guo Village, Batang Natal Sub-district, Mandailing Natal District, North Sumatra, utilizes cengkodok leaves for wound healing (Rambey et al. 2024). According to quantitative phytochemical analysis conducted

by Lee et al. (2022), cengkodok leaves contain secondary metabolites such as flavonoids, glycosides, steroids, and terpenoids.

In addition to cengkodok, jambu bigek (*P. guajava*) is also used by the people of Tebing Batu Village, with its leaves being utilized to treat stomach pain and diarrhea. This is consistent with research by Dewi et al. (2024), which reported that the Akit ethnic group in Teluk Setimbul Hamlet, Pasir Panjang Village, Meral Sub-district, Karimun District, Riau Islands, uses jambu bigek leaves as an antidiarrheal. Furthermore, jambu bigek leaves have been shown to exhibit pharmacological activities such as antidiarrheal and antimicrobial properties (Ugwuja et al. 2022), antioxidant (Lorena et al. 2022). Additionally, jambu bigek leaves are known to contain secondary metabolites such as flavonoids, phenolics (Lorena et al. 2022), alkaloids, saponins, steroids, tannins, and triterpenoids (Ugwuja et al. 2022).

Pandan leaves (*P. amaryllifolius*) are also used by the people of Tebing Batu Village to treat bloating and constipation. Additionally, the community living in the Bantimurung-Bulusaraung National Park, Pangkajene Kepulauan District, South Sulawesi, uses pandan to treat nausea, menstrual cramps, and rheumatism (Husaini et al. 2022). Furthermore, the Manobo ethnic group in the Ugnop Cave Forest Reserve, Agusan del Sur, Philippines, utilizes pandan for managing cholesterol, kidney issues, and prostate diseases (Paraguison et al. 2024). Pandan leaf extract also demonstrates pharmacological activities such as antioxidant and antimicrobial effects (Wahyuni et al. 2024). Furthermore, the results of quantitative phytochemical screening show that pandan leaf extract contains high levels of flavonoids and polyphenols (Wahyuni et al. 2024).

The people of Tebing Batu Village use the leaves of the ambing buah (*P. amarus*) to address health issues such as gastritis and toothache. In addition, Adriadi et al. (2022) reported that in Kembang Paseban Village, Mersam Sub-district, Batanghari District, Jambi, the community uses boiled ambing buah leaves to treat kidney stones (Adriadi et al. 2022). All parts of the ambing buah can also be used to treat boils, diarrhea, dysentery, gastropathy, scabies, and wounds (Bekoe et al. 2020). In addition, all parts of the ambing buah have been reported to possess pharmacological activities such as anticancer, antimicrobial, antioxidant, and antiviral effects (Ghosh et al. 2022). Phytochemical tests have shown that ambing buah leaves contain active compounds, including alkaloids, flavonoids, glycosides, saponins, steroids, and tannins (Bekoe et al. 2020).

Traditionally, sirih leaves (*P. betle*) are used by the people of Tebing Batu Village as a natural remedy to treat stomach pain. The use of betel leaves aligns with the research by Paraguison et al. (2024), which reported that the Manobo ethnic group in the Ugnop Cave Forest Reserve, Agusan del Sur, Philippines, uses betel leaf decoctions to treat coughs and asthma. Meanwhile, in Wonosobo District, Central Java, betel leaf decoctions are utilized to eliminate bad breath and serve as a natural antiseptic (Tsurayya et al. 2025). Additionally, research by Sonphakdi et al. (2024) demonstrated that betel leaves exhibit antibacterial, antidiabetic, anti-obesity activities, and function as a food

supplement. Furthermore, qualitative phytochemical tests revealed that betel leaves contain active compounds such as alkaloids, coumarins, flavonoids, saponins, tannins, and terpenoids (Sonphakdi et al. 2024).

The people of Tebing Batu Village use all parts of the sapu cine plant (*S. dulcis*) to treat toothaches. In line with this, the Dayak Lino community in Nobal Village, Sungai Tebelian Sub-district, Sintang District, West Kalimantan, also uses all parts of the sapu cine plant to treat toothaches (Julung et al. 2023). Pharmacologically, sapu cine leaves exhibit antidiabetic, antihypertensive, and antipyretic activities (Christi and Fogarty 2021). Furthermore, the results of qualitative phytochemical tests indicate that sapu cine leaves contain compounds such as flavonoids, phytosterols, saponins, steroids, tannins, and terpenoids (Christi and Fogarty 2021).

Mengkudu (*M. citrifolia*) is widely recognized among the people of Tebing Batu Village as a traditional medicine, with its leaves being used to treat gastritis, nausea, stomach pain, and vomiting. In addition, the Dayak Bakumpai and Ngaju communities in Central Kalimantan use the fruit and bark of mengkudu to treat diabetes and as an antihypertensive (Lestariningsih et al. 2023). Meanwhile, the local community in Hulu Sungai Bengawan Solo, Central Java, also uses mengkudu fruit to treat cancer, hypertension, and stomachaches (Nurcahyo et al. 2024). Furthermore, mengkudu leaves have demonstrated pharmacological activities such as antibacterial properties and contain active compounds like flavonoids and phenolics (Royani et al. 2023).

Kunyit (*C. longa*) is a plant whose rhizome is used by the people of Tebing Batu Village to treat gastritis and acid reflux. Additionally, Torimbanu et al. (2024) reported that the Javanese community living on the eastern slopes of Mount Merapi, Central Java, uses turmeric rhizomes as an antidote for diarrhea. In line with this, research by Boro et al. (2023) also indicated that turmeric rhizomes are used to treat diarrhea, intestinal worms, and can be used for skin rejuvenation. Furthermore, turmeric rhizomes possess pharmacological activities such as antidiabetic, anti-diarrheal, anti-inflammatory, antimicrobial, and anti-obesity properties (Iweala et al. 2023). Phytochemical tests have also shown that turmeric rhizomes contain various secondary metabolites such as starch, alkaloids, flavonoids, phenols, proteins, saponins, and tannins (Permatananda et al. 2021).

The people of Tebing Batu Village use the leaves of the cakkor plant (*K. galanga*) to promote bowel movement and reduce excess body weight. Additionally, in Bungur and Tulakan Villages, Tulakan Sub-district, Pacitan District, East Java, cakkor rhizomes are used to treat coughs, fever, and inflammation (Ammar et al. 2021). Research by Panjaitan et al. (2024a) also shows that in Kubu Padi Village, Kuala Mandor B Sub-district, Kubu Raya District, West Kalimantan, the rhizome of cakkor is used to treat sheep disease. Furthermore, both the rhizomes and leaves of cakkor exhibit various pharmacological activities such as anti-inflammatory, antioxidant, and antitumor properties (Wang et al. 2021). Phytochemical screening of cakkor plants has revealed the presence of active compounds such

as esters, fatty acids, flavonoids, phenolics, and terpenoids (Wang et al. 2021).

The community of Tebing Batu Village exhibits unique methods of processing medicinal plants that differ from other studies conducted in Kalimantan. In Tebing Batu Village, most medicinal plants are processed by grinding them to treat digestive disorders, whereas in other regions, the commonly used method is boiling the plants (Ningsih et al. 2020; Asmita et al. 2023). However, this traditional knowledge faces various challenges, including the loss of natural habitats due to land-use changes and the declining interest of younger generations in learning and preserving traditional healing practices (Dodo and Hidayat 2020). Some medicinal plants are now increasingly difficult to find in the wild due to land clearing for agriculture and settlements. As an effort to sustain the use of medicinal plants, the community has begun cultivating certain species in their home gardens (Rahmayani et al. 2023). In addition, the transmission of knowledge through families and communities is crucial, given the risk of declining interest among the younger generation. Therefore, preservation strategies that integrate plant cultivation and strengthen knowledge transfer mechanisms across generations are needed to ensure that this local wisdom endures and continues to benefit public health.

This study demonstrates that the community of Tebing Batu Village, Sebawi Sub-district, Sambas District, maintains strong traditional knowledge in utilizing medicinal plants for everyday healthcare. A total of 17 plant species have been identified and documented for their use, particularly in treating digestive system disorders such as stomachaches and diarrhea, which are common ailments among the local population. The findings also reveal that leaves are the most frequently used plant parts, while the most common method of preparation is pulverization. These results reflect a close relationship between the community and their natural environment and underscore the importance of preserving local knowledge as part of efforts to maintain natural health practices. However, this traditional knowledge faces the risk of extinction due to social changes, the loss of natural habitats, and the declining interest of younger generations in inheriting these practices. Therefore, the preservation of traditional knowledge must continue to ensure its values are passed down to future generations, this simultaneously serves as a foundation for further pharmacological studies on the plants traditionally used by the community. In addition, this knowledge can also be utilized in environmental conservation efforts and the improvement of healthcare services in the village, as a way to integrate local wisdom with sustainable development. The limitations of this study lie in the data collection method, which was conducted solely through oral interviews with traditional healers. The research team did not undertake further investigation into the preparation or processing of medicines, nor observe the treatment sessions with patients, thus the information obtained is limited to the accounts provided by the informants.

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