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Potential of traditional medicinal plants in the Dayak Tamambaloh Tribe, West Kalimantan, Indonesia

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Abstract. *Supiandi MI, Julung H, Susanti Y, Zubaidah S, Mahanal S. 2023. Potential of traditional medicinal plants in the Dayak Tamambaloh Tribe, West Kalimantan, Indonesia. Biodiversitas 24: 3384-3393.* The Dayak tribe in West Kalimantan (Indonesia) consists of 151 sub-ethnics, one of which is the Dayak Tamambaloh located in Temau Village, Embaloh Hulu Subdistrict, Kapuas Hulu District, West Kalimantan, Indonesia. This tribe uses the forest for various purposes, including plants as traditional medicines, which is a form of local wisdom in the community. However, the local wisdom can be threatened with extinction when it is not preserved properly. Factors contributing to the extinction of local wisdom include the influence of foreign cultures, forest degradation due to shifting cultivation, the existence of oil palm plantations, and forest fires. Therefore, this study aimed to examine the use of plants as traditional medicine with a qualitative descriptive approach. The method used was a survey; data were obtained from the key informants. They are knowledgeable about the uses of plants for traditional medicine. Data on medicinal plants were collected through in-depth interviews, field observations, documentation, and were then analyzed descriptively and qualitatively. The results showed that the plants used to treat diseases by the Dayak Tamambaloh tribe were 58 and consisted of 29 families. The most widely used families were Zingiberaceae, Euphorbiaceae, Lamiaceae, Poaceae, and Musaceae, with 10, 4, 4, 4, and 3 species, respectively.

Keywords: Dayak, medicinal, plants, Tamambaloh, traditional

INTRODUCTION

West Kalimantan is the fourth largest province in Indonesia, with a population dominated by the Dayak tribe and has become part of the heart of Kalimantan (Sardana et al. 2011; Supiandi et al. 2019a; Sada et al. 2019). This tribe consists of 151 sub-ethnics (Alloy et al. 2008), including the Dayak Tamambaloh located in Temau Village, Embaloh Hulu Subdistrict, Kapuas Hulu District, also referred to as a conservation district (Weihreter 2014). This is supported by the existence of Lake Sentarum and Betung Kerihun National Park (Purwayantie and Suryadi 2020). Temau village has a forest with a diversity of plants that are used by the Dayak community for medicine, food, building, craft materials, natural dyes, and cosmetics (Roslinda 2016; Andesmora et al. 2017; Chabib et al. 2018; Supiandi et al. 2019b; Nurcahyani et al. 2019; Luardini et al. 2019; Yusro et al. 2020; Supiandi et al. 2020). Moreover, the Dayak Tamambaloh tribe uses plants in the forest to fulfill their daily needs, one of which is for traditional medicine.

The use of plants in traditional medicine is a kind of local wisdom that represents all forms of knowledge, belief, understanding, insight, customs, values, and social norms that guide human behavior in the community to solve various problems as well as to maintain environmental balance (Vitasurya 2016; Sibarani et al. 2021). Local wisdom functions for (i) conservation and preservation of natural resources, (ii) cultural and knowledge development, as well as (iii) repository of alternative options that maintain cultural and biological diversity (Virginia 2006; Persic and Martin 2007).

However, local wisdom can be threatened due to sociocultural changes and improper documentation of the use of plants (Gurib-Fakim 2006; Namsa et al. 2011; Yusro et al. 2014; Tamalene et al. 2016; Rashid et al. 2018; Supiandi et al. 2019c; Jamir et al. 2021; Kujawska and Hirschmann 2022), foreign cultural influences (Kustiawan 2007), forest degradation due to shifting cultivation, plantations, and forest fires (Setyawan 2010). Moreover, the study of the relationship between ritual language and its role in medicine has not been explored in depth (Noels et al. 2014). Investigations on local wisdom in utilizing plants as traditional medicine have been carried out in Sri Wangi Village, Kapuas Hulu District (Yusro and Mariani 2021).

Based on these problems, ethnobotanical studies are needed to reveal and document local knowledge in a community group and its importance in conservation efforts. Ethnobotany has benefits as an effort to plant and cultural conservations (Ajesh et al. 2012; De la Torre et al. 2012; Sop et al. 2012; Kewessa et al. 2015; Marin et al. 2015; Nahdi et al. 2016; Akgul et al. 2018). The knowledge of the Dayak Tamambaloh community about the use of plants in traditional medicine is very limited. Hence, data in written form and published are needed. According to Dangal et al. (2017), publishing current studies is essential for even distribution to the broader scientific community and getting feedback. The essence of publication is to share findings and ideas with a broader network and learn what others have discovered on a particular topic.

The urgency of this study lies in the need to record and understand traditional knowledge about the use of medicinal plants as a form of cultural preservation. This is necessary to ensure the sustainable development of certain areas that hold ethnobotanical resources. The ethnobotanical information on medicinal plants in this article can be used in other areas with almost the same or different conditions for preserving traditional knowledge. Therefore, this ethnobotany study aims to record the knowledge of the Dayak Tamambaloh community in Temau Village in using plants as traditional medicine.

MATERIALS AND METHODS

Study area

The study sites covered the area of Temau Village, Embaloh Hulu Subdistrict, Kapuas Hulu District, West Kalimantan, Indonesia as shown in Figure 1. Temau village is located in the northern part of Putussibau and can be reached within 2 hours from the City of Putussibau with a distance of about ± 89 Km through the northern causeway. Mobility to the Village can be achieved using four-wheeled vehicles, such as buses or cars, and two-wheeled vehicles, namely motorcycles. Moreover, the total area is 80 km^2, consisting of two hamlets, namely Dusun Nanga Liyu and Hamlet Kanyoling, with a total of ± 200 families. The livelihoods of the community are farmers and gardeners who are also predominantly Catholic (Data Desa 2022).

Data collection

The study was conducted in June 2022 in Temau Village using a qualitative descriptive approach. This approach was used because the data obtained were descriptive in the form of words and language (narrative) in a particular context (the use of medicinal plants) from the Dayak Tamambaloh community, including both males and females. This study used a survey method to collect field data related to the use of medicinal plants carried out by the Dayak Tamambaloh tribe in their daily life (Susanti et al. 2023). Data on the use of medicinal plants were obtained from customary leaders, shamans, and people who know and collect medicinal plants. Our informants were selected using purposive and snowball sampling techniques (Tongco 2007; Naderifar et al. 2017). The number of informants was five, as presented in Table 1.

Table 1. Informants data

Gender	Age	Profession	Type of informant	Information
Man	70 years	Farmer	Traditional leader	Main informants
Woman	65 years	Farmer	Traditional healer	Key informants
Woman	74 years	Farmer	Traditional healer	Key informants
Woman	68 years	Farmer	Knew the uses of plants for traditional medicine	Sources of recommendation
Man	68 years	Farmer	Knew the uses of plants for traditional medicine	Sources of recommendation

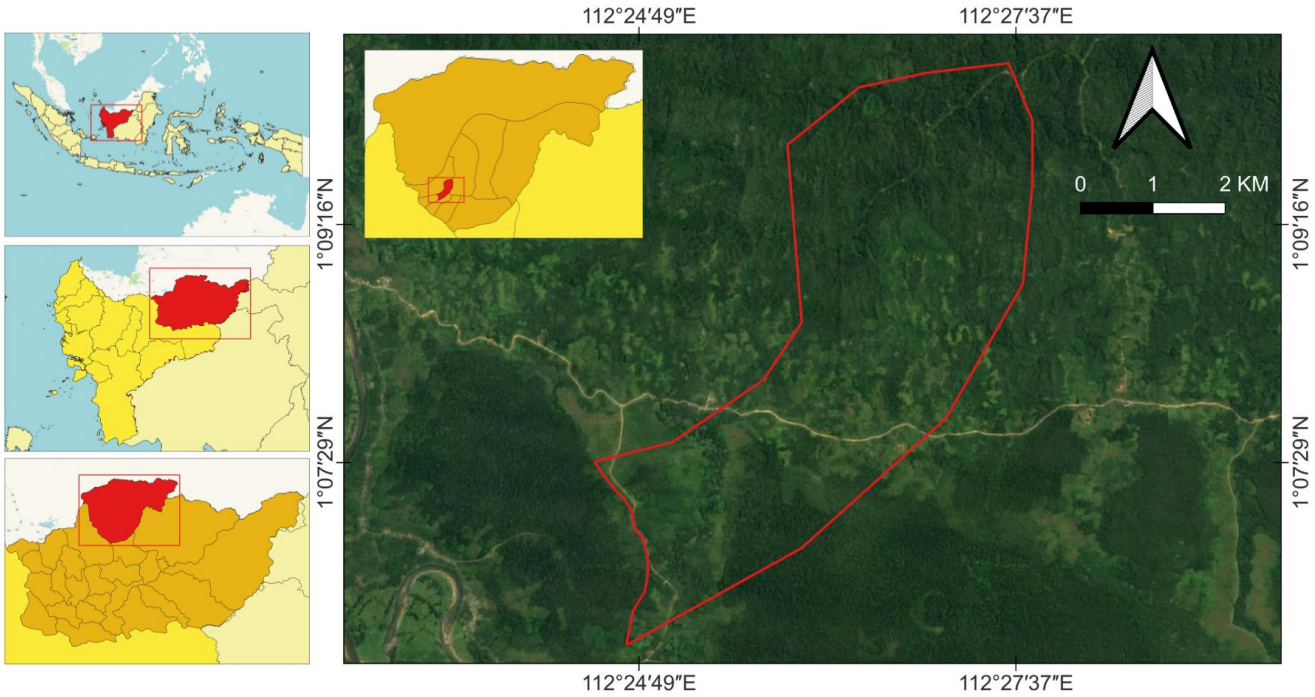

Figure 1. Study location in Temau Village, Embaloh Hulu Subdistrict, Kapuas Hulu District, West Kalimantan, Indonesia

Data on the use of medicinal plants in the Tamambaloh Dayak community were collected by: (i) In-depth interviews conducted by asking open-ended questions to enable the informants to provide broad answers about medicinal plants; (ii) field observations were performed to verify medicinal plant species obtained from in-depth interviews with resource persons who have an understanding of medicinal plants; and (iii) documentation was carried out by searching for data in the form of notes, pictures, archives, or other records that are useful for completing and obtaining data related to the use of medicinal plants in the Tamambaloh Dayak community.

Data analysis

Data on the use of medicinal plants were analyzed qualitatively in the following way: (i) Data related to medicinal plants used by the Dayak Tamambaloh tribe were collected; (ii) Data were separated according to the study objectives; (iii) Data on medicinal plants were presented in the form of tables and descriptions; (iv) Conclusions were made according to the results and discussions that have been carried out.

RESULTS AND DISCUSSION

The results were obtained through interviews and field observations with informants in the Dayak Tamambaloh community (Table 1). The plants used to treat the disease were 58, consisting of 29 families. The most widely used families were *Zingiberaceae* (10 species), *Euphorbiaceae* (4 species), *Lamiaceae* (4 species), *Poaceae* (4 species), and *Musaceae* (3 species). In detail, the data on medicinal plants in the Dayak Tamambaloh community are listed in Table 2.

The Dayak Tamambaloh people in Temau Village use plant organs for traditional medicine, and the most commonly used part is the leaf at 46.55% (Table 3).

Discussion

Based on in-depth interviews and field observations with respondents in the Dayak Tamambaloh community, 58 species of plants in 29 families are used as traditional medicines. Plants that are widely used come from the family Zingiberaceae with 10 species, Euphorbiaceae, Lamiaceae, and Poaceae with 4 species each, and 3 species from Musaceae, as shown in Table 2. The most widely used plant family is Zingiberaceae which has long been utilized for treating fungal skin disorders (Laokor and Juntachai 2021). Additionally, it can be used as herbal medicines, dyes, and perfumes (Kumar et al. 2021).

Among the species from the Zingiberaceae family used as traditional medicine by the Dayak Tamambaloh tribe are *kunus* (*C. longa*) for treating external wounds and postpartum bleeding, as well as *kunus baute* (*C. zedoaria*) as anti-cancer, tumor, and blood purifier in boils. Moreover, *sakur* (*K. galanga*) is used to eliminate body odor, colds accompanied by chills, *laiya* (*Z. officinale*) for wind, colds, postpartum, as well as *langkuas* (*A. galanga*) to treat ringworm and tinea versicolor. *Tantamu kuning* (*C. xanthorrhiza*) is utilized for treating nosebleeds, ulcers, and internal pain, *tantamu putih* (*C. zedoaria*) to treat nearsightedness and fractures, as well as *japa* (*Z. montanum*) for wounds caused by nail punctures. Moreover, *katimbang* (*E. coccinea*) is used to eradicate pinworms and treat vomiting, while *randar* (*H. havilandii*) is utilized for deworming.

Curcuma longa has pharmacological effects such as antioxidant, anti-inflammatory, antimicrobial, antitumor, hepatoprotective (Tung et al. 2019), antifungal, antibacterial, antiviral, antiischemic, antineoplastic (El-Kenawy et al. 2019), and as a wound healing agent (Nair et al. 2019). It is also used in traditional medicine to cure inflammation, infectious diseases, and gastric disorders in Indonesia (Tung et al. 2019). *Curcuma zedoaria* contains secondary metabolites, namely terpenoids (Tariq et al. 2016), tannins, saponins, alkaloids, and steroids (Azam et al. 2014). It is reportedly effective in reducing total cholesterol, which exhibits antihyperlipidemic activity (Srividya et al. 2012). Furthermore, *C. zedoaria* has antibacterial, antifungal (Shahriar 2010; Das and Rahman 2012), anti-cancer (Hamdi et al. 2014), and anti-inflammatory activities (Kaushik and Jalalpure 2011). In Ayurveda, it is used to treat diarrhea, cancer, flatulence, and dyspepsia (Lobo et al. 2009).

Kaempferia galanga has anti-inflammatory, analgesic, antidiarrheal, antibacterial, sedative, and cytotoxic properties (Shetu et al. 2018). It is used for the treatment of diabetes, hypertension, cough, asthma, joint fractures, rheumatism, urticaria, vertigo, and intestinal injuries (Khairullah et al. 2021). This plant is widely utilized as a traditional Indian medicine to treat fever, rheumatism, respiratory, hypertension, and cardiovascular disorders (Srivastava et al. 2021). Furthermore, *Z. officinale* has chemicals that function as antiarthritis, anti-inflammatory, antidiabetic, antibacterial, antifungal, anticancer (Mbaveng and Kuete 2017), and antioxidants (Jakribettu et al. 2016). It has been used traditionally to treat colds, digestive ailments, fever, nausea, vomiting (Inserra and Brooks 2017), respiratory diseases (Gulati et al. 2021), and enhance immunity (Yasmin et al. 2020).

Table 3. The part of the plant used for traditional medicine

The part of the plant used	Percentage
Bark	3.44%
Flowers	1.72%
Fruit	12.06%
Leaf	46.55%
Rhizome	13.79%
Root	10.33%
Sap	5.17%
Shoots	5.17%
Stem	11.96%
Tuber	1.72%

Table 2. List of plants to treat diseases in the Dayak Tamambaloh tribe

Family	∑ species	Scientific name	Vernacular names	Plants habitus	Parts used	How to use	Utility
Acanthaceae	1	*Clinacanthus nutans* Lindau	*Tabak paku*	Herb	Shoots	Stabbed in the wound caused by nails	Nail stab wound
Annonaceae	1	*Annona muricata* L.	*Durian belanda*	Tree	Leaf	Seven pieces of boiled leaves, taken three times a day	Hypertension, migraine
Arecaceae	2	*Araca catechu* L	*Singkara*	Tree	Young fruit	Eat three times a day	Dysentery, diabetes, vagina doormat
		Daemonorops angustifolia (Griff.) Martelli.	*Lalis*	Climber	Young stem	Consumed	Neutralize stomach acid
Asteraceae	2	*Ageratum conyzoides* L.	*Rimput mamata*	Herb	Leaf	Rubbing, water dripping, and sticking	Wound medicine
		Gynura procumbens (Lour.) Merr.	*Rumput belean sao*	Herb	Leaf	Boiled, drink three times a day (made tea and palm sugar) Rubbing, water is dripped into the injured area	Hypertension, gout, fever, itching, ulcers, wound medicine
Apocynaceae	1	*Alstonia scholaris* (L.) R. Br.	*Lita*	Tree	Sap	Put a drop on the tooth that hurts cavities	Toothache
Bignoniaceae	1	*Pithecellobium lobatum* Benth.	*Jengkol*	Tree	Fruit	Eaten	Antioxidant and prevent cancer
Blechnaceae	2	*Blechnum orientale* L	*Papaku baruang*	Shrub	Young shoots	Pounded, pasted	Boils
		Stenochlaena palustri (Burm) Bedd.	*Kakas dadara*	Shrub	Young leaf	Make vegetables	Blood booster
Bombacaceae	2	*Ceiba pentandra* (L.) Gaertn.	*Kakabu*	Tree	Young leaf	Finely ground paste on the head and covered with a wet cloth on the child/baby	Heat reducer
		Durio zibethinus Murray.	*Durian*	Tree	Bark	The outer skin is peeled, boiled for an hour, and drunk	Acute dysentery medicine is mixed with mucus and blood
Caricaceae	1	*Carica papaya* L.	*Unti kayu*	Shrub	Young leaves and flowers	Boiled	Malaria medicine
Clausiaceae	1	*Garcinia xanthochmus* Hook f. ex T.	*Kandis*	Bush	Fruit	Sorted by the sprain	Sprain
Dryopteridaceae	1	*Nephrolepis bisserata* (Sw.) Schott	*Papaku*	Herb	Old leaf	Heated in the fire, applied to the itchy skin area	Bites of ants and caterpillars
Dipterocarpaceae	1	*Shorea macrophylla* (de Vr.) Ashton	*Kakawang*	Tree	Fruit oil	Smeared	Solves boils, skin irritation, sprue
Euphorbiaceae	4	*Excoecaria cochinchinensis* Lour.	*Kayu dadara*	Shrub	Leaf	Boiled	Dysentery
		Jatropha curcas L.	*Kayu pagi*	Shrub	Sap from the leaf stalk	Dropped in the nail puncture	Nail stab wound
		Phyllanthus urinaria L.	*Rimput amben anak*	Bush	Leaf, Stem, root	Boiled	Dysentery, itching
		Plukenetia volubilis L.	*Sacha inchi*	Herb	Fruit	Eaten	Diabetes, cholesterol, gout, hypertension
Fabaceae	1	*Spatholobus littoralis* Hassk.	*Bararan kalait*	Liana	Root	Drink water	Anti-cancer, gout
Iridaceae	1	*Eleutherine Americana* Merr.	*Bawang lamba*	Herb	Tuber	Boiled, drink water	Lowering blood sugar (diabetes)
Lamiaceae	4	*Coleus atropurpureus* (L) Benth.	*Kalinsang*	Shrub	Leaf	Rub on the skin area	Itching, water fleas
		Ocimum basilicum L.	*Takin*	Herb	Leaf	The leaves are rubbed and affixed to the itchy and smelly area	Ringworm, water fleas, eliminate body odor
		Orthosiphon aristatus (Blume) Miq	*Kumis kucing*	Herb	Leaf	Boiled, drunk	Kidney stones, diabetes
		Vitex pinnata L.	*Kulit papa*	Tree	Leaf and bark	Boiled for bath	Jaundice
Liliaceae	2	*Allium chinense* G. Don.	*Kucai*	Herb	All parts	Eaten	Treating children who secrete excessive salivary glands, eliminates lousy breath
		Crinum asiaticum L.	*Batak*	Herb	Leaf, root	Boiled, drunk	Reducing fever in babies, itching, cough
Menispermaceae	1	*Arcangelisia flava* (L) Merr.	*Bararan kunus*	Climber	Stem, root	Dried, boiled an hour	Malaria, jaundice, liver
Musaceae	3	*Musa paradisiaca* Linn.	*Unti*	Herb	Young stem	Young banana stems are chopped and mixed with chicken meat, covered with broken bones	Fracture
		Musa textilis Nee.	*Unti pangkaran*	Herb	Sap on the stem	The sap on the banana stem is dripped on	Stops bleeding from wounds

						the injured area	
		Musa acuminata Colla	*Unti jaranang*	Herb	Young stem	Chopped, and cooked for bathing	Fever
Moraceae	1	*Ficus variegate* Blume,Bijdr.	*Ara*	Tree	Leaf	Make vegetables	Streamlining breast milk
Moringaceae	1	*Moringa oleifera* Lam.	*Kelor*	Shrub	Leaf	Finely ground, mixed with two cups of clean water, let it settle, then filtered, dripped	Myopic eyes
Mrytaceae	2	*Psidium guajava* L.	*Jambu biji*	Tree	Old and young leaf	Young leaves are eaten directly Boiled old leaves	Diarrhea, dysentery, dengue fever
		Syzygium polyanthum (Wight.) Walp	*Bungkang*	Tree	Leaf	Seven pieces finely ground, boiled for an hour, and mixed with bay leaves, one handful, until the remaining three cups Leaf shoots are eaten raw	Symptoms of stroke, hypertension, stomach pain, blood sugar, deworming
Oxilidaceae	1	*Averrhoa carambola* L.	*Umbing tunjuk*	Tree	Leaf	Boiled	Hypertension, migraine
Piperaceae	2	*Piper betle* L.	*Baulu*	Herb	Leaf	Seven pieces boiled for bath Chewed (*nyirih*) Rubbed, dripped	Cleansing the smell of women's areas due to vaginal discharge, toothache due to cavities, eye pain
		Piper crocatum Ruiz & Pav.	*Baulu darara'*	Herb	Leaf	Seven pieces of betel leaf boiled, taken three times a day	Malaria that bleeds from the nose
Poaceae	4	*Cymbopogon citratus* (DC.) Stapf.	*Serai bumbu*	Herb	Stem	Stems burned, eaten Lemongrass stem boiled water	Treating colds, eliminating body odor, treating toothache
		Cymbopogon nardus (L.) Randle.	*Serai wangi*	Herb	Stem (oil)	Smeared	Throw away the wind and aches from being tired
		Pennisetum purpureum Schumach.	*Rimput balanda*	Herb	Leaf	Rubbed, water dripped on the wound	Anti infection
		Saccharum sinense Roxb.	*Tabu darara'*	Shrub	Stem	Milked stem	Urinating blood due to blunt object impact
Rubiaceae	2	*Coffea canephora* Pierre ex Froehner.	*Kopi*	Tree	Young leaf	Devoured raw	Rheumatism, joint pain, heart palpitations
		Morinda citrifolia L.	*Mangkudu*	Tree	Young fruit and young leaf	Consumed instantly Devoured	Tumors, cancer, hypertension
Simaroubaceae	1	*Eurycoma longifolia* Jack.	*Sasapa'*	Tree	Roots	Cut, dried, boiled, brewed (a mixture of brown sugar and honey)	Gout, cholesterol, hypertension, malaria, diabetes
Solanaceae	2	*Physalis angulata* L.	*Malatop*	Herb	Roots, stems, leaf	Boiled, drink three times a day	Hypertension, kidney, diabetes
		Solanum torvum Sw.	*Tarung pipit*	Shrub	Fruit	Consumed	Eye medicine
Zingiberaceae	10	*Alpinia galanga* (L.) Sw.	*Langkuas*	Shrub	Rhizome	Rub directly into the itchy skin area	Ringworm
		Cucurma zedoaria (Berg.) Rosc.	*Kunus baute*	Shrub	Rhizome	Grated, cooked, drunk Grated, pasted	Anti-cancer, tumor, blood purifier on boils
		Curcuma zedoaria (Christm.) Roscoe.	*Tantamu putih*	Bush	Rhizome	Grated, pasted Grated, milked, water is dripping in the eye	Myopic, broken bones
		Curcuma longa L.	*Kunus*	Bush	Rhizome	Grated, taped to the wound Grated, boiled, drunk (honey mixture)	External wound, bleeding for postpartum
		Curcuma xanthorrhiza Roxb.	*Tantamu kuning*	Bush	Rhizome	Grated, boiled, drunk (a cup three times a day)	Nosebleeds, stomach
		Etlingera coccinea (Blume).	*Katimbang (tepus)*	Shrub	Young stem	Burned, consumed	Getting rid of pinworms
		Hornstedtia havilandii (K.Schum.) K.Schum.	*Randar*	Shrub	Young shoots	Young shoots are eaten	Anthelmintic
		Kaempferia galanga L.	*Sakur*	Herb	Rhizome, leaf	Grated, boiled, drunk	Eliminate body odor, catch a cold accompanied by chills
		Zingiber montanum (J.Koenig) Link ex A.Dietr.	*Japa*	Herb	Rhizome	Grated, pasted	Nail stab wound
		Zingiber officinale Linn. var. rubrum	*Laiya*	Herb	Rhizome	Boil, drink water	Passing wind, flu, postpartum

Alpinia galanga is used as a carminative, expectorant, aphrodisiac, diuretic, and antispasmodic agent (Mohiuudin et al. 2011). Traditionally, it is used to treat throat infections, asthma, urinary tract diseases, inflammation, and rheumatism (Ramanunny et al. 2022). This plant contains phenylpropanoids, flavonoids, and terpenoids (Ramanunny et al. 2022). *Curcuma xanthorrhiza* reportedly has active compounds in the form of essential oils, curcumin, alkaloids, flavonoids, terpenoids, phenols, and tannins (Dermawaty 2015). It exhibits pharmacological activities such as anticancer, antioxidant, anti-inflammatory, antimicrobial, and antidiabetic (Simamora et al. 2022). Moreover, this plant has been used traditionally to treat diseases such as lack of appetite, gastric disorders, liver disease, constipation, bloody diarrhea, dysentery, arthritis, fever, hypotriglyceridemia, hemorrhoids, vaginal discharge, rheumatism, skin eruptions (Rahmat et al. 2021), thrush, and helps combat the pathogenic bacteria that cause acne (Salea et al. 2014).

Curcuma zedoaria contains curcumin and refined oils, which are considered anticancer, antibacterial, anti-inflammatory, immune-boosting (Hou and Jin 2005), immunostimulants (Samad et al. 2022), and antitumor (Hadem and Sen 2017). It is used to treat colds, coughs, allergies, strengthen the abdominal muscles, regulate the menstrual cycle, clean wounds, and act as an antidiarrhea (Kayum et al. 2020). The plant is also one of the traditional herbs used as an antifertility (Fatrin et al. 2017) and as a tumor/cancer medicine (Subositi and Wahyono 2019). Meanwhile, *Z. montanum* is a plant with various nutritious substances and has multifunctional activities (Lim 2016). The Chinese traditionally use it to prevent and reduce symptoms caused by COVID-19 (Musdja 2021). This plant is also used by several communities in Indonesia, Malaysia, Thailand, and certain areas of South Asia to treat asthma, pneumonia, anti-inflammatory, antiviral, antibacterial, anticancer, and immunomodulation (Jantan et al. 2008; Kaewchoothong 2009; Iswantini et al. 2011; Devkota et al. 2021).

Etlingera coccinea is utilized by various indigenous communities in some parts of Asia to treat food poisoning, stomach pain, and gastric problems (Daula et al. 2015). It contains flavonoids, flavonols, as well as antioxidants (Daula et al. 2015), and antimicrobial activities (Jambun et al. 2012). *Hornstedtial havilandii* reportedly has a chemical composition of beta-pinene, beta-elemene, beta-cubebene, alpha-pinene, gamma-cadinene, and germacrene D (Hashim et al. 2014). Additionally, it has great potential as an antioxidant and antimicrobial agent (Hashim et al. 2015).

The second most widely used plant family is Euphorbiaceae which are reportedly effective against several diseases such as HIV/AIDS, jaundice, infertility, neurosis, syphilis, smallpox, asthma, hypoglycemia, diabetes, and inflammation. The plant family also has antidiarrheal, antioxidant, antibacterial, anticancer, antiamoebic, and antiplasmodial effects (Bijekar and Gayatri 2014). The types of plants used are *J. curcas* to treat wounds caused by nail punctures, *E. cochinchinensis* for dysentery, *P. urinaria* for dysentery and itching, as well as *P. volubilis* to treat diabetes, cholesterol, gout, and hypertension. *Jatropha curcas* has been reported to have antimicrobial activity (Dohoué et al. 2020), while *E. cochinchinensis* has a significant anti-inflammatory effect (Jiangcun et al. 2020). Furthermore, *P. urinaria* reportedly has antiviral, antitumor, antidiabetic, antioxidant, antihypertensive, anti-inflammatory, and antimicrobial activities. It has also been used in traditional medicine to treat hepatitis, kidney disorders, and diarrhea (Du et al. 2018). *Plukenetia volubilis* contains essential fatty acids, phenolic compounds, and vitamin E, which exhibit antioxidant and hypolipidemic activities. Therefore, it can prevent cardiovascular and chronic inflammatory diseases, as well as dermatitis, and control tumor proliferation (Cárdenas et al. 2021).

The third most widely used plant family is Lamiaceae which have secondary metabolite bioactive compounds with antibacterial, antioxidant, anti-inflammatory, antimicrobial, antiviral, and anticancer properties (Carović-Stanko et al. 2016). The species used include *kulit papa* (*V. pinnata*) to treat jaundice, *takin* (*O. basilicum*) for tinea versicolor, water fleas, and eliminate body odor, as well as *kumis kucing* (*O. aristatus*) to treat kidney stones and diabetes. Additionally, *Kalinsang* (*C. atropurpureus*) is used for treating itching and water fleas, while *V. pinnata* contains components of flavonoids, saponins, tarutins, alkaloids, terpenoids, and tannins (Nuraskin et al. 2018). Traditionally, *Vitex pinnata* has been used by the Brunei Darussalam people to treat jaundice (Goh et al. 2017). *Ocimum basilicum* contains flavonoids, gallic acid, terpenoids (Malik et al. 2022), and also exhibits antioxidant activity (Do et al. 2020). Moreover, *O. aristatus* has secondary metabolites, namely rosmarinic acid and eupatorin (Faramayuda et al. 2019). According to a previous study, this plant can treat kidney inflammation, stones, and dysuria (Hsu et al. 2010). *Coleus atropurpureus* also contains phytochemicals such as alkaloids, phenolics, steroids, saponins, and flavonoids that act as antibacterial and anti-inflammatory agents (Verawati et al. 2016; Tarigan et al. 2021).

Poaceae is the fourth most widely used family, and it comprises several plants used as traditional medicine, including *tabu darara'* (*S. sinense*) to treat *beri-beri* and bloody urine caused by the impact of a blunt object. Furthermore, *serai bumbu* (*C. citratus*) is used to treat colds, eliminate body odor, and toothache, while *serai wanqi* (*C. nardus*) is used to relieve catching a cold and treat aches due to fatigue. *Rumput balanda* (*P. purpureum*) is utilized as an anti-infective agent, while *S. sinense* is used in traditional medicine to treat cardiovascular disease (Wczassek et al. 2022). It has immunomodulatory, analgesic, antithrombotic, anti-inflammatory, antihypercholesterolemic, antihyperglycemic, diuretic, and antioxidant properties (Ali et al. 2019). Previous studies reported that *C. citratus* has anti-inflammatory, antimicrobial, antioxidant, and analgesic activities (Garcia et al. 2015; Hosseinzadeh and Younesi 2002). It also produces various secondary metabolites in the form of alkaloids, saponins, tannins, and flavonoids (Ekpenyong et al. 2014). Furthermore, *C. nardus* has antioxidant, anti-

inflammatory, and antimicrobial properties (De Toledo et al. 2016; Kačániová et al. 2017; Pontes et al. 2018). *P. purpureum* also possesses antioxidant and antimicrobial activities in the treatment of infectious diseases (Jack et al. 2020).

The fifth most widely used plant family is Musaceae and the several species utilized by the Tamambaloh Dayak people include *unti* (*M. x paradisiaca*) to treat fractures, *unti pangkaran* (*M. textilis*) to stop bleeding from wounds, and *unti jaranang* (*M. acuminata*) to treat fever, chills, and colds. Based on previous studies, *M. paradisiaca* is very effective in curing various non-communicable diseases due to its secondary metabolite content (Adesola 2021). Furthermore, *M. textilis* has been used in traditional medicine (Ros 2000), while *M. acuminata* reportedly has bioactive components such as ascorbic acid, lycopene, saponins, alkaloids, flavonoids, and tannins (Apriasari and Iskandar 2014). A previous study also reported that *M. acuminata* has antibacterial, antifungal, and antioxidant properties (Fitriati et al. 2015).

The Dayak Tamambaloh tribe community relies on plants for treating various types of diseases due to their ease of use, not requiring expensive tools, low cost, and accessibility to all. According to a previous study, in general, the Dayak people process medicinal plants in an easy and simple way (Supiandi et al. 2019a). They traditionally use plant organs from roots, stems, leaves, and fruits to treat various diseases. These organs are used because they are easy to obtain in the forest, easy to process, and have been passed down from one generation to another by the local community. Therefore, people have confidence in the efficacy of these plant organs. The plant organ most widely used for treatment is the leaf at 46.55%. The leaves are part of the medicinal plant with the highest utilization ratio by various ethnic groups, but the ratio for each ethnic group is different (Nugroho et al. 2022).

The Dayak Tamambaloh community in Temau Village, Embaloh Hulu Subdistrict, Kapuas Hulu District, West Kalimantan, Indonesia has traditional knowledge of using plants to treat various diseases experienced by the people. These plants comprise 58 species of 29 families, which are processed and utilized in a simple way. Plant organs used to treat diseases are roots, rhizomes, stems, leaves, and fruit. This study can be a reference for the wider community to preserve traditional knowledge in utilizing plants that have medicinal properties.

The limitation of this study is that it was only conducted based on limited-scale interviews with traditional leaders, healers, and people who have knowledge of medicinal plants. In addition, the plant data were not tested in the laboratory, and this limitation serves as a basis for further studies.

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