

Local Wisdom in Traditional Medicine: Documentation of Medicinal Plants and Utilization by the Forest Community of Tangkahan Village

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Abstract: Rural communities often rely on medicinal plants for primary healthcare; however, their knowledge of the diversity and use of these plants is not well documented. This study aims to identify medicinal plant species, their modes of use, and to support the preservation of local cultural wisdom. The research is conducted in the Tangkahan Village Forest, Central Kalimantan, using a 100% exploratory inventory method. Observations are made along three transects representing dense, moderate, and sparse forest cover. Information on plant utilization were obtained through interviews with local traditional healers. This study found 108 individual medicinal plants, representing 16 species from 13 botanical families. The most represented families are Orchidaceae (19%) and Auriculariaceae (13%), with others such as Araceae, Lauraceae, Apocynaceae, and Fabaceae comprising smaller percentages. These plants are used to treat 22 types of ailments, including diabetes, cancer, cardiovascular disease, digestive disorders, and for cosmetic purposes. Preparation methods includes decoction, infusion, topical application of pounded material, and direct consumption. The most commonly used plant parts are leaves, stems, roots, sap, and bark. Some involves combination of 2–3 species. The availability of these plants supports local health needs and presents opportunities for economic development through further processing, thereby indirectly contributing to food security. Further pharmacological studies are needed to analyze their compounds. Cultivation efforts are also essential to ensure the long-term sustainability of these medicinal resources.

Keywords: Ethnobotany; Local wisdom; Medicinal plants; Plant utilization; Traditional medicine

Introduction

Traditional knowledge regarding the use of plants for medicinal purposes has been an important part of local culture, passed down orally from generation to generation. According to Law of the Republic of Indonesia Number 23 of 1992 concerning Health, traditional medicine is the treatment and/or care using methods, medicines, and remedies that are based on experience and skills passed down through generations

and in accordance with prevailing community norms. Medicinal plants are a key component of this practice due to their natural availability and affordability compared to synthetic drugs. Furthermore, medicinal plants are considered to have minimal side effects and have been empirically proven by the community (Heinrich et al., 1998). Several tribes in Indonesia are known to have used this medicinal plant for generations, such as the Dayak Kanayat Ahe tribe of East Kalimantan, the Sepangah Village community of East Kalimantan,

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the Sangihe community of North Sulawesi, and the Serawai tribe of Jambi (Fardana et al., 2023; Patiola et al., 2023; Yelianti et al., 2023).

The Tangkahen Village Forest in Banama Tingang District, Pulang Pisau Regency, Central Kalimantan, is one area that still holds significant potential for the use of medicinal plants. This area, covering 162 hectares, has been designated a Village Forest and is officially managed by the local community. The village forest management system has divided the area into several utilization blocks, one of which is the Non-Timber Forest Products (NTFP) block, which includes medicinal plants (Ministry of Forestry Regulation No. P.35/Menhut-II/2007). Although local communities possess local knowledge of medicinal plants, this information is generally undocumented. Tian-Liang et al. (2025) stated that the increasing age of traditional knowledge holders can lead to the loss of this information if not promptly recorded. Several medicinal plant species, such as *Eurycoma longifolia* (*Pasak Bumi*) and *Luvunga sarmentosa* (*Saluang Belum*), are widely known, but many others remain scientifically unidentified.

This study aims to identify and document the types of medicinal plants in the Tangkahen Village Forest, the diseases they can treat, and how they are utilized. Other objectives include supporting biodiversity conservation, preserving local culture, and developing NTFPs that have the potential to improve the local economy.

Method

This research was conducted in the Non-Timber Forest Products Block of Tangkahen Village Forest, Banama Tingang District, Pulang Pisau Regency, Central Kalimantan Province. The research period was approximately 3 months. Several research tools were required, including a tally sheet to summarize medicinal plant data, a tape measure to measure the observation plots, and a GPS to determine coordinate points.

Observation Method

Observations used a 100% exploration method, or inventory, of medicinal plants within a single plot. Plots measuring 100 m long and 10 m wide represented three locations: dense, medium, and sparse forest, resulting in a total observation area of 3,000 m², or 0.3 ha. The exploration team consisted of four people and one person who identified medicinal plant species. Each species encountered was documented and filled in the tally sheet. Species with unknown Latin names were sampled for identification. Observations of medicinal plant species covered all growth stages, from undergrowth to shrubs and trees.

Data Analysis

Observational data, including local names, benefits or ailments treated, plant parts used, and methods of use, were obtained through tree identification, which also serves as a local traditional medicine. Interviews were conducted in local languages and then processed using Indonesian, maintaining the original meaning intended by the informants. Plant identification, including Latin names and families (Steenis, 2002). The data was then tabulated and subjected to descriptive qualitative analysis using several references.

Result and Discussion

Included in 16 species and 13 families. The Orchidaceae family had the highest percentage, at 19%. This was followed by the Auriculariaceae family at 13%. Other families, with an average of 6%, were Araceae, Lauraceae, Apocynaceae, Fabaceae, Menispermaceae, Sapotaceae, Thymelaeaceae, Aramanthaceae, Rutaceae, Simaroubaceae, and Myrtaceae. The coordinates of medicinal plants at the research location are presented in Figures 1-3.

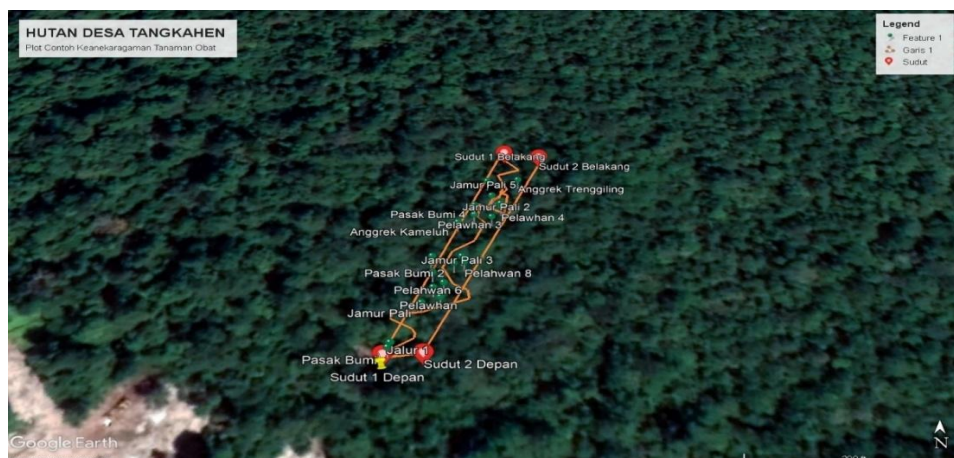


Figure 1. Coordinate points of medicinal plant types in dense forest conditions



Figure 2. Coordinate points of medicinal plant types in moderate forest conditions



Figure 3. Coordinate points of medicinal plant species in sparse forest conditions

This traditional medicine is popular among the community due to its strong belief in its safety and perceived affordability compared to modern medicine. Interviews revealed information about local wisdom that has persisted to this day in the collection of medicinal plants. The specific methods and requirements followed by traditional *Dayak* healers include preparing several materials, such as nails, coins, and salt, before entering the forest. The nails, known as Panekang Hambaruan, strengthen faith and belief in the healing power of the medicinal plants to be consumed. The coins serve as a means of payment to supplement or suffice when spoken to. The salt serves as a flavoring agent or enhances the healing efficacy of the medicinal plants to be consumed. These materials are placed in the palm of the hand while praying to God and invoking the patient's name for healing. These materials are placed around the medicinal plants, after which the plants can be collected.

The medicinal plants found can be grouped into 13 families, 16 species, and 108 individuals. The distribution of medicinal plant families varied, with the Orchidaceae family representing 19% of the species. The second most abundant family after Orchidaceae is the Auriculariaceae family, with a percentage of 13%. Other families have a more even distribution with the same percentage of 6% (*Araceae*, *Lauraceae*, *Apocynaceae*, *Fabaceae*, *Menispermaceae*, *Sapotaceae*, *Thymelaeaceae*, *Aramanthaceae*, *Rutaceae*, *Simaroubaceae*, and *Myrtaceae*).





Medicinal plant treatment is most likely practiced by rural communities or communities surrounding forests, who are far from government-provided health facilities (Farooq et al., 2019). Approximately 80% of the world's population relies on medicinal plants for their health needs, especially in rural areas. Aziz et al. (2018) stated that rural communities living in developing countries rely on traditional healing systems due to their strong beliefs and limited access to modern medicine. However, this is only required when used wisely and

appropriately. Therefore, knowledge about medicinal plants is crucial for positively impacting the community.

A number of medicinal plants found in the Tangkahen Village forest have been identified as being

used to treat 22 types of diseases. The most commonly used plant species are to boost immunity. The following are the types of medicinal plants found, the parts of the plants used, the diseases treated, and how they are used.

Table 1. Types of Medicinal Plants Found in the Tangkahen Village Forest: Images, Morphology, Plant Parts Used, and How They Are Used

Plants Figure	Morphology-Parts used-How to use
	<p><i>Scindapsus pictus</i> Local name: Sirih Harimau Family: Araceae Habitus: Liana Parts used: Leaves</p> <ul style="list-style-type: none"> - For diabetes, hypertension, and detoxification, boil 10-15 leaves and drink the water. - To treat bad breath and toothache, chew 3-5 betel leaves. - For respiratory disorders, soak 10-15 leaves in hot water and inhale the aroma. - For external use, crush (pound) the leaves and apply a compress to wounds or minor ulcers.
	<p><i>Cinamomum sintoc</i> Local name: Sintuk Family: Lauraceae Habit: Shrub Parts used: Leaves and stems</p> <ul style="list-style-type: none"> - For digestive disorders, boil the leaves and drink the water. - For inflammation, pain, and wounds, crush the leaves and stems and apply to the affected area. <p>For respiratory disorders, boil the leaves and inhale the steam.</p>
	<p><i>Alyxia reinwardtii</i> Local name: Kelanis Family: Apocynaceae Habit: Liana Parts used: Leaves and Stems</p> <p>To brighten facial skin, fresh Kelanis stems are peeled of their outer bark, dried in the sun, and then ground into a fine powder. This powder is mixed with soaked and ground rice, then formed into balls, called traditional powder or cold powder.</p>
	<p><i>Uncaria acida</i> Local name: Bajakah Merah Family: Fabaceae Habit: Liana Parts used: Stem</p> <ul style="list-style-type: none"> - To treat cancer, back pain, arthritis, and digestive problems, boil the stem and drink it while it's still warm. - To boost immunity, cut the stem while it's still fresh and drink the juice from the stem.

Plants Figure

Morphology-Parts used-How to use

*Coscinium fenestratum*

Local name: Akar kuning

Family: Menispermaceae

Habit: Liana

Parts used: Stem

- To treat cancer, diabetes, sore throats, malaria, flu and coughs, and digestive problems, boil the stem and drink it while it's still warm.
- To boost immunity, cut the fresh stem and drink the water from the stem.

*Specklinia grobyi*

Local name: Anggrek Kameluh

Family: Orchidaceae

Habitus: Shrub

Parts used: Leaves

- - To prevent hair loss and treat the scalp, crush several leaves, then strain them. The mixture is applied to the hair as a hair mask and left on for 15-20 minutes. For optimal results, mix the Kameluh Orchid extract with aloe vera extract.

*Grammatophyllum speciosum*

Local name: Anggrek tebu tringgiling

Family: Orchidaceae

Habit: Epiphyte

Parts used: Leaves

- To calm/relieve stress, boost the immune system, treat liver disease, urinary tract infections, and as an anti-inflammatory, by drying the orchid plant, then boiling it and drinking it while warm.
- - For external use, to relieve skin inflammation or as a compress, by grinding the plant into powder and mixing it with oil or as an additional ingredient in ointments.

*Callostoma*

Local name: jamur pali

Family: Auriculariaceae

Habit: Saprophyte

Parts used: Fruiting body

- To support the immune system or treat arthritis, fever, and flu, and can support heart health

*Auricularia cornea*





Local name: mouse deer eye mushroom




Family: Auriculariaceae

Habit: Saprophyte

Part used: Fruiting body

- To relieve internal heat, sore throats, and as an antioxidant and anti-cancer agent, choose fresh, clean, undamaged mushrooms that don't smell bad. Then, boil them and drink the water while it's still warm. To preserve the mushrooms during storage and prevent spoilage, it's best to dry them in the sun to reduce their water content.

Plants Figure	Morphology-Parts used-How to use
	<p><i>Palaquium rostratum</i> (Miq.) Burck Local name: Nyatoh Family: Apocynaceae Habit: Tree Parts Used: Leaves, Bark, and Sap</p> <ul style="list-style-type: none"> - For anti-inflammatory and antipyretic purposes, and for digestive problems and malaria, boil the dried leaves and drink the warm water. - To treat wounds and skin infections, clean the dried bark and boil the water. The decoction is used as a compress for infected or fungal skin infections. - - For wounds and skin infections, apply fresh nyatoh sap directly to the affected area.
	<p><i>Aquilaria malaccensis</i> Local name: Gaharu Family: Thymelaeaceae Habit: Tree Parts used: Stem, Leaves, and Bark</p> <ul style="list-style-type: none"> - Small pieces of agarwood resin are burned as incense to reduce stress and anxiety, and provide a relaxing effect. - To cure digestive problems and relieve pain, boil a few leaves and drink. - To treat digestive problems and other ailments, the leaves and bark are dried in the sun and then finely ground to make an herbal concoction, brewed like an unsweetened herbal tea.
	<p><i>Charpentiera elliptica</i> Local name: Rumpot Kalimantan Family: Aramanthaceae Habit: perdu Parts used: Roots and Leaves</p> <ul style="list-style-type: none"> - To treat fever, flu, back pain, and arthritis. The roots and leaves of the karpentiera plant have benefits in traditional medicine. Drying the leaves and roots in the sun, then boiling them until they release a distinctive aroma, the resulting decoction can be drunk.
	<p><i>Luvunga sarmentosa</i> Local Name: Saluang Belum Family: Salaciaceae Habit: Saprophyte Parts Used: Leaves, Sap, and Stems</p> <ul style="list-style-type: none"> - To treat digestive problems, boil the leaves of the Saluang Belum plant for 10-15 minutes and drink the water. - To treat inflammation and wounds, apply them directly to the injured skin area. Take fresh leaves and grind them finely to extract the sap from the poultice. - To increase stamina and vitality, especially in men, dry the roots in the sun and boil them for 20-30 minutes. Once cool, the water can be drunk. -- To reduce fever and help cure chronic diseases, boil the stems for 10-15 minutes and drink the water after the water has cooled.

Plants Figure	Morphology-Parts used-How to use
	<p><i>Eurycoma longifolia</i> Jack Local name: Pasak Bumi Family: Simaroubaceae Habitus: Shrub Parts used: Root</p> <p>Dry the roots of the Pasak Bumi plant (50 grams) in the sun, then boil them for 20-30 minutes, adding 1 liter of water until boiling. Afterward, drink the boiled water regularly once or twice daily for maximum results, improving stamina, bone and muscle health, and reproductive health in men. Excessive use can cause insomnia, anxiety, or stomach discomfort.</p>
	<p><i>Tristaniaopsis marguensis</i> Local name: Pelawan Family: Myrtaceae Habitus: Tree Parts used: Bark and Leaves</p> <p>- To treat digestive problems, hemorrhoids, and skin problems from within the body, take the bark from the Pelawan tree and dry it first. Then, boil 50 grams of the dried bark in 1 liter of water until it boils and let it simmer for 20-30 minutes. This boiled water can be drunk after it cools, usually.</p> <p>-- To wash wounds or as a compress to treat skin infections or itching, boil the fresh leaves until they boil. This boiled water can be used to wash wounds or as a compress to treat skin infections or itching.</p>
	<p><i>Bulbophyllum beccari</i> Local name: Anggrek Kuping Gajah. Rchb.f Family: Sorchidaceae Habit: Epiphyte Parts used: Leaf sap</p> <p>To treat inflammation/wounds: Wash fresh leaves, then crush them to extract the sap. Apply directly to the wound or inflamed area to help reduce fever. Boil the leaves in boiling water for 10-15 minutes. Drink the water after it cools.</p>

Several medicinal plants found in the Tangkahen Village-forest have been the subject of phytochemical research, including tiger betel leaf, red sintuk and bajakah, kelanis, yellow root, sugar cane orchid, agarwood, saluang belum, pasak bumi, and pelawan. Information on the compounds contained in others has not yet been obtained.

Salempa et al. (2019) stated that tiger betel leaf has long been used by the Mambi indigenous community as an anticancer agent. This plant contains active compounds with anti-inflammatory, analgesic, antioxidant, and antitumor properties. Results of phytochemical tests, fractionation, and bioactivity tests of extracts with Brine Shrimp Lethality using *Artemia salina* revealed that the methanol extract contained alkaloids and steroids. The Brine Shrimp Lethality toxicity test showed the activity of the methanol extract of tiger betel leaf with an LC50 value of 1.1365 µg mL⁻¹, respectively.

Jemi et al. (2019) have tested the antifungal activity of Sintok essential oil against *P. ostreatus*, the results showed that at an oil concentration of 5-30 µg/mL the fungus remained alive, while at an oil concentration between 65-1000 µg/mL the fungus died. Furthermore, it was stated that Sintok root bark essential oil has optimum antifungal properties at a concentration of 48.69 µg/mL. The results of phytochemical analysis showed that there are 15 chemical compounds contained in Sintok root bark essential oil, with three main compounds being methyl eugenol (77.14%), methyl cinnamate (17.43%), and 4-Nonylphenol (1.35%).

Alyxia reinwardtii (Apocynaceae), locally known as kalanis, is known by the Tangkahen villagers as a traditional powder mixture that is effective for smoothing facial skin. This plant is also found in Thailand, where it is used as a medicinal plant, known as Chalood. Thais use it to reduce fevers; its flowers are effective in treating mental confusion and hallucinations associated with high fevers; and its stems are used to

treat fainting, heart failure, and abdominal discomfort due to bloating or other unknown causes (Rattanapan et al., 2012). Research on the roots of Kelanis showed that they contain coumarin, scopoletin, and (+)-pinoresinol. They also demonstrated antioxidant activity through several tests, such as DPPH radical scavenging, superoxide scavenging (xanthine oxidase-related), and lipid peroxidation inhibition (Rattanapan et al., 2012). Meanwhile, red Bajakah, long believed by the *Dayak* people to be used for cancer treatment, was found in a study by Masendra et al. (2021) based on GC-MS results. Red Bajakah contains high concentrations of aromatic compounds known to increase antioxidant activity. Pratiwi & Nurdin (2020); Tahar et al. (2024) stated that antioxidants are compounds that can absorb or neutralize free radicals, thereby preventing degenerative diseases such as cardiovascular disease, carcinogenesis, and others. Meanwhile, Zhang et al. (2016) also detected aromatic compounds in *Uncaria rhynchophylla*.

Yellow Root (*Coscinium fenestratum*), a medicinal plant traditionally used by the *Dayak* people, is also used as a medicinal plant in the traditional Ayurvedic and Siddha systems of medicine for the treatment of diabetes mellitus, known in North and South India (Shirwaikar et al., 2005). Phytochemical tests indicate that yellow root contains berberine, palmatin, and jatrorrhizin, which have antidiabetic and antimicrobial properties (Shirwaikar et al., 2005). Other research indicates that *Coscinium fenestratum* extract has the ability to kill or inhibit the growth of cancer cells, but does not enhance the effects of the chemotherapy drug 5-FU when used concurrently (Potikanond et al., 2015).

Grammatophyllum speciosum, or the Sugarcane Orchid, is also a medicinal plant whose leaves have long been used medicinally by the *Dayak* people. Research examining the chemical compounds contained in this plant, including research (Harikarnpakdee & Chowjarean, 2018) Yingchutrakul et al. (2021), found that ethanol extract from *G. speciosum* pseudobulbs increased human fibroblast cell migration and accelerated wound healing through a scratch wound assay. This extract also exhibited antioxidant activity with radical-scavenging properties and confirmed the presence of polyphenols and flavonoids.

Agarwood is a type of medicinal plant that has long been known. Three parts of this plant can be used for medicinal purposes. Several studies have been conducted on the phytochemicals of agarwood. Research by Tian-Liang et al. (2025) stated that the core component of agarwood includes 2-(2-phenylethyl)chromone, while various parts of *Aquilaria sinensis* are rich in phenolics, phenolic acids, and phenylpropanoids. Compounds found in agarwood

leaves include flavonoids, glycosides, tannins, and triterpenoids. Due to its various compounds, agarwood has several pharmacological activities such as antibacterial, antidiabetic, anti-inflammatory, anti-termite, and antioxidant properties (Za'amah et al., 2021). Agarwood has long been used as aromatherapy by burning small pieces of agarwood, a practice widely practiced in Middle Eastern countries. The fragrant aroma of agarwood when burned comes from the main component of agarwood oil, namely chromone (Hashimoto et al., 1985). Chromones are phenolic compounds characteristic of high-quality agarwood.

Saluang is not yet known to the *Dayak* people as a medicinal plant known for its male vitality benefits. Muliani et al. (2024) stated that saluang stems do not contain secondary metabolites, namely tannins, saponins, steroids, and flavonoids, which are suspected to have antibacterial activity. Research by Deyulita et al. (2022) showed that aqueous extract of *Lavanga sarmentosa* or saluang belum stems (doses of 50, 300, and 550 mg/kg body weight) significantly reduced leg edema volume from the 4th to 5th hour compared to a negative control. Maryani & Anwar (2020) stated that the combination of extracts of Saluang Belum (*Lavanga sarmentosa*) roots with Yellow Root (*Arcangelisia flava* Merr) had an antibacterial effect against *A. hydrophila* bacteria in vitro. Effective concentration: Combination of extracts of Saluang Belum Root (*Lavanga sarmentosa*) and Yellow Root (*Arcangelisia flava* Merr) at a concentration of 55 g/150 ml with an inhibition zone diameter of 15 mm.

Khanam et al. (2015) found, based on preliminary research on Tongkat Ali stem extract, that it contains phenolic compounds, flavonoids, terpenoids, alkaloids, proteins, and cardiac glycosides. Flavonoids and phenolics in Tongkat Ali help ward off free radicals, slow cellular aging, and protect the body from oxidative damage. Furthermore, Bedir et al. (2003) stated that Tongkat Ali contains various bioactive compounds such as quassinoids, alkaloids, glycosides, eurycomanol, eurycomanone, and others. Eurycomanone is the main active component with dominant pharmacological activities, such as increasing testosterone levels and antioxidant properties. Rehman et al. (2016) who studied the administration of Tongkat Ali (*Eurystis pyogenes*) extract to white mice showed a statistically significant increase in spermatozoa quality ($p < 0.05$) in white mice. The results of research conducted by Bogar et al. (2016) showed that *Eurycoma longifolia* Jack extracts on the qualities of spermatozoa.

The *Dayak* community of Central Kalimantan uses the bark of the Pelawan plant as an antidiarrheal medicine. Ilmi et al. (2023) state that red Pelawan leaves contain secondary metabolites such as alkaloids,

tannins, and saponins, which are known to be active substances with antidiarrheal properties. Meanwhile, research results by Rizal et al. (2021), on three types of Pelawan (*T. merguensis*, *T. whiteana*, *T. kalimantanensis*) showed that the bioactive compound Alkaloids are found in the stems, leaves, and bark; not detected in the roots. Steroids were found in the roots, leaves, and bark; not in the stems. Triterpenoids were positive only in the bark. Tannins, saponins, and quinones are found in the roots, stems, leaves, and bark, while Flavonoids are found in the roots, stems, leaves, and bark. in the secretory cavity of the roots of *T. whiteana*. The results of research by Mahardika et al. (2023) stated that Pelawan stem extract contains flavonoid and phenolic secondary metabolites.

Although the traditional benefits of other medicinal plants have long been known and used by the community, scientific studies on their pharmacological properties and activities are still limited. Therefore, scientific documentation and further exploration are crucial to support the conservation of these plants and the development of locally sourced phytopharmaceutical products.

Processing Methods

The Tangkahen Village community uses several methods for processing and using medicinal plants: boiling, soaking, pounding, drinking directly, and applying topically. The most common methods used by the Tangkahen Village community, in order of highest to lowest, are boiling, followed by pounding, soaking, drinking directly, and applying topically. The high percentage of medicinal plant processing through boiling is believed to release more chemical compounds than other processing methods. These methods have different effects on the extraction of bioactive compounds and their therapeutic effectiveness. Boiling of certain parts of the plant to be used, such as the roots, stems, or bark, in boiling water for a specified time. This process aims to extract water-soluble and heat-resistant compounds such as alkaloids, tannins, and saponins, which have antimicrobial and anti-inflammatory effects (Azwanida, 2015).

Voight (1994) stated that the higher the temperature, the greater the solubility of a substance. In addition, from the existing methods of processing medicinal plants, boiling is the most widely used by the community because boiling is an easy and practical method of processing medicinal plants, the boiling process can also help eliminate bacteria and contaminants that may be present in medicinal plants, and boiling is believed to be effective because generally the diseases treated are internal diseases and by drinking the concoction people feel better faster. The

boiling method was commonly used by the *Dayak Kanayatn Ahe*, sepangah village west Kalimantan and Sangihe tribe North Sulawesi, community to use medicinal plants (Fardana et al., 2023; Patiola et al., 2023).

Soaking is usually done on softer plant parts like leaves and flowers. This involves steeping the plant in hot water to preserve compounds like flavonoids, essential oils, and certain vitamins (Heinrich et al., 2017). The grinding method involves pounding fresh plant parts until smooth, then applying them directly to the area to be treated (externally, such as inflammation or wounds). This method releases active compounds such as terpenoids and proteolytic enzymes, which function in wound healing, anti-inflammatory, and analgesic properties (Kambizi & Afolayan, 2001).

Used Plant Parts

The plant parts used, as described for each type of medicinal plant, vary. The most commonly used part is the leaves, accounting for 30%. The results of this study are similar to those conducted by Aziz et al. (2018) in Pakistan, where the leaves are the most commonly used plant part for medicinal purposes. According to Şenkal (2020), leaves are thought to accumulate secondary metabolites useful as medicines, such as tannins, alkaloids, essential oils, and other organic compounds stored in vacuoles or in additional leaf tissues such as trichomes. Leaves are often cited as the plant part with the highest concentration of secondary metabolites, such as alkaloids, flavonoids, tannins, terpenoids, and phenols. This is related to the process Photosynthesis occurs in the leaves (Harborne, 1998). The roots and bark are also rich in alkaloids and lignans, which act as energy reserves and chemical defense mechanisms against soil microorganisms (Gurib-Fakim, 2006). Several studies have shown that roots often contain more stable and complex compounds than aerial parts such as stems, leaves, etc. (Atanasov et al., 2015), therefore they are often used in traditional medicine, such as in the Tongkat Ali plant.

Conclusion

This study documented 16 medicinal plant species from 13 families used by the Tangkahen Village community to treat 22 types of diseases. The dominance of Orchidaceae and Auriculariaceae indicates that epiphytic and saprophytic species are ecologically significant sources of traditional medicine. The findings demonstrate that traditional knowledge still plays a vital role in local healthcare systems, particularly where modern facilities are limited. Practically, the utilization of these plants has potential for developing community-

based herbal products and eco-entrepreneurship, contributing to rural economic growth and food security. Scientifically, this research provides baseline data for future pharmacological and phytochemical studies. To ensure sustainability, community-based cultivation and documentation of traditional medicinal knowledge are essential for future conservation and development strategies.

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Authors Contributions

Conceptualization, I. L., S. M.; Methodology, Formal analysis, I. L., D. R., A., S. Y. R., Y., G. S; Data curation, Visualization, Writing—original draft preparation, I. L; Validation, Writing—review and editing, I. L. All authors have read and agreed to published versions of the manuscript.

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