

A Review of Ethnopharmacological Practices Among Two Indigenous Communities In Sumatra: The Anak Dalam And Mentawai Tribes

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Abstract

Indonesia is a country rich in biodiversity and high culture, including traditional knowledge such as the use of medicinal plants. This study examined ethnopharmacological practices in two indigenous communities on the island of Sumatra: the Anak Dalam tribe in Jambi and the Mentawai tribe in West Sumatra. The study reviewed several articles on medicinal plants from Google Scholar related to the plant species used, plant parts utilized, processing methods, and indications for their use in traditional medicine. The review showed that both tribes utilized various plants to treat ailments such as fever, diarrhoea, coughs, wounds, digestive disorders, and infections. Some of these were supported by scientific evidence regarding their pharmacological activities, such as *Zingiber officinale*, *Psidium guajava*, *Curcuma longa*, and *Eurycoma longifolia*. The results of this review confirm that the traditional knowledge of both communities has excellent potential for development in pharmacy and conventional medicine. Documentation and scientific study of medicinal plants are crucial for cultural preservation and the development of traditional medicine.

Keywords: Anak Dalam tribe, ethnopharmacology, Mentawai tribe, traditional medicine.

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Introduction

Traditional medicine is part of Indonesia's cultural heritage, passed down through generations, and has been an essential part of the public health system for centuries [1][2]. Indonesia boasts some of the world's most extraordinary biodiversity, home to thousands of ethnic groups with diverse local wisdom. Approximately 1,340 ethnic communities are documented in Indonesia, some indigenous to the Indonesian archipelago [3]. Approximately 1,340 ethnic communities are documented in Indonesia, some indigenous to the Indonesian archipelago. Many of these tribes still maintain their traditional medicine practices, making Indonesia a global centre for ethnopharmacological studies [2].

Ethnopharmacology is a branch of science that studies the use of medicinal plants within the context of culture, tradition, and beliefs. Ethnopharmacology evaluates pharmacological potential using a scientific approach. In other words, ethnopharmacology is a science that connects traditional knowledge and modern science by documenting local wisdom and exploring opportunities for developing evidence-based herbal medicines. Ethnopharmacology is a relevant approach in Indonesia, where conventional medicine remains closely tied to cultural identity. Many indigenous communities rely on plants for medicinal purposes, making Indonesia a living laboratory for ethnopharmacological studies [2].

Sumatra is one of Indonesia's islands, rich in indigenous communities with unique healing traditions. One such tribe is the Anak Dalam tribe in Jambi, located around Bukit Duabelas National Park. The Anak Dalam tribe is often called the Kubu, Rimbo, or Kelam people. Most of the Anak Dalam people live a semi-nomadic or nomadic lifestyle. They move to new locations or abandon old ones when a relative or resident dies, to escape enemies, or to clear new fields. This tribe still uses a variety of forest plants to treat ailments, such as diarrhoea, bacterial infections, and even respiratory problems. These plants are usually processed using simple methods such as boiling, pounding, or directly using plant parts [4][5]. Ethnobotanical research also records the use of rattan in the Besale ritual, which functions as

both physical and spiritual healing, demonstrating the close relationship between plants, health, and local belief systems [6].

Meanwhile, in other parts of Sumatra Island, more precisely in the Mentawai Islands, especially on Siberut Island, people still use traditional healing practices managed by shamans known as Sikerei or Siagai Laggek. The Arat Sabulungan belief system greatly influences this healing system, which views health as a balance between humans, nature, and ancestral spirits. Several studies indicate that the Mentawai people use at least 46 plant species to treat various ailments, with diseases classified based on naturalistic (physical ailments) and personalistic (spiritual ailments) approaches [7]. Other studies also highlight the significant potential of the Zingiberaceae family, with 32 species recorded as being used in traditional medicine by the Mentawai people [8].

However, this local wisdom is threatened with extinction due to modernisation, environmental changes, and the declining interest of the younger generation in inheriting traditional knowledge. Yet, documenting this knowledge is crucial for cultural preservation and developing new medicines based on local biodiversity [2]. Therefore, ethnopharmacological studies of the Anak Dalam and Mentawai tribes are critical for identifying medicinal plant species, the parts used, processing methods, and the indications of the diseases they treat. This research will document traditional knowledge and open opportunities for its scientific application to develop safe, evidence-based herbal medicines [4][7].

Materials and Methods

Materials

The materials used in this study consisted primarily of secondary data collected from published scientific literature available through Google Scholar. Articles were searched between January and April 2025 using combinations of relevant keywords, including “Anak Dalam tribe,” “Mentawai tribe,” “ethnopharmacology,” “traditional medicine,” “medicinal plants,” and “Sumatra.” Only open-access and peer-reviewed publications were considered to ensure reliability and reproducibility of data. Each selected article was screened for information regarding: the names of medicinal plant species (both scientific and local names); the plant parts utilized (e.g., leaves, roots, bark, rhizomes); methods of preparation or processing (e.g., decoction, infusion, maceration, direct use); and traditional indications for each plant as applied by the local community.

Methods

This study applied a qualitative systematic literature review approach to identify and synthesize data on ethnopharmacological practices among two indigenous communities in Sumatra, namely the Anak Dalam tribe in Jambi and the Mentawai tribe in West Sumatra. The review was conducted to document medicinal plant species, parts used, preparation methods, and their ethnomedicinal indications as reported in published scientific literature.

The literature search was conducted between January and April 2025 using the Google Scholar database. Search terms included combinations of “Anak Dalam tribe,” “Mentawai tribe,” “ethnopharmacology,” “traditional medicine,” “Sumatra,” and “medicinal plants.” Boolean operators (“AND,” “OR”) were used to expand or refine the search scope. Reference lists of selected papers were also screened to identify additional relevant studies. Articles were included if they met the following criteria: reported original or secondary data on medicinal plants used by the Anak Dalam or Mentawai tribes; described plant species, parts used, methods of preparation, and traditional indications; were published in English or Indonesian and available in full text. Exclusion criteria included: studies focusing on non-plant-based traditional practices (e.g., animal or mineral remedies); publications lacking clear methodological details or plant identification; and non-peer-reviewed materials such as theses, proceedings, or non-academic sources.

Results and Discussion

Literature searching those keyword revealed only limited article (eight articles) discussing medicine plants used by the Anak Dalam and Mentawai tribes. It means the natural resources and traditional knowledge of these two tribes have not been scientifically documented. However, these articles still provide a valuable insight into the use of medicinal plants by these two communities. A review of these journals revealed a total of approximately 77 plant species. Specifically, 36 plants species were used by the Anak Dalam tribe, while 41 plant species were used by the Mentawai tribe.

Ethnopharmacology plants

As a result of the literature review, the medicinal plants were used by the Anak Dalam Tribe and Mentawai Tribe for various therapeutic purposes. It demonstrated the relationship between local wisdom and the

pharmacological potential of each plant. The detail information regarding traditional use, plant species, local names, plant parts used and how to use of medicinal plants describes in Table 1 and Table 2.

Table 1. Medicinal plants of the Anak Dalam Tribe [9][10][11][6].

Traditional uses	Scientific name	Local name	Plant parts used	Mode of preparation
Antipyretic	<i>Eurycoma longifolia</i>	Pasak bumi	Root	Scrape, boil, drink
	<i>Blumea</i> sp.	Capo	Leaf	The capo is squeezed and rubbed on the head
	<i>Clerodendrum deflexum</i>	Sempayang	Bark	Soak, drink
	<i>Rourea asplenifolia</i>	Kabesoung	Leaf, stem	Soak, drink
	<i>Timonius wallichianus</i>	Berumbung	Leaf, stem	Soak, drink
	<i>Bauhinia variegata</i>	Dedaup	Root	Scrape, boil, drink
	<i>Callerya atropurpurea</i>	Meribungan	Leaf, root	Soaked in warm water, drink
	<i>Adina multiflora</i> Val	Kayu brumbung	Bark	Boil it then drink
	<i>Imperata cylindrica</i> (L.) Raeusch	Alang-alang	Root	Pounded then smeared
	<i>Blumea balsamifera</i> L.	Sembung	Leaf	Boiled and drink
Wound	<i>Daemonorops draco</i>	Jernang kuau	Sap	Crush, apply
	<i>Mikania micrantha</i>	Sembung rambat	Leaf	Crush, apply
	<i>Selaginella</i> sp.	Tawas	Leaf	Boiled, smeared
	<i>Callicarpa longifolia</i>	Kumbi	Leaf	Crush, apply
	<i>Melastoma malabathricum</i>	Senduduk	Leaf	Crush, apply
	<i>Curcuma longa</i>	Kunyit	Rhizome,	Grated, applied to the wound
	<i>Centella asiatica</i>	Pegagan	Whole plant	Crush, apply
	<i>Trema orientalis</i>	Simpur	Leaf, stem	-
	<i>Hibiscus rosa-sinensis</i>	Kembang Sepatu	Leaf, flower	Crush, apply
	<i>Carica papaya</i>	Pepaya	Sap	Sap is applied
	<i>Cocos nucifera</i>	Kelapa	Coconut water, oil	Smeared
	<i>Mimosa pudica</i>	Putri Malu	Leaf, root	Crush, apply
	<i>Lantana camara</i>	Tembelekan	Leaf, flower	Crush, apply
Digestive problems	<i>Imperata cylindrica</i> (L.) Raeusch	Alang-alang	Root	Pounded then smeared
	<i>Melastoma malabathricum</i>	Senduduk	Flower	Boiled, drink
	<i>Psidium guajava</i>	Jambu biji	Leaf	Boiled, drink
	<i>Garcinia</i> sp.	Daun empat	Leaf, root	Soaked in warm water, drink
	<i>Jatropha gossypifolia</i>	Jarak merah	Leaf	Bake, stick on the stomach
	<i>Daemonorops draco</i>	Jernang kuau	Sap	Mash, drink warm water or apply
	<i>Adina multiflora</i> Val	Kayu brumbung	Bark	Boil it then drink
	<i>Planchonia valida</i> [B.]	Kayu putat	Bark	Boil it then drink
	<i>Blumea</i> sp.	Capo	Leaf	Boiled, drink
	<i>Zingiber officinale</i>	Jahe	Rhizome	Boiled, drink
Cough	<i>Hibiscus rosa-sinensis</i>	Kembang sepatu	Leaf, flower	Boiled, drink
	<i>Alpinia galanga</i>	Lengkuas	Rhizome	Boiled, drink
	<i>Abrus precatorius</i> Linn.	Saga merah	Leaf	Boiled or eaten directly
	<i>Imperata cylindrica</i>	Ilalang	Root	Boiled, drink
	<i>Jasminum Sambac</i>	Melati hutan	Stem	Scraped, soaked, dropped into the eyes
Birth attendant-related illness	<i>Sterculia foetida</i>	Seluruh	Root	Scrape the roots, boil, drink
	<i>Musa</i> sp.	Pisang	Stem, root, leaf	Boil, eat, spread
	<i>Syzygium ridleyi</i>	Plangh	Root	Used for baby's umbilical cord

Table 2. Medicinal plants of the Mentawai Tribes [8] [7][12][13]

Traditional uses	Scientific name	Local name	Plant parts used
Antipyretic	<i>Hedychium flavescens</i>	Simakaino silimun / tainao	Leaf, flower
	<i>Hornstedtia cf. Deliana</i>	Kara-kara	Stem
	<i>Kaempferia galanga</i>	Kopuk	Rhizome
	<i>Plagiostachys mucida</i>	Sikak-sikak, pasisikak	Leaf
	<i>Zingiber zerumbet</i> var. <i>L</i>	Palakokoaik, laigak saileu	Rhizome, leaf (boiled and drink)
	<i>Zingiber officinale</i>	Laigak	Rhizome (boiled and drink)
	<i>Jiajat</i> sp.	Jiajat	Stem (pound and drink)
Wound	<i>Alpinia malaccensis</i>	Pasingin	Stem (boiled and drink)
	<i>Curcuma zanthorrhiza</i>	Kiniu-Ra'ba'	Rhizome (boiled and drink)
	<i>Allepet</i> sp.	Allepet	Leaf (smoothed and smeared)
	<i>Cocos nucifera</i> L.	Kelapa	Fruit oil & powder (grated)
Digestive	<i>Curcuma zanthorrhiza</i>	Kiniu-ra'ba'	Rhizome (boiled and drink)
	<i>Hedychium longicornutum</i>	Kinande, siputainaok	Rhizome (boiled and drink)
	<i>Alpinia malaccensis</i>	Pasingin	Stem (boiled and drink)
	<i>Curcuma longa</i>	Kiniu	Rhizome, leaf (boiled and drink)
	<i>Elettaria longituba</i>	Alutuet	Flower, leaf, stem
	<i>Hedychium flavescens</i>	Simakaino silimun / tainao	Leaf, flower
	<i>Kaempferia galanga</i>	Kopuk	Rhizome
	<i>Zingiber officinale</i>	Laigak	Rhizome
	<i>Zingiber zerumbet</i>	Siguju'	Rhizome
	<i>Pictum</i> (L.) Griff	Ailepet simaingo	-
	<i>Costus speciosus</i> sm	Bagli – bagli	-
	<i>Musa acuminata</i>	Bilijoat	-
	<i>Cordyline fruticosa</i>	Boblo	-
	<i>Rottboellia exaltata</i>	Boku – boku	-
	<i>Lansium domesticum</i>	Buluk selak	-
	<i>Salvadora persica</i>	Geretget mata	-
	<i>Scleria sumatrensis</i>	Jajajak	-
	<i>Psidium guajava</i> l	Jabbuik	-
	<i>Syzygium polyanthum</i>	Kairiggi	-
	<i>Plectranthus amboinicus</i>	Kepuk buluk	-
Cough	<i>Amomum mentawaiense</i>	Gojot leleu	Stem (boiled and drink)
	<i>Globba flavibracteata</i>	Silukkuk	Whole plant
	<i>Hedychium coronarium</i>	Kakainauk	-
	<i>Aneilema nudiflorum</i> l)	Sibukak	-
	<i>Kaempferia galanga</i> L.	Kencur	Rhizome (boiled and drink)
Headache	<i>Elettaria longituba</i>	Alutuet	Flower, leaf, stem (boiled, drink)
	<i>Etlingera elatior</i>	Totonan	Rhizome
	<i>Etlingera foetens</i>	Kukuan	Stem
	<i>Globba atrosanguinea</i>	Tamalalauk	Whole plant
	<i>Hedychium coronarium</i>	Tainao simabulan	Flower, stem
	<i>Hornstedtia parviflora</i>	Kamumulek, Roddot	Rhizome
	<i>Costus speciosus</i> sm	Bagli – Bagli	-
	<i>Myrmecodia</i>	Kasuka	-
	<i>Neprholepis cordifolia</i>	Sibakat Laggai	-
	<i>Cyrtandra pilosa</i> bl	Oroket	-
Birth Attendant	<i>Boesenbergia angustifolia</i> (Hallier f.) Schltr.	Egleu	Whole plant (pounded, smeared)
	<i>Alpinia malaccensis</i>	Pasingin	Stem (boiled, drink)
	<i>Hornstedtia conica</i>	Sikukuat	Stem
	<i>Zingiber officinale</i>	Laigak	Rhizome
	<i>Curcuma zanthorrhiza</i>	Kiniu-Ra'ba'	Rhizome (boiled and drink)
Asthma	<i>Globba flavibracteata</i>	Silukkuk	Whole plant
	<i>Globba variabilis</i>	Sipu Popoirag	Whole plant

Importance plants

Identification of medicinal plants is crucial in ethnopharmacological studies, providing valuable insights into species that play a key role in traditional indigenous medicine and possess potent pharmacological potential. Of the various plant species, several plants were widespread in both ethnics, such as *Zingiber officinale*, *Curcuma longa* L., *Cocos nucifera*, and *Psidium guajava* L. Furthermore, several plants included *Curcuma longa* L., *Psidium guajava* L., *Eurycoma longifolia*, and *Jatropha gossypifolia* have been scientifically proven through various pharmacological evaluation.

Turmeric (*Curcuma longa* L.)

Turmeric (*Curcuma longa* L.) (Figure 2) is a rhizome plant belonging to the Zingiberaceae family. Turmeric (*C. longa* L.) contains curcumin, which has antibacterial and antioxidant qualities that can accelerate the migration and re-epithelialization of cells beneficial in wound healing, including myofibroblasts, fibroblasts, and macrophages. In-vivo study using mice that were given incisions found that turmeric (*C. longa* L.) can accelerate the healing of incisions [14]. The results of this study support the traditional use of turmeric (*C. longa* L.) as a wound healing agent.

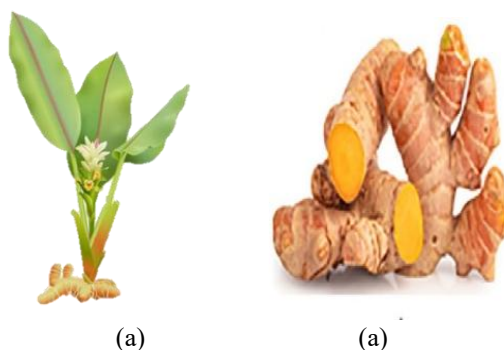


Figure 2. Turmeric (*C. longa* L.), (a) whole plant; (a) rhizome [15][16].

Guava leaves (*Psidium guajava* L.)

Guava leaves (*Psidium guajava* L.) (Figure 3) contain numerous medicinal compounds, such as flavonoids, tannins, saponins, essential oils, triterpenoids, and alkaloids. The flavonoid and phenolic content of guava leaves is influenced by the location and environment in which they grow. Research shows that aqueous extracts of guava leaves have potent antioxidant activity [17].

A study found that the ethanol extract of guava leaves (*Psidium guajava* L.) had antidiarrheal effect in male white mice (*Mus musculus* L.). In addition, at a specific dose, there was a decrease in the frequency of diarrhoea to 4.6 times for 79.33 minutes [18]. The results of this study support the traditional use of *guava leaves* as a medicine to treat digestive problems, namely diarrhoea.

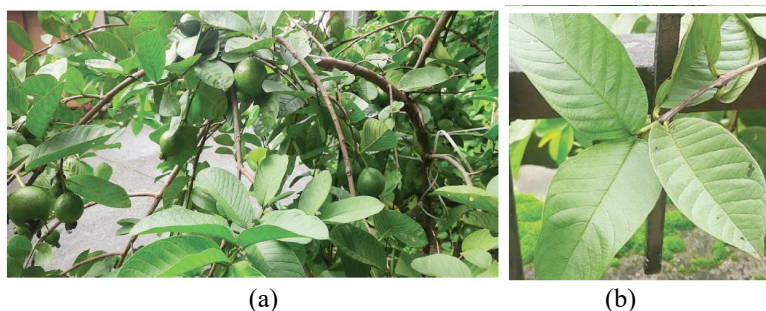


Figure 3. Guava (*P. guajava* L.) (a) whole plant; (b) leaves [19].

Longjack (*Eurycoma longifolia*)

Eurycoma longifolia (Figure 4) is a plant species from the Simaroubaceae family that has high economic value and is commonly traded on the islands of Sumatra, Kalimantan, Java, Bali, and Nusa Tenggara [20]. *E. longifolia* is used by the Anak Dalam tribe in Tabun Village in VII Koto District, Tebo Regency, Jambi City as a traditional medicine. Phytochemical screening results show that the roots of the *E. longifolia* plant contain alkaloids, flavonoids, and triterpenoids, which are thought to have antipyretic activity [9]. Other studies have stated that high doses of *E. longifolia* have antipyretic activity, as shown by in vivo studies [20]. This supports the traditional use of *Eurycoma longifolia* as an antipyretic drug.



Figure 4. *E. longifolia* (a) whole plant; (b) root [22].

Red castor (*Jatropha gossypifolia*)

Red castor (*Jatropha gossypifolia*) (Figure 5) is a plant from the same genus as the curcas castor (*Jatropha curcas*), which has previously been shown to have antibacterial activity. Ethanol extract of red castor (*J. gossypifolia*) leaves has antibacterial activity against *E. coli* at an optimum concentration of 80% and against *S. aureus* at an optimum concentration of 60%. The active compound suspected of having antibacterial activity is a terpenoid [23]. Another article also explains that red castor leaf extract (*J. gossypifolia*) has antidiarrheal activity, which was tested on mice induced by *E. coli* bacteria [24]. This supports the traditional use of red castor (*J. gossypifolia*) as a medicine that helps overcome digestive problems.



Figure 5. Red Castor (*J. gossypifolia*) (a) whole plant; (b) leaves [25].

Conclusion

This review showed that the Anak Dalam and Mentawai Tribes possess a wealth of traditional knowledge of using plants as medicines, which has been passed down through generations. Various plant species have been identified from both tribes, with conventional medicinal uses ranging from fever, wounds, diarrhoea, coughs, stomach aches, asthma, and childbirth assistance. Several plants, such as *C. longa*, *P. guajava*, *E. longifolia*, and *J. gossypifolia*, have been scientifically proven to have pharmacological activities and support their traditional uses, such as anti-inflammatory, antibacterial, antidiarrheal, and antipyretic activities.

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Declarations

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