

Sasak Local Wisdom and Medicinal Plant Conservation in Mount Rinjani National Park

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Abstract

The conservation forest area in Tetebatu Resort, Mount Rinjani National Park, possesses diverse medicinal plants with ecological and cultural value for the Sasak community. This study aimed to analyze the forms of Sasak local wisdom in utilizing medicinal plants and their integration with forest conservation practices. The research employed a descriptive qualitative approach supported by simple quantitative data. Data were collected through in-depth interviews, participatory observation, documentation, and literature study, while informants were selected purposively and expanded using snowball sampling. The findings revealed that medicinal plant utilization is still practiced traditionally through oral transmission and direct practice. The community applies customary rules that support sustainable harvesting, such as prohibiting the cutting of parent trees, collecting plants only as needed, avoiding overharvesting in one area, and restoring soil after rhizome extraction. These practices align with conservation principles by maintaining natural regeneration and forest vegetation structure. The study concludes that Sasak local wisdom functions as a community-based conservation mechanism integrated with formal conservation policies. Therefore, documentation of ethnobotanical knowledge and stronger collaboration between local communities and conservation managers are essential to ensure the sustainability of medicinal plant conservation.

Keywords: conservation; ethnobotany; local wisdom; medicinal plants; Sasak community.

INTRODUCTION

Conservation forests are important biodiversity assets at both local and global scales because they provide significant ecological functions and ecosystem services for humans and the environment. This biodiversity includes flora with ecological, economic, and cultural value, including various medicinal plant species utilized in traditional healing systems by communities living around forest areas (Pramana et al., 2025). Indonesia is recognized as a megabiodiversity country with more than 30,000 plant species, of which approximately 9,600 have potential as medicinal plants (Majid et al., 2025). The use of medicinal plants is not only related to public health needs but also reflects the socio-cultural relationships formed through long-standing interactions between humans and the environment (Jadid et al., 2020; Rani & Kustiawan, 2025). In the context of modern conservation, the existence of local knowledge regarding medicinal plants has become an important component in supporting sustainable and community-based natural resource management (Febriyanti et al., 2026). Furthermore, the documentation of ethnobotanical knowledge is considered essential to prevent the loss of local knowledge caused by modernization and changes in community lifestyles (Ulfa et al., 2025; Humaedi et al., 2014).

Within local communities, local wisdom functions as a socio-ecological mechanism that regulates the relationship between humans and the environment, particularly in the utilization and conservation of natural resources. Indigenous communities, including the Sasak community in Lombok,

possess social practices, customary regulations, and ethnobotanical knowledge regarding medicinal plants that serve as guidelines for sustainable harvesting, processing, and utilization (Purwanti et al., 2020). This knowledge is passed down from generation to generation and functions as a normative system that helps prevent overexploitation while maintaining the ecological balance of forest areas (Gadgil et al., 2021; Weking et al., 2023). Similar phenomena have also been identified among the Tengger community in East Java, the Dayak Desa community in West Kalimantan, and indigenous communities in Aceh and North Sumatra, all of whom continue to preserve ethnobotanical knowledge as part of their cultural identity and as a strategy for conserving biological resources (Jadid et al., 2020; Supiandi et al., 2019; Ulfa et al., 2025). Such local knowledge contributes significantly to the sustainability of medicinal plant species through sustainable harvesting practices, traditional cultivation, and the utilization of non-timber forest products (Wahidah et al., 2025).

Nevertheless, conservation approaches that remain heavily oriented toward formal regulations often face limitations because they do not fully consider the socio-cultural dynamics of local communities. Modernization, lifestyle changes, and the declining interest of younger generations in traditional medicinal practices have caused ethnobotanical knowledge to gradually erode in many local communities (Ulfa et al., 2025). In addition, studies specifically examining the integration of Sasak community

knowledge and medicinal plant conservation within the Mount Rinjani National Park area remain very limited. Previous studies have focused more extensively on ethnobotany and medicinal plant conservation among other communities, resulting in the limited scientific documentation of the Sasak community's contribution to local wisdom-based conservation (Ulmillah et al., 2025). This condition highlights the need to develop collaborative conservation approaches that integrate cultural values, customary norms, and formal policies to create more participatory and sustainable area management (Cahyaningsih et al., 2021). Previous studies have also emphasized that recognizing Indigenous and Local Knowledge can strengthen conservation effectiveness and the sustainability of biological resources in conservation areas (IPBES, 2019).

Based on these conditions, this study is important to understand how the local wisdom of the Sasak community contributes to medicinal plant conservation in the Tetebatu Resort area of Mount Rinjani National Park. This study aims to analyze the forms of local wisdom practiced by the Sasak community in the utilization of medicinal plants and their relationship to conservation practices within the protected area. The findings are expected to provide empirical and conceptual contributions to the development of community-based conservation approaches that integrate local knowledge with modern conservation strategies. Furthermore, the results are expected to serve as a foundation for supporting conservation area management policies that are more responsive to the socio-cultural conditions of local communities and for strengthening the recognition of Indigenous and Local Knowledge in sustainable biodiversity management (IPBES, 2019; Febriyanti et al., 2026).

RESEARCH METHODS

Time and Research Location

This research was conducted at the Tetebatu Resort of Mount Rinjani National Park, which is administratively located in East Lombok Regency, West Nusa Tenggara, Indonesia. The area was selected because it still possesses relatively well-preserved conservation forests and serves as a site for the traditional use of medicinal plants by the Sasak community. Data collection was carried out from May to August 2025, spanning the dry season to the beginning of the rainy season, in order to facilitate access to the research location, vegetation observation, and the identification of medicinal plant species in the field. This period is commonly used in ethnobotanical studies because plant specimens are more easily observed and community harvesting activities are more intensive (Martin, 2014; Albuquerque et al., 2019).

Research Design

This study employed a descriptive qualitative approach supported by simple quantitative data (mixed methods). The qualitative approach was used to understand the forms of local wisdom, social practices, and the knowledge system of the Sasak community regarding the use of medicinal plants, while quantitative data were utilized to support descriptions related to the number of species and the frequency of medicinal plant utilization. The mixed methods approach was chosen because it is capable of integrating the exploration of social meanings with empirical field data in a more comprehensive manner (Creswell & Creswell, 2018). This method is also widely used in ethnobotanical and community-based conservation studies

because it enables researchers to understand the relationship between humans, culture, and the environment holistically (Albuquerque et al., 2019; Bernard, 2017).

Population and Research Sample

The population of this study consisted of Sasak communities living around the Tetebatu Resort area who possess knowledge regarding the use of traditional medicinal plants. The research sample included customary leaders, village elders, traditional herbal practitioners, communities utilizing non-timber forest products, and resort officers/conservation area managers. Informants were selected using purposive sampling based on specific criteria, such as experience and involvement in the use of medicinal plants, and were further developed through snowball sampling until data saturation was achieved (Sugiyono, 2022).

The research variables included forms of local wisdom, types of medicinal plants, utilization techniques, customary regulations, and community conservation practices. Data collection was conducted through in-depth interviews, participatory observation, documentation, and literature studies. The tools and materials used in this study included interview guidelines, digital cameras, stationery, GPS devices, voice recorders, observation sheets, plant identification books, and plant taxonomy databases (Martin, 2014; Bernard, 2017).

Research Procedure

The research began with a preliminary observation stage and the acquisition of research permits from the management of Mount Rinjani National Park and local community leaders. The next stage involved determining research informants using purposive sampling techniques. After the informants were selected, the researcher conducted in-depth interviews to obtain information regarding medicinal plant species, plant parts utilized, processing methods, customary regulations, and conservation practices implemented by the community.

Furthermore, participatory observation was carried out by following community activities in collecting and processing medicinal plants within the conservation forest area. Documentation activities included recording plant species, taking photographs, documenting plant habitats, and collecting other visual data. The identification of medicinal plant species was conducted based on plant morphological characteristics using plant determination books and plant taxonomy databases to ensure the validity of the scientific names of the identified species (Albuquerque et al., 2019).

The final stage of the research involved data triangulation and member checking with informants to ensure the compatibility of the researcher's interpretations with the information provided by the participants (Birt et al., 2016).

Data Analysis

Data analysis was conducted descriptively and qualitatively through stages of data reduction, data presentation, categorization, and conclusion drawing following the interactive analysis model proposed by Miles et al. (2014). Data obtained from interviews and observations were classified into several categories, such as forms of local wisdom, customary regulations, harvesting techniques, and community conservation practices.

Subsequently, thematic analysis was conducted to identify the relationship between medicinal plant utilization practices and conservation principles within the protected

area. Simple quantitative data, such as the number of medicinal plant species, utilized plant parts, and frequency of use, were presented in tables and percentages to strengthen the interpretation of qualitative findings. Data validity was enhanced through source triangulation, technique triangulation, and member checking (Creswell & Creswell, 2018; Birt et al., 2016). All data were analyzed and organized using Microsoft Excel and NVivo 12 software to support the categorization and interpretation of qualitative data.

RESULTS AND DISCUSSION

Utilization of Medicinal Plants in Tetebatu Resort, Mount Rinjani National Park

The Sasak community in the Tetebatu Resort area of Mount Rinjani National Park continues to practice the use of medicinal plants as part of their traditional family-based healing system. Based on the results of in-depth interviews and participatory observations, knowledge regarding plant species, utilized plant parts, and processing techniques is transmitted orally through family members and customary leaders. The utilization of medicinal plants is carried out in a limited manner within specific areas that are already recognized by the community, without opening new land or damaging forest vegetation.

Field identification results revealed several medicinal plant species commonly utilized by the community for daily healthcare needs.

Table 1. Medicinal Plant Species Utilized by the Sasak Community in Tetebatu Resort.

No.	Scientific Name	Family	Utilized Part	Medicinal Uses	Habitat
1	<i>Zingiber zerumbet</i> (L.) Sm.	Zingiberaceae	Rhizome	Treating colds and fever	Moist forest floor
2	<i>Curcuma longa</i> L.	Zingiberaceae	Rhizome	Digestive disorders	Forest trail edges
3	<i>Andrographis paniculata</i> (Burm.f.) Nees	Acanthaceae	Leaves	Reducing fever and boosting immunity	Open shrublands
4	<i>Piper betle</i> L.	Piperaceae	Leaves	Wound treatment and antiseptic	Climbing on trees
5	<i>Cinnamomum burmannii</i> (Nees & T.Nees) Blume	Lauraceae	Bark	Treating colds and body warming	Forest stands
6	<i>Imperata cylindrica</i> (L.) Raeusch.	Poaceae	Roots	Reducing internal heat	Open areas
7	<i>Centella asiatica</i> (L.) Urb.	Apiaceae	Leaves	Wound healing and stamina enhancement	Moist soil
8	<i>Curcuma xanthorrhiza</i> Roxb.	Zingiberaceae	Rhizome	Appetite stimulant and liver treatment	Forest floor
9	<i>Tinospora crispa</i> (L.) Hook.f. & Thomson	Menispermaceae	Stem	Diabetes treatment and immune booster	Twining on shrubs
10	<i>Senna alata</i> (L.) Roxb.	Fabaceae	Leaves	Skin diseases	Forest edges

Source: Primary research data, 2025.

The results of the study indicate that the Sasak community utilizes at least 10 species of medicinal plants from 9 different families for traditional family-based medicine. The family Zingiberaceae was identified as the most dominant group of medicinal plants utilized, particularly the rhizomes of *Zingiber zerumbet*, *Curcuma longa*, and *Curcuma xanthorrhiza*. The dominance of this family demonstrates that the community possesses empirical knowledge regarding the bioactive compounds contained in rhizomatous plants, which function as anti-inflammatory agents, immune boosters, and remedies for digestive disorders. This finding is consistent with the study of Jadid et al. (2020), which reported that the Zingiberaceae family constitutes the most widely used medicinal plants in the traditional healing system of the Tengger community in Indonesia due to their availability and broad medicinal benefits. Furthermore, Cahyaningsih et al. (2021) explained that medicinal plant species from the Zingiberaceae family are considered conservation priorities because of their high utilization among local communities. Similar findings were reported by Silalahi et al. (2020), who stated that plants from the Zingiberaceae family dominate traditional medicinal practices among the Batak community due to their rich secondary metabolite content and ease of cultivation.

The most frequently utilized plant parts were leaves and rhizomes, whereas the harvesting of roots and bark was conducted only on a limited basis. This utilization pattern reflects the implementation of sustainable harvesting practices that indirectly support forest vegetation conservation. The collection of leaves and partial rhizomes tends not to cause plant mortality when carried out selectively and moderately. This practice demonstrates that the Sasak community possesses local mechanisms for maintaining the sustainability of biological resources through unwritten rules concerning the limits of plant harvesting in forest areas. This finding supports the study by Weking et al. (2023), which explained that indigenous communities possess plant utilization systems that consider the natural regeneration of plant species. Similarly, Supiandi et al. (2019) found that the Dayak Desa community in West Kalimantan implemented comparable practices by limiting the harvesting of specific plant parts to maintain the sustainability of medicinal plant populations in their natural habitats. These findings indicate that the existence of local norms and traditional knowledge among the Sasak community plays an important role in preventing the degradation of medicinal plant resources within conservation areas.

The habitats of the identified medicinal plants were distributed across moist forest floors, open shrublands, forest trail edges, and forest stands. This condition indicates that the community possesses spatial knowledge regarding the

growing locations of each medicinal plant species and understands the ecological characteristics of their habitats. Such knowledge has been acquired through generations via direct experience and cultural transmission within families and customary communities. The community does not clear new land to obtain medicinal plants but instead utilizes specific locations that have long been recognized. This practice reflects a harmonious relationship between the community and the conservation area, thereby supporting the sustainability of forest ecosystems. These findings are in line with Febriyanti et al. (2026), who stated that local ethnobotanical knowledge contributes significantly to community-based conservation because it helps maintain a balance between the utilization and preservation of natural resources. Therefore, the utilization of medicinal plants by the Sasak community in Tetebatu Resort functions not only as a traditional healing system but also as part of a local wisdom-based conservation practice that supports the sustainability of the Mount Rinjani National Park area.

Forms of Local Wisdom in Harvesting Practices

The Sasak community in Tetebatu Resort applies customary rules and taboos in the utilization of medicinal plants as a form of local wisdom-based conservation. These rules are inherited from generation to generation through families and customary leaders in medicinal plant harvesting activities within forest areas. The results of interviews and observations indicate that customary rules function not only as social norms but also as mechanisms for controlling the utilization of natural resources in order to maintain sustainability and support the regeneration of medicinal plants in their natural habitats.

Table 2. Forms of Customary Rules in the Utilization of Medicinal Plants by the Sasak Community

No.	Forms of Customary Rules/Taboos	Conservation Purpose	Ecological Impact
1	Prohibition against cutting down the parent trees of medicinal plants	Maintaining the natural regeneration of plants	Preservation of species populations
2	Harvesting forest products only as needed	Preventing excessive exploitation	Stability of forest resources
3	Not harvesting all parts of plants from a single location	Maintaining plant regrowth	Continued vegetation regeneration
4	Covering the soil again after rhizome extraction	Maintaining soil moisture and structure	Reducing habitat degradation
5	Prohibition against freely harvesting rare plant species	Protecting high-value species	Reducing the risk of local extinction

Source: Primary research data, 2025.

The findings of this study indicate that the customary rules implemented by the Sasak community possess strong ecological functions in maintaining the sustainability of medicinal plants within conservation forest areas. The prohibition against cutting the parent trees of medicinal plants and the obligation to collect forest products only as needed demonstrate the existence of a local knowledge-based

resource management system aimed at maintaining a balance between utilization and conservation. The practice of not harvesting all parts of a plant from a single location also represents a form of sustainable harvesting because it allows plants to regenerate naturally after utilization. In addition, the recommendation to re-cover the soil after rhizome extraction reflects the community's understanding of the importance of maintaining soil conditions and the moisture of medicinal plant habitats. These findings show that the Sasak community possesses traditional ecological knowledge that has developed through ecological experiences and has been transmitted across generations within customary communities.

The findings of this study are consistent with the research of Iskandar and Iskandar (2017), which explained that indigenous communities in Indonesia possess customary norms and plant utilization systems that limit the exploitation of natural resources in order to maintain the ecological balance of forest areas. Cahyaningsih et al. (2021) also emphasized that selective harvesting practices and the protection of medicinal plant species are important components of community-based conservation strategies in Indonesia. In addition, Heinrich et al. (2018) and Weckerle et al. (2018) stated that the principles of harvesting only as needed and protecting parent plants are traditional conservation practices commonly found among ethnobotanical communities in various tropical regions of Southeast Asia. However, this study reveals a more specific characteristic among the Sasak community, namely the practice of re-covering the soil after rhizome extraction, which has rarely been discussed in previous ethnobotanical studies. This practice demonstrates local knowledge regarding the conservation of medicinal plant microhabitats that contributes to the stability of forest ecosystems.

Based on the findings, the customary rules of the Sasak community function not only as cultural norms but also as community-based conservation instruments that support the sustainability of Mount Rinjani National Park. This local wisdom serves as important social capital in strengthening participatory and sustainable conservation area management. Nevertheless, the challenges of modernization and the declining interest of younger generations in traditional practices may weaken the transmission of local ecological knowledge in the future. Therefore, efforts are needed to document local knowledge and strengthen collaboration between indigenous communities and conservation area managers so that local wisdom-based conservation practices can be maintained and integrated into conservation forest management policies.

Patterns of Ethnobotanical Knowledge Transmission

The transmission of ethnobotanical knowledge within the Sasak community occurs through direct practice (learning by doing), particularly from parents to children and through the guidance of traditional leaders when collecting and processing medicinal plants within conservation forest areas. This transmission process demonstrates that families and customary communities continue to function as the primary medium for maintaining local knowledge regarding the utilization of traditional medicinal plants. The knowledge transmitted includes not only plant species and their medicinal benefits, but also harvesting techniques, customary regulations, and ethical principles related to the sustainable use of forest resources. These findings indicate that the

ethnobotanical knowledge of the Sasak community constitutes a form of traditional ecological knowledge developed through social interaction and ecological experiences passed down across generations. The findings are consistent with Reyes-García et al. (2009), who stated that ethnobotanical knowledge within local communities is generally transmitted through family relationships, social interactions, and direct practical experiences in daily life.

Nevertheless, interview results revealed a declining interest among younger generations in learning traditional medicinal plant knowledge due to modernization, lifestyle changes, and increasing dependence on modern medical treatment. This condition has the potential to accelerate the erosion of local knowledge if intergenerational transmission processes do not function effectively. Research conducted by Srithi et al. (2014) among the Tai Yai community in Thailand also demonstrated that younger generations possess lower levels of ethnobotanical knowledge compared to older generations due to reduced involvement in traditional healing practices. Furthermore, Zhang et al. (2020) emphasized that urbanization and social change are major factors contributing to the rapid loss of ethnobotanical knowledge among local communities in Asia. Therefore, the sustainability of local wisdom-based conservation in Resort Tetebatu largely depends on efforts to preserve and document ethnobotanical knowledge through cultural education, strengthening the role of customary communities, and increasing youth involvement in sustainable medicinal plant conservation practices.

Integration of Local Wisdom and Conservation Area Management

The findings indicate that community practices are aligned with conservation area management principles. The community does not clear land, cut down primary trees, or exploit timber resources, but instead utilizes only non-timber forest products. These practices are consistent with conservation management policies that permit the limited utilization of non-timber forest products. This synergy demonstrates the existence of a natural integration between customary norms and formal conservation regulations. Community compliance with conservation area regulations is driven not only by formal policies but also by deeply rooted cultural values.

These findings reinforce the perspective that community-based conservation integrating local knowledge possesses high effectiveness in maintaining the sustainability of biological resources (IPBES, 2019; Ens et al., 2016). The sustainable harvesting practices implemented by the Sasak community are consistent with modern conservation principles that emphasize sustainable utilization without disrupting species regeneration (Albuquerque et al., 2019).

The prohibition against cutting parent trees and the principle of harvesting only as needed indicate the presence of social norms functioning as a self-regulating system in natural resource utilization, as also identified among various indigenous communities in other conservation areas (Gadgil et al., 2021). This system has proven effective in maintaining a balance between human needs and ecosystem sustainability. However, the primary challenge identified in this study is the weakening transmission of ethnobotanical knowledge to younger generations. This condition is consistent with recent studies indicating that modernization and lifestyle changes are major factors contributing to the loss of local medicinal plant

knowledge (Quave & Pieroni, 2015; Turner et al., 2022). Without proper documentation and integration into conservation management programs, local wisdom is at risk of gradual erosion.

Thus, the conservation model implemented in Resort Tetebatu demonstrates that the integration of local wisdom and formal conservation policies can produce a more participatory, adaptive, and sustainable management system. This approach is aligned with global recommendations emphasizing the importance of recognizing Indigenous and Local Knowledge in biodiversity conservation strategies (IPBES, 2019).

CONCLUSION

Based on the findings of this study, the Sasak community in Resort Tetebatu continues to maintain the practice of utilizing medicinal plants as part of a traditional healthcare system based on local wisdom that is transmitted through families and traditional leaders. This utilization involves at least ten medicinal plant species from various families, with harvesting patterns that tend to be sustainable, as indicated by the selective collection of plant parts and adherence to customary rules that function as community-based conservation mechanisms. Furthermore, there is a relatively harmonious integration between the community's local knowledge and the conservation principles of Mount Rinjani National Park. However, the sustainability of these practices faces challenges due to the declining interest of younger generations, which may threaten the continuity of ethnobotanical knowledge transmission in the future.

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