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Ethnobotanical Insights into Traditional Medicine: A Study of Medicinal Plants in Sungai Betung, Kerinci Regency

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ABSTRACT

The use of medicinal plants is a primary alternative for rural communities in preventive and curative healthcare; however, this local ethnobotanical knowledge has not been comprehensively documented, particularly in the Sungai Betung area. This study aims to document the diversity of medicinal plant species and examine their utilization methods in the daily practice of traditional medicine by the Sungai Betung community, Kerinci Regency. This study used a qualitative design with a descriptive-exploratory approach. Data collection was conducted through direct observation and in-depth interviews with four key informants who have authority and extensive knowledge of traditional medicine practices. The study successfully identified 20 medicinal plant species that were empirically classified into four main categories of medical indications: digestive disorders, wounds and dermatological (skin) infections, musculoskeletal problems, and other systemic physiological conditions. These findings indicate that the resilience of local ethnobotanical knowledge remains very strong and has the potential to be integrated as a basis for the development of safe, natural, and sustainable alternative medicine. Future research should go beyond ethnobotanical documentation and include comprehensive phytochemical profiles and pharmacological investigations. Rigorous in vitro and in vivo studies are essential to isolate the active compounds responsible for the reported therapeutic effects and to scientifically validate their safety through appropriate toxicological assessments.

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INTRODUCTION

Medicinal plants are often very useful for treating various diseases and health problem. With over 31,750 identified plant species, Indonesia is among the countries with the highest biodiversity in the world. Approximately 15,000 of these species have the potential to be used as medicinal plants (Adriadi et al., 2022). Indonesian traditional medicine, also known as "jamu", is a concoction made from ingredients such as plants, animals, minerals, extracts, or a mixture of these ingredients that have been used for generations for treatment and can be applied according to prevailing community norms (Andania et al., 2024). This diversity is found in many places, including Jambi Province, which has a wealth of medicinal plants traditionally used by local communities

The Kerinci people, one of the oldest tribes in Sumatra, have a close relationship with nature and a rich cultural heritage (Fajri et al., 2025; Widowati & Priyambodo, 2024). Kerinci Regency is one of the areas in Jambi rich in biodiversity (Suganda et al., 2024). For centuries, the Kerinci people have utilized medicinal plants in their daily lives, but this knowledge is being lost due to development and a lack of information (Haryanto, 2025). Being an essential

component of their cultural identity, this ancient wisdom has been transmitted from generation to generation (Lorensa et al., 2026). However, a lot of this knowledge is in danger of being lost because of modernization and a lack of documentation.

Ethnobotanical knowledge in the Kerinci region is rich and generationally transmitted, with each village developing unique practices based on specific environmental conditions and resource availability (Amri & Rahayu, 2025). The local communities utilize various plant parts predominantly leaves roots, rhizomes, bark, flowers, fruits, and sap—to treat an array of health issues, including fever, wounds, digestive problems, and joint pain (Mustakim et al., 2023; Hidayah et al., 2022).

Specific local studies highlight this diversity in traditional medicine. In Semerap, ten medicinal plant species from various families were identified, with leaves being the most frequently utilized part (Lorenza et al., 2026). Furthermore, in Lempur, five species from the Solanaceae family play a vital role in treating ailments such as eye pain, hypertension, asthma, and stomach aches. Similarly, in Tamiai Village, Batang Merangin District, the community utilizes 48 medicinal plant species, predominantly preparing treatments by boiling the leaves (Fransiska et al., 2022). This strong reliance on traditional botanical processing is a persistent cultural practice, comparable to the traditions of the Malay community in Lingga Regency, Riau Islands Province (Qasrin et al., 2020).

Despite this rich cultural heritage, certain areas like Sungai Betung in Kerinci Regency remain largely underexplored. While local communities depend on medicinal plants for their daily needs, comprehensive data regarding plant diversity and their specific applications is notably scarce. Therefore, further ethnobotanical research is imperative to document indigenous knowledge, evaluate the pharmacological potential of these plants, and establish effective conservation strategies for sustainable resource management (Mekonnen et al., 2022).

This ethnobotanical research in Sungai Betung aims to elucidate the diversity of medicinal plants, their specific applications, and the cultural values underlying their use by the local community. Through systematic documentation, this local knowledge can be preserved and effectively utilized to support sustainable public health initiatives (Fransiska et al., 2022). Ultimately, the research findings are intended to provide a scientific basis for future conservation strategies and the sustainable use of local botanical resources.

METHOD

This research was conducted in September 2025 in Sungai Betung Village, Gunung Kerinci District. The study employed a qualitative descriptive-exploratory approach to identify and document traditional medicinal plants used by the local community. As commonly applied in ethnobotanical research, this approach enables an in-depth exploration of indigenous knowledge and the utilization of natural resources without experimental intervention.

Participants were selected using a purposive sampling technique, targeting key informants with extensive knowledge of traditional healthcare practices. Four informants from the Sungai Betung indigenous community were selected based on specific inclusion criteria: willingness to participate in in-depth interviews, extensive experience in the use of medicinal plants, and recognition by the local community for their expertise in maintaining and utilizing a living pharmacy.

The research was carried out in four systematic stages: preparation (literature review and instrument development), fieldwork implementation, botanical documentation, and data organization. Primary data were collected through methodological triangulation, consisting of semi-structured interviews, direct observation, and documentation. Interviews were conducted using an interview guide focusing on local plant names, plant parts utilized, preparation techniques, methods of administration, ailments treated, and sources of ethnobotanical knowledge. Subsequently, field observations were conducted alongside the informants to verify the presence of medicinal plants in their natural habitats. Field notes and photographic documentation were also employed to record traditional healing practices and support accurate taxonomic identification.

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The collected data were analyzed using qualitative descriptive analysis based on an interactive model consisting of data reduction, data display, and conclusion drawing. Raw data obtained from observations, interviews, and documentation were selected, categorized, and focused on information relevant to the research objectives. Interview data served as the primary source of information and were cross-validated with observational findings to ensure the credibility of the results. Following the data reduction process, the findings were presented descriptively and systematically in tabular form, detailing medicinal plant species, families, plant parts used, therapeutic functions, and preparation methods. The final stage involved drawing conclusions to interpret the findings and provide a comprehensive understanding of how the Sungai Betung community conserves and utilizes local medicinal plant resources.

RESULTS AND DISCUSSION

Researchers have discovered a rich diversity of traditional medicinal plants in Kerinci Regency, specifically in Sungai Betung, which remain an important part of the daily lives of residents. This reflects how local knowledge has been passed down through generations. Based on the analysis, the Sungai Betung community uses 18 species of traditional medicinal plants to treat health ailments. These plants are divided into four main groups: digestive disorders, infectious and skin diseases, musculoskeletal disorders, and specific body conditions. A description of the traditional medicinal plants used to treat digestive disorders can be seen in Figure 1.

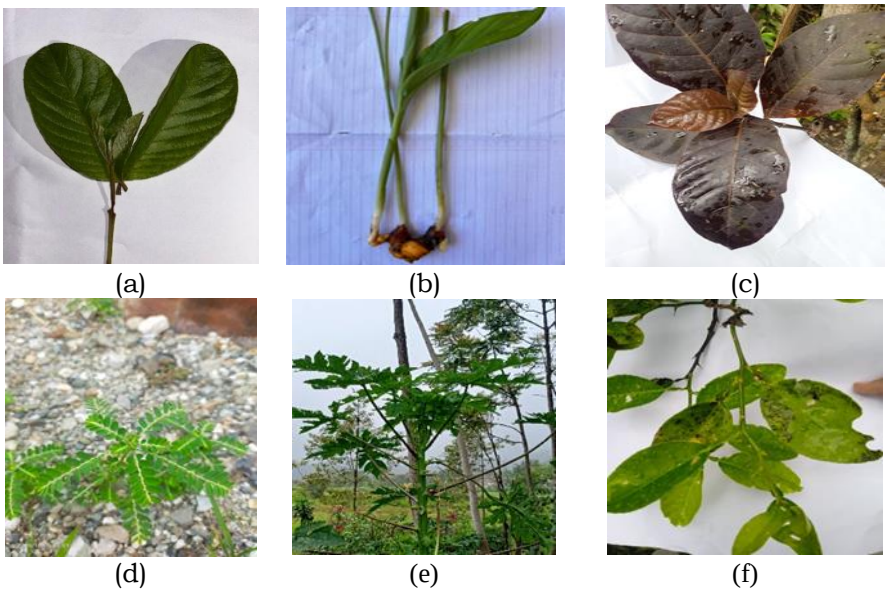

Figure 1. Examples of traditional medicinal plants used to treat digestive disorders, namely (a) Guava Leaves (*Psidium pictum* L.), (b) Yellow Turmeric (*Curucma longa* L.), (c) Black Pudding (*Grathophyllum pictum* (L.) Griff), and (d) Mineralan (*Phyllanthus urinaria* L), (e) Papaya Leaf Shoots (*Carica papaya* L.*)* and Lime (*Citrus aurontifolia* (Christm.)

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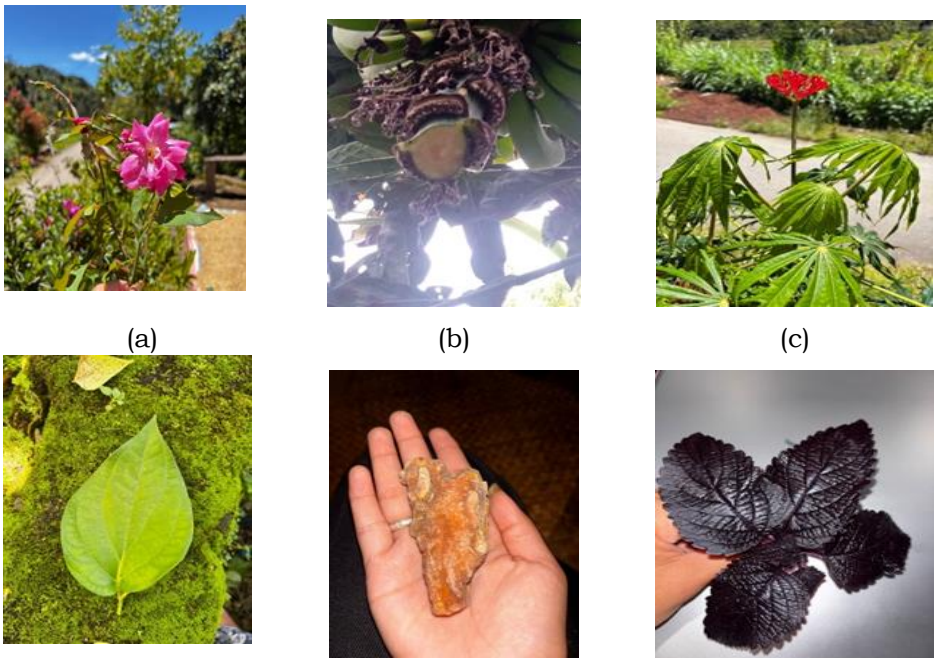

Figure 2. Leaves (*Psidium pictum* L.), (b) Yellow Turmeric (*Curucma longa* L.), (c) Black Pudding (*Grathophyllum pictum* (L.) Griff), and (d) Meniran (*Phyllanthus urinaria* L), (e) Papaya Leaf Shoots (*Carica papaya* L.*)* and Lime (*Citrus aurontifolia* (Christm.) Swingle).

Figure 3. Examples of traditional medicinal plants used to treat joint disorders, body aches and inflammation, namely (a) Soursop leaves (*Annona mucirata* L.), (b) Bay leaves (*Syzygium polyanthum* (Wight) Walp.), (c) White turmeric (*Curcuma zedoria rosc* (Christm.)

Figure 4. Examples of traditional medicinal plants used to cure specific physiological conditions (pregnancy and mouth ulcers/fever), namely (a) Sugarcane (*Saccaharum officinarum* L.), (b) White Hibiscus (*Hibiscus rosa sinensis* L.), (c) Orange Root (*Citrus sinensis* (L.) Osbeck.)

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Ethnobotany is a scientific discipline that investigates the relationship between humans and plants (Ali et al., 2022). There is evidence that traditional medicinal plants, such as guava leaves (*Psidium guajava)*, yellow turmeric (*Curcuma longa*), and lime (*Citrus aurantifolia*), can help treat digestive problems. (Arum et al., 2026) People use turmeric (Curcuma longa L.) as a traditional medicine because it has anti inflammatory and antioxidant properties. (Nastiti et al., 2022; Mitra et al., 2024; Liu et al., 2024; Seo et al., 2014; Huynh et al., 2025; Ally-charles et al., 2025). Guava leaves contain tannins and flavonoids, which act as antidiarrheal and anti-inflammatory agents, and have been scientifically studied to improve stool consistency and reduce the frequency of diarrheal episodes. Studies show that guava leaf extract can not only inhibit the growth of *Escherichia coli* bacteria, which is one of the causes of diarrhea, but can also reduce intestinal peristalsis, which in turn can reduce diarrhea symptoms. Due to its safety and effectiveness in treating digestive disorders, yellow turmeric has been included in the WHO monograph because it contains curcumin, which has anti-inflammatory and antioxidant properties. (Damayanti & Jannah, 2022) Lime contains vitamin C and citric acid, which aid digestion and relieve bloating and nausea. Traditionally, lime juice is used to treat diarrhea and increase appetite. The use of these three plants has long been known in society and is supported by scientific research showing that they are effective and safe for treating various digestive problems.

Papaya (*Carica papaya*) and mineralan (*Phyllanthus urinaria*) leaf tips are also often used to treat digestive problems. (Butar, 2025) Papaya fruit is a source of the antioxidant beta-carotene because it can reduce damage caused by free radicals (Azzahra, 2023) The papain enzyme found in papaya leaf tips aids digestion and reduces symptoms of dyspepsia. This papain enzyme can break down proteins, which Facilitates digestion and reduces symptoms of bloating and other stomach problems (Bhatia & Upadhyay, 2025). Furthermore, papaya leaves contain alkaloids, flavonoids, and tannins that act as anti-inflammatory and antimicrobial agents, helping to treat digestive tract infections. The lignans and flavonoids in mineralan function as hepatoprotective and antidiarrheal agents. The use of nature as a traditional medicine can be an alternative to the use of antibiotics. An alternative to the use of antibiotics (Nor et al., 2018; Febryna & Fitrianingsih, 2022; Nugraha et al., 2023). Mineralan is very useful in treating digestive disorders accompanied by liver problems because it can inhibit the growth of diarrhea-causing bacteria and help improve liver function. Furthermore, the active compounds in mineralan are also known to have immunomodulatory effects, which can increase the body's defenses against digestive tract infections. As a result, these two plants not only aid digestion but also protect the digestive tract from various problems.

For years, external wounds and skin infections have been treated with traditional medicinal plants, such as betel leaf (*Jatropha multifida* L.), banana sap (*Musa paradisiaca*), and rose flowers (*Rosa centifolia*). Also known as Jatropha multifida L, is often used in traditional medicine to help heal skin infections and wounds because it contains the compounds jatropholone and flavonoids, which have antibacterial properties. (Liana & Utama, 2018) The anti-inflammatory and antimicrobial properties of rose flowers can help the wound healing process and prevent infection. Banana sap contains polyphenols and flavonoids, which act as antioxidants and anti-inflammatories (Nurmila, Sinay & Watuguly, 2019). These polyphenols are also known to have hemostatic effects and can accelerate the wound healing process (Debnath et al., 2022). Frankincense, also known as Styrax benzoin, contains a compound called benzoin, which can kill germs and is often used in traditional medicine to prevent infection in open wounds.

People also often use betel leaves (Piper betle L.), frankincense (Styrax benzoin), and black field (Plectranthus scutellarioides) to treat wounds and skin diseases. This study examined the antibacterial characteristics of mattresses made from a mixture of PVA and betel leaves (Akram et al., 2023). The natural antiseptic properties found in green betel leaves, particularly their essential oils, have led to their long-standing use in traditional eye drop formulations to treat itchy eyes and bacterial infections (Bustanussalam, et al. 2015), The polyphenolic compounds, alkaloids, and essential oils found in betel leaves have antimicrobial and anti-inflammatory properties, which help treat skin infections and

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accelerate wound healing. The use of these three natural ingredients indicates that people have long recognized the benefits of bioactive plant compounds in accelerating wound healing (Lorensa et al., 2026). These bioactive compounds contain flavonoids, polyphenols, and antibacterial compounds that inhibit pathogen growth and promote tissue regeneration. Current research has further recognized the potential of these medicinal plants. Now, they can be developed as safer and more natural alternative treatments. Black turmeric (Plectranthus scutellarioides) also contains flavonoids and tannins that can help treat inflammation and skin infections. The use of these plants is supported by scientific research demonstrating their effectiveness in the healing process of wounds and skin infections. The diversity of active plant compounds suggests that traditional medicine has a strong biochemical basis. With more supporting research, the use of these natural ingredients may continue to be developed as a safe and effective alternative for skin care. Soursop leaves (Annona muricata L.), bay leaves (Syzygium polyanthum), and white turmeric (Curcuma zedoria Rosc.) are traditional medicinal plants that have long been used to treat joint disorders, inflammation, and body aches.

Soursop leaves contain tannins, resins, and crystallized magostin, which function as powerful analgesics and anti-inflammatories. They have also been scientifically proven to reduce joint pain caused by gout. These compounds can reduce inflammation and relieve pain associated with various health conditions (Lorensa et al., 2026). Furthermore, the active compounds in soursop leaves have been widely used in traditional medicine to help treat gout. This is because soursop leaves can stop the progression of inflammation in the joints and help reduce the pain and swelling it causes. According to research, soursop leaf extract also has pharmacological properties that can support health by acting as an antimicrobial, antioxidant, and immunomodulator. As a result, this plant is widely used in traditional medicine. Bay leaves contain essential oils and polyphenol compounds that act as anti-inflammatory and analgesic agents, helping to relieve inflammation and joint pain. In addition to containing curcuminoids, which act as anti-inflammatory and antioxidants, white turmeric has been widely used in traditional medicine to treat joint pain and inflammation. These three herbs are the primary choice in traditional medicine due to their proven efficacy and ease of use.

Traditional medicinal plants, including sugarcane (Saccharum officinarum), white Hibiscus rosa-sinensis), and orange root (Citrus radix), have long been used to treat specific physiological conditions, such as pregnancy, canker sores, and fever ((Sumara, 2018; Mirna & Ohorella, 2024). Black sugarcane (Saccharum officinarum) has been shown to reduce dysmenorrhea in adolescent girls. This is due to the analgesic and anti-inflammatory properties of its fatty acids. Furthermore, sugarcane contains antioxidants that strengthen the immune system and reduce the risk of long-term disease (Alharbi et al., 2024; S. Ali, 2023).

Furthermore, white hibiscus is often used traditionally to treat fever and mouth ulcers due to its polyphenol and flavonoid content, which act as anti-inflammatory and antimicrobial agents. These three plants are the primary choice in traditional medicine due to their proven efficacy and ease of use for specific physiological conditions such as fever, mouth ulcers, pregnancy, and pain, as well as their analgesic and antipyretic effects. Hibiscus stem bark extract has been shown to have antipyretic activity, with the most effective result at a 50% concentration (Supriati et al., 2014).

a b c

Figure 5. Documentation of interviews with the Betung village community

CONCLUSION

Traditional medicinal plants represent a significant repository of potent bioactive compounds, including flavonoids, curcumin, tannins, and ascorbic acid, which form the pharmacological basis for their therapeutic properties. Some plants possess potent antibacterial, anti-inflammatory, and antioxidant properties. Components such as Jatropha multifida (locally known as the betadine plant), Piper betle (betel quid), guava, turmeric, lime, and papaya have demonstrated historical and clinical efficacy in treating digestive disorders, skin infections, and accelerating wound healing. Furthermore, other culturally important species, including white hibiscus, black sugarcane, white turmeric, bay leaf, and soursop, are primarily used to alleviate systemic conditions such as pyrexia (fever) and arthralgia (joint pain). Supported by contemporary ethnopharmacological research, these findings demonstrate that traditional medicinal plants provide a natural, accessible, and safe alternative therapeutic paradigm, highlighting the critical need to integrate indigenous botanical knowledge with modern pharmacological development and conservation efforts.

Moving forward, this research should go beyond ethnobotanical documentation and include comprehensive phytochemical profiles and pharmacological investigations. Rigorous in vitro and in vivo studies are essential to isolate the active compounds responsible for reported therapeutic effects and to scientifically validate their safety through appropriate toxicological assessments. Furthermore, given the dependence of local communities on wild harvesting, formulating sustainable cultivation techniques and robust conservation policies is crucial to prevent the ecological depletion of these indigenous bioresources. Ultimately, translating this traditional botanical knowledge into modern clinical trials can pave the way for the discovery and development of standardized, evidence-based phytopharmaceutical products.

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