

# The utilization of plants in traditional medicine and rituals of Karimunjawa Island community, Central Java, Indonesia

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## Abstract

Ethnobotany research remains important for improving our understanding of the use of plants for health and medicinal purposes in various societies and cultures. This research represents a journey toward exploring and understanding the wealth of traditional medicine knowledge, holistic health services, cultural preservation, and sustainable resource management in coastal communities in the Karimunjawa region. The study employed a qualitative method with a series

of data collection techniques including observations, interviews, and documentation. The research findings reveal that there are at least 38 types of plants used as traditional treatment options for individuals and families. The plants include red onion, garlic, aloe vera, galangal, green chiretta, soursop, madeira vine, celery, cinnamon, key lime, coffee, turmeric, java ginger, lemon grass, carrot, aromatic ginger, calabash, moringa, banana, tobacco, rice, sticky rice, pandan, pepper elder, angular winter cherry, betel, guava, saccharum, star gooseberry, hummingbird, Indonesian bay leaf, tamarind, gambier, red ginger and several other endemic materials from the coastal region such as coconut, Surinam cherry, bantigue, and seaweed. The processing methods are still simple, such as boiling, grating, blending, or consuming them fresh. This local knowledge is passed down through generations as a preferred form of traditional medicine which is affordable and easily accessible in the region.

## Keywords

Ethnobotany

Karimunjawa Island

Local Knowledge

Traditional Medicine

Medicinal Plants

## 1. Introduction

Ethnobotany is a popular field in the scientific realm, particularly in the fields of anthropology and biology (botany). The interaction between the two fields resulted in the development of a multidisciplinary science that can be understood through social-cultural perspectives and natural sciences (Hsu and Harris, 2010). This field integrates various elements from anthropology, botany, ethnography, and ecology to explore how cultures interact with plants. Ethnobotany experts investigate how plants are utilized as food, medicines, shelter, clothing, in rituals, and other cultural practices in societies (Chassagne et al., 2023, Quiroz and van Andel, 2015, Hussain et al., 2023, Stryamets et al., 2021, Hu et al., 2022, Sansanelli and Tassoni, 2014). They also explore the transmission of this knowledge from generation to generation and its role in shaping the customs, traditions, and belief systems of local communities.

Ethnobotany is a multidisciplinary field that studies the relationship between plants and humans, focusing on the significant roles of culture, the utilization of traditional resources, and the knowledge systems related to plants in various societies and communities (Staller, 2010). Ethnobotany is not just about identifying plants and their uses, but also involves understanding the cultural context surrounding the practices (Balick and Cox, 2021). By documenting and preserving traditional knowledge about plants, ethnobotany experts contribute to scientific understanding and biodiversity conservation, while also respecting and valuing the cultural heritage of indigenous and local communities.

One branch of ethnobotany is medical ethnobotany, which focuses on the utilization of plants for health and medicinal purposes in various societies and cultures. Knowledge about the use of medicinal plants is embedded in the understanding and practices of traditional medicine conveyed by local healers and traditional healing practices within families. Specifically, medical ethnobotany aims to understand the knowledge of different parts of plants such as leaves, roots, stems, and bark (Xiong et al., 2020). The understanding is also focused on methods of utilization or preparation. The study also examines the cultural and biological effectiveness of these medicines so that they can be developed as new medicinal materials in various disease treatments in the future.

Understanding the concept of medical ethnobotany in coastal communities is an interesting and important endeavor. There have been many studies on how agrarian communities utilize nature for improving health quality and treatment because agrarian communities have many areas in their environment that can be explored (Ruan-Soto et al., 2020, Jorim

et al., 2012, Ferrier et al., 2015). Another intriguing aspect to explore is the knowledge of coastal communities regarding the utilization of plants, especially for health or medicinal purposes (Pakia, Cooke and van Staden, 2003, Figueiredo, Leitão-Filho and Begossi, 1997, Carrió and Vallès, 2012). However, not many studies focus on coastal communities whose geographical settings are clearly bordered by the sea, particularly in Indonesia. Therefore, it is interesting to understand how coastal communities discovered plants that can be utilized for health purposes. By exploring the relationship between local plants and healthcare practices in these coastal communities, their traditional medical knowledge inherited from generation to generation can be understood.

In coastal regions, where biodiversity often thrives, native plants have significant potentials in terms of medicinal properties (Duryat, Rodiani and Maryono, 2023, Agustina et al., 2022, Nurfadilah, Hapsari and Abywijaya, 2017). This medical ethnobotany not only respects the cultural heritage of the community but also provides an opportunity to bridge traditional wisdom with modern healthcare practices.

This study explored the Karimunjawa region, a cluster of islands located in the northern part of the Java Sea. This area is a stunning tourist destination known for its natural beauty, situated in the Jepara Regency, Central Java Province. It highlights not only its natural richness but also the significant biodiversity. The diversity of flora in the coastal areas of Karimunjawa creates a unique ecological condition, serving as an ideal habitat for various plant species, including medicinal plants that grow around the region (Abdullah, Mustikaningtyas and Widiatningrum, 2010, Nurhidayati et al., 2009). Medicinal plants play a central role in the traditional healthcare system of the coastal community in Karimunjawa. The generational knowledge about the use of these plants not only involves medical aspects but also reflects local wisdom and culture. Therefore, ethnobotanical research in Karimunjawa is considered a crucial step in documenting and preserving this knowledge, while also understanding the role of medicinal plants in the local cultural context.

To understand the traditional healing practices practiced by the Karimunjawa community, health anthropology approach, specifically ethnomedicine, was employed. In studies on medical systems within health anthropology, ethnomedicine is commonly used to explore local treatments as healing practices within specific cultural groups. Ethnomedicine studies individual experiences, discourses, knowledge, practices, and the sociocultural meanings in relation to health (Erickson, 2008). With this approach, the causes of illnesses are explored, as well as how individuals or communities treat them (Foster and Anderson, 2006).

Meanwhile, to explore the understanding of local healing practices using plants, utilitarian ethnobotany and cognitive ethnobotany approaches were employed. According to Cotton (1996), utilitarian ethnobotany focuses on the principle of plant use, involving the collection of information about the utilization and management of plants, including how plants are produced and processed into remedies. On the other hand, cognitive ethnobotany emphasizes primarily on anthropological aspects such as cultural symbols associated with plants. This also involves interpreting the local ideologies of the plants that are utilized.

This research is an academic journey towards holistic healthcare, cultural preservation, and sustainable resource management in coastal communities. With the aim of exploring traditional medical knowledge, this research also brings the mission of fostering collaboration between scientific research, cultural preservation, and community engagement. This is aimed at harnessing the healing potential of the botanical richness of the Karimunjawa coastal area optimally.

## 2. Research Method

The context of this research is the coastal community residing in Kemujan Village, Karimunjawa Island, Jepara Regency, Central Java Province. This research employed the qualitative method which enables the researchers to explore the traditional medical knowledge and the utilization of medicinal plants by the community. Furthermore, the ethnobotanical method in anthropology is adapted in the research as outlined in the manual issued by WWF, UNESCO, and the Royal Botanic Gardens, Kew (Martin, 2004).

This research employed observations, interviews, and documentation as data collection techniques to understand the traditional healing practices applied by the community. Observations were conducted to directly observe healing practices using medicinal plants based on the knowledge held by coastal communities in the Kemujan Village area. Interviews were carried out in unstructured and semi-structured formats with 18 informants, consisting of local community members from various ethnic backgrounds residing in the village of Kemujan, such as the Javanese, Bugis, Mandar, and Madurese ethnic groups, local midwives/healers, communities producing lemongrass oil, communities producing coconut oil and virgin coconut oil (VCO), as well as local village officials. By engaging informants from diverse ethnic groups, the research uncovered the uniqueness of treatments from each group, local knowledge related to inherited healing practices, and treatments still utilized in daily life. This was also done to explore whether there is acculturation or assimilation of knowledge, especially related to traditional or popular healing within a family context.

The last technique employed in this anthropological research was documentation of events, supported by data from previous research reports related to ethnobotany in the Karimunjawa region, data from village websites, and information from official government institutions such as the social demographics report of Kemujan Village. The collected data was then analyzed, starting from transcribing the data, coding, and identifying specific themes based on the research objectives. Subsequently, the data was interpreted through thick description. Thick description, introduced by Geertz (2008), is an anthropological method that considers all informants' knowledge and actions related to specific contexts so that existing social events can be meaningful (Kostova, 2017).

## 3. Result and Discussions

### 3.1 Overview of the Research Context

Kemujan is one of villages in Karimunjawa District which has a heterogeneous characteristic as people of Kemujan Village come from various ethnicities and cultures. Not only are the indigenous Javanese people living there, but there are also people from other ethnic groups such as Bugis, Makassar, Mandar, Madura, Buton, and Batak. The Bugis ethnic group is the second-largest after the Javanese, and they inhabit the Batu Lawang hamlet in groups.

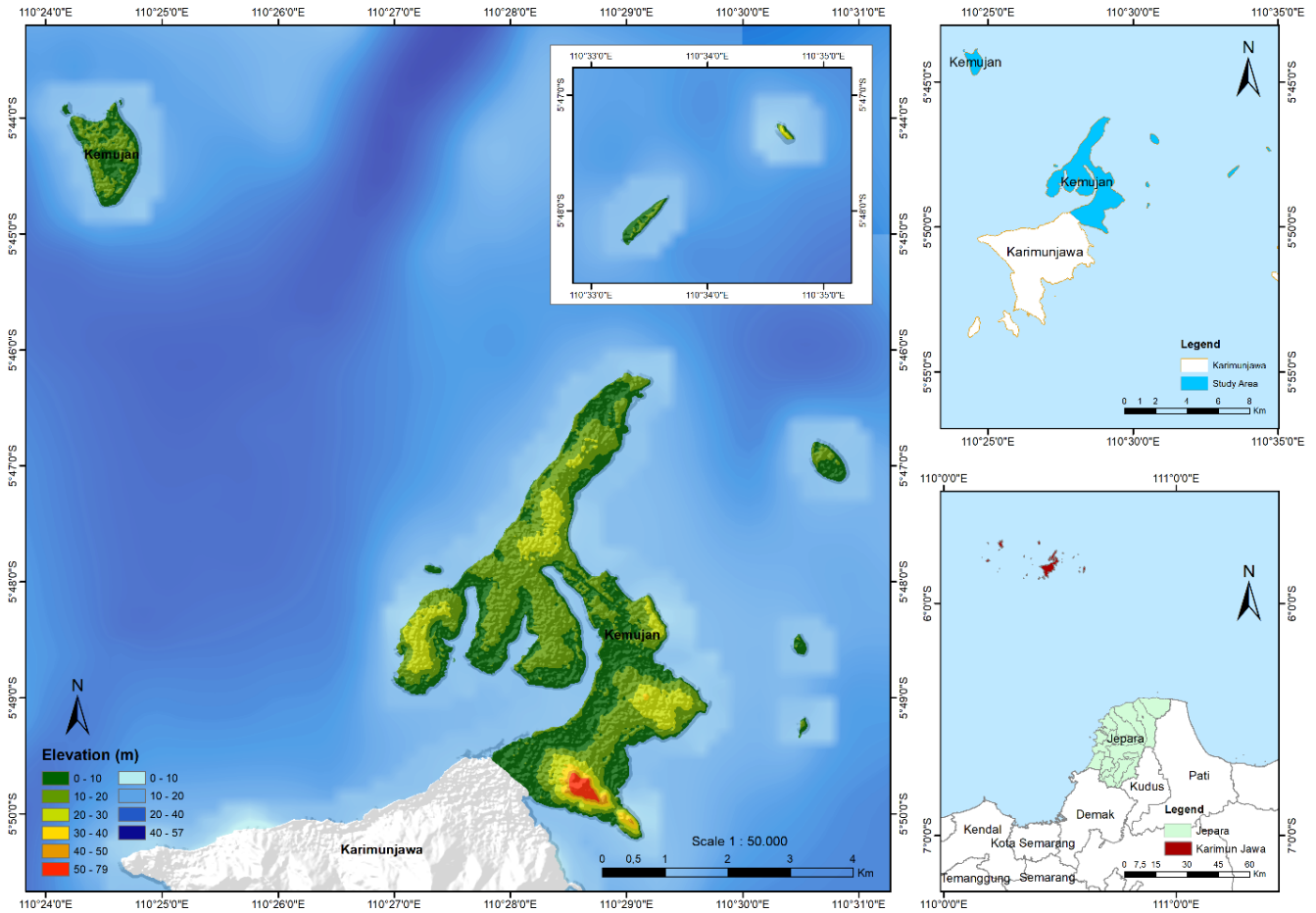


Fig 1. Map of Karimunjawa Island

Administratively, the village of Kemujan consists of several hamlets such as Legonipah, Kemujan, Jelamun, Telaga, Gelaman, Mrican, Legon Gede, Legon Pinggir, and Batu Lawang. Its area covers 1,626 hectares with 1,231 hectares of dry land, 270 hectares of plantations, 25 hectares of public facilities, and 100 hectares of forest land. The village of Kemujan borders the Java Sea directly to the north, west, and east, while it borders the Karimunjawa village to the south.



Fig 2. Left: *Jukung* – traditional wooden boat. Right: small boat, used by the community for fishing in the open sea

The majority of the population in Kemujan Village works in the maritime and fisheries sector, primarily as fishermen. The local community ventures out to sea in search of fish to meet their daily needs using privately owned traditional wooden boats and small vessels (Figure 2). The local residents, predominantly engaged in fishing, still catch fish using traditional tools (nets) and other environmentally friendly fishing gear. Fishing activities in Kemujan Village are solely for subsistence purposes. A large catch is usually sold or even given away for free to neighbors in need of fish. Kemujan Village has various natural resources, including fisheries, seaweed farming, coconut plantations, and tourism areas (owned either privately or by private companies).

### 3.2 Utilization of Medicinal Plants for Family Needs (Family Medicine and Popular Medicine)

In Kemujan Village, medicinal plants are used by the community for treating specific illnesses, not as a form of preventive measure. Typically, this is prompted by the presence of an ailment felt by individuals. Then, they contemplate alternative treatments for recovery. One decision commonly made is to utilize the plants available in the surroundings. People seek out various types of plants that can be used for treatment. The processing, preparation, and concoction of medicinal plants are tailored to the type of illness being experienced. In this regard, there are several processing methods employed by the community in Kemujan Village.



Fig 3. Processed Virgin Coconut Oil (VCO) Product from Coconut Milk

Based on interviews conducted with 18 research informants, it was found that there are around 38 types of medicinal plants utilized by the community of Kemujan Village based on the ailments they suffer from. The following description also provides detailed information regarding the plant parts used, processing methods, treatment concoctions, along with the usage and availability based on the local knowledge in that area.

Table 1. Utilization of Plants in Traditional Medicine by the Community of Kemujan Village, Karimunjawa

No.	Botanical Name	Species Local Name	English Name	Part	Medicinal Uses	Processing method	Availability
1	<i>Allium cepa</i>	Bawang merah/Bawang abang	Red Onion	Tuber	Cold, ointment for babies	Cut, add oil, then apply; finely ground, then attach	Bought from a shop
2	<i>Allium sativum</i>	Bawang putih	Garlic	Tuber	Stomach	Taken, consumed every morning	Bought from a shop
3	<i>Aloe vera</i>	Lidah buaya	Aloe Vera	Fruit	Stomachache	Peeled, the mucus is applied to the stomach; boiled, then the fruit is eaten	Cultivated in pots or land in front of the house
4	<i>Alpinia galanga</i>	Lengkuas/Laos	Galangal	Rhizome	Aches, liver, herpes	Cut, boiled, burned, pounded, the water is drunk; mixed with coconut oil and then applied to the affected area of herpes.	Grown in the yard or garden, cultivated, bought at the market
5	<i>Andrographis paniculata</i>	Sambiloto	Green Chiretta	Leaf	Itch medicine, stomach pain	Crushed, then applied to the itchy area	Bought from a shop
6	<i>Annona muricata</i>	Sirsak	Soursop	Leaf	Aches and pains	Boiled, drink the water	Grown in the yard or garden, cultivated
7	<i>Anredera cordifolia</i>	Binahong	Madeira Vine	Leaf	Wound medicine, itching	Pounded, applied to the injured area	Grown in the yard or garden, cultivated
8	<i>Apium graveolens</i>	Seledri	Celery	Leaf, stem	Growing and thickening hair	Grated, or blended, then applied to the head and between the hair.	Bought at the stall
9	<i>Cinnamomum burmannii</i>	Kayu manis	Cinnamon	Wood	Aches and pains	Boiled, then take the water.	Bought at the stall
10	<i>Citrus aurantiifolia</i>	Jeruk nipis	Key Lime	Fruit	Cough	Cut, burned, squeezed for its juice, mixed with soy sauce, free-range chicken eggs, or honey	Grown in the yard or garden, cultivated
11	<i>Cocos nucifera</i>	Kelapa/Krambil	Coconut	Fruit, flower	Sprain, fever medicine, herpes, canker sores, cooking oil, baby safety, itching, mosquito repellent, smooth breastfeeding	Grated, squeezed and taken the coconut milk, applied, boiled/roasted and drank the coconut water	Grown in the garden (coastal area)
12	<i>Coffea sp.</i>	Kopi	Coffee	Seeds	Headache medicine	Ground into powder, brewed with hot water	Bought from a shop
13	<i>Curcuma longa</i>	Kunyit/Kunir	Turmeric	Rhizome	Herpes, cough medicine, diarrhea, baby powder, body freshness, relieve menstruation	Cut, mixed with coconut oil, applied to the affected area of herpes; boiled with tamarind and the water is drunk; finely pounded and made into a poultice	Grown in the yard or garden, cultivated
14	<i>Curcuma xanthorrhiza</i>	Temulawak	Java ginger	Rhizome	Liver, stomach medicine, muscle ache	Burned, pounded, given water and drunk; boiled and the water is drunk	Grown in the yard or garden, cultivated, bought at the market
15	<i>Cymbopogon citratus</i>	Sereh	Lemon Grass	Stem	Aches, itching, boils, mosquito repellent, body freshness, cough medicine, relieve menstruation	Cut, boiled, and the water is drunk; distilled and the oil is extracted	Grown in the yard or garden, cultivated
16	<i>Daucus carota</i>	Wortel	Carrot	Tuber	Treating sore eyes	Cut, then pounded finely	Bought from a shop
17	<i>Eugenia uniflora</i>	Dewandaru	Surinam Cherry	Stem	Lowering blood sugar	boiled, drink the water	Grown in the yard or garden, cultivated

No.	Botanical Name	Species Local Name	English Name	Part	Medicinal Uses	Processing method	Availability
18	<i>Kaempferia galanga</i>	Kencur	Aromatic Ginger	Rhizome	Postpartum care for new mothers	Finely pounded, applied to the forehead	Grown in the yard or garden, bought at the shop
19	<i>Kappaphycus alvarezii</i>	Rumput laut	Seaweed	All parts	Body freshness, cough, relieve menstrual pain	Boiled together with turmeric, tamarind, and lemongrass as herbal drink	Cultivated in the sea
20	<i>Lagenaria siceraria</i>	Labu putih	Calabash	Fruit	Rashes on the baby	Grated, applied to the baby's head/fontanel.	Grown cultivated in the yard or garden
21	<i>Moringa oleifera</i>	Kelor	Moringa	Leaves	Treating sore eyes, improving breast milk production, body aches (wind-cold affliction)	Grounded, boiled, dried in the sun, blended	Grown in home gardens or orchards, both cultivated and wild-growing
22	<i>Musa acuminata</i>	Pisang/Gedang	Banana	Stem, fruit	Hair growth, housewarming event (building a house), wedding event	Water is taken from its stem, applied to the hair; the fruit is tied with wood	Grown in the yard or garden, cultivated
23	<i>Nicotiana tabacum</i>	Tembakau	Tobacco	Leaf	Body freshness (chewing betel, chewing)	Cleaned thoroughly, then added with lime	Bought from a shop
24	<i>Oryza sativa</i>	Padi	Paddy Rice	Seeds	Postpartum care for new mothers	Finely pounded, applied to the forehead	Bought from a shop
25	<i>Oryza sativa var. glutinosa</i>	Padi Beras ketan	Paddy Sticky Rice	Seeds	Baby safety, tradition	Steamed, given 7 colors	Bought at the shop
26	<i>Pandanus amaryllifolius</i>	Pandan Wangi	Pandan	Leaf, root	Speeding up pregnancy	Boil it, reduce the water.	Grows in the yard or garden, whether cultivated or wild
27	<i>Pemphis acidula</i>	Kayu stigi	Bantigue	Stem	Healing from a scorpion sting	Boiled, drink the water.	Growing area
28	<i>Peperomia pellucida</i>	Sirih cina	Pepper Elder	Leaf	High blood pressure	Boiled, take the water	Grows wild in the yard
29	<i>Physalis angulata</i>	Ciplukan	Angular Winter Cherry	Leaf, stem, root, fruit	High blood pressure	Boiled, take the water	Growing wild in the yard
30	<i>Piper betle</i>	Sirih/Suroh	Betel	Leaf	High blood pressure, eye pain, body freshness (betel chewing), feminine care	Boiled, the water is taken; cleaned thoroughly, then added with lime.	Grown in the yard or garden, whether cultivated or wild
31	<i>Psidium guajava</i>	Jambu biji	Guava	Leaf	Diarrhea	Pounded, blended, added honey water	Grown in the yard or garden, whether cultivated or wild
32	<i>Saccharum sp.</i>	Tebu	Saccharum, Sugarcane	Stem	House blessing ceremony	Attached/tied to the roof tiles; arranged/tied into a ladder	Growing in the yard or garden, whether cultivated or wild
33	<i>Sauropus androgynus</i>	Katuk	Star Gooseberry	Leaf	Smooth breastfeeding	Cooked into vegetable dish	Growing in the yard or garden, whether cultivated or wild
34	<i>Sesbania grandiflora</i>	Turi	Hummingbird	Leaf	Removing mucus from the throat of a newborn baby	Pounded, wrapped in cloth, applied to the lips/mouth; grated, squeezed, the juice applied to the baby's chest	Grown in the yard or garden, cultivated



No.	Botanical Name	Species Local Name	English Name	Part	Medicinal Uses	Processing method	Availability
35	<i>Syzygium polyanthum</i>	<i>Salam</i>	Indonesian bay leaf	Leaf	Aches	Boiled, drink the water.	Grown cultivated in gardens, cultivated
36	<i>Tamarindus indica</i>	<i>Asem</i>	Tamarind	Leaf	Fever medicine, cough medicine, body freshness, relieves menstruation	Boiled/grilled with coconut water, drink the water; boiled with turmeric and drink the water	Grown in the yard or garden, cultivated
37	<i>Uncaria gambir</i>	<i>Gambir</i>	Gambier	Leaf	Body freshness (chewing betel, chewing)	Cleaned thoroughly, then added with lime	Grown in the yard or garden, cultivated, bought at the shop
38	<i>Zingiber officinale var. rubrum</i>	<i>Jahe merah</i>	Red Ginger	Rhizome	Aches	Cut, boiled, drink the water	Bought from a stall, grown cultivated in the home yard

### 3.2.1 *Bawang Merah/Bawang Abang* (Red Onion)

*Bawang merah/Bawang abang*, scientifically known as *Allium cepa*. The people of Kemujan Village use onions as an alternative remedy for colds and for infant colic. The processing involves cutting the onions, adding oil, and applying them on the chest for cold relief. For infant colic, they are pounded into a fine paste and applied on the baby's forehead or crown. Treatment with shallots for colds is administered only when a person is experiencing a cold. For infant colic, the treatment is carried out twice a day, in the morning and in the evening.

### 3.2.2 *Bawang Putih* (Garlic)

*Bawang putih*, scientifically known as *Allium sativum*. The plant has a strong odor and a sharp taste. Garlic is known to originate from Central Asia. The local community utilizes garlic as an alternative treatment for stomach ulcers. The processing involves taking around 2–5 cloves of garlic, roasting them, and consuming them directly by individuals experiencing gastric complaints. Consumption is done every morning, once a day. No additional seasonings are required when roasting garlic. Garlic is widely available at local stores or shops in the area.

### 3.2.3 *Lidah Buaya* (Aloe Vera)

*Lidah buaya* is an ornamental plant that contains properties beneficial for health, earning it the title of a miraculous plant. This plant can be found everywhere, both in hot and cold regions, in lowlands as well as in mountains. The community in Kemujan Village uses aloe vera for stomach ache remedies. The process begins with peeling the aloe vera first. The next step involves extracting the gel from the aloe vera, which is then applied to the stomach or ingested when stomach discomfort arises. The aloe vera gel treatment is conducted by the community members 2–3 times a day.

### 3.2.4 *Lengkuas/Laos* (Galangal)

*Lengkuas/Laos* (*Alpinia galanga*) is a type of rhizomatous spice widely used as a seasoning in cooking as well as in traditional medicine. The people of Kemujan Village utilize galangal for muscle aches, liver issues, and herpes. The processing methods vary, from slicing and boiling it to extract the liquid for consumption, to roasting and mixing it with coconut for both the liquid and the fruit to be consumed, followed by pounding. Treatment with galangal for individuals with muscle aches, liver problems, and herpes involves consumption twice a day, in the morning and in the evening or afternoon.

### 3.2.5 *Sambiloto* (Green Chiretta)

*Sambiloto*, scientifically known as *Andrographis paniculata*, is a tropical plant belonging to the herbaceous plant category, encompassing roots, stems, leaves, flowers, and seeds. In Kemujan Village, the community utilizes green chiretta to treat skin itching and stomach pain. The part of the plant used is its leaves. To treat itching, green chiretta leaves are processed by grinding them into a fine paste. Subsequently, the resulting paste is applied to the itchy skin. To address stomach pain, the leaves are boiled in boiling water. The boiled green chiretta water is mixed with honey to reduce bitterness, then consumed twice a day. Green chiretta is extensively cultivated by the local community in garden areas.

### 3.2.6 *Sirsak* (Soursop)

*Sirsak*, scientifically known as *Annona muricata*. The leaves, roots, stems, fruit, and seeds of soursop can be naturally utilized in treatments. Soursop leaves are used by the Kemujan Village community to treat muscle stiffness and aches. The method involves processing a handful of soursop leaves and turmeric. Both ingredients are boiled with 3 cups of water. Once the boiled water reduces to half, it is strained to separate it from the residue. To alleviate pains caused by muscle aches or stiffness, the boiled water can be consumed in small portions, one glass, twice a day. Soursop plants are not abundantly found in this region, but some residents intentionally cultivate this plant in their home gardens.

### 3.2.7 *Binahong* (Madeira Vine)

*Binahong*, scientifically known as *Anredera cordifolia*. The local community utilizes binahong to heal wounds caused by sharp objects, accidents, falls, or itching wounds. The part of the plant used is its leaves. Fresh binahong leaves are crushed into a fine paste and then applied to the itchy and wounded areas. For emergency supplies when experiencing wounds, this plant is widely cultivated by people in front yards for easy access.

### 3.2.8 *Seledri* (Celery)

*Seledri*, scientifically known as *Apium graveolens*, is a type of leaf vegetable and medicinal plant belonging to the Apiaceae family. The community in Kemujan Village utilizes celery for hair care, such as thickening and promoting hair growth. The method involves blending the celery stem and leaves with a little water. Once smooth, the celery paste is then gently applied to the scalp. Consistent practice of this ritual is believed to gradually stimulate hair growth.

### 3.2.9 *Kayu Manis* (Cinnamon)

*Kayu manis*, scientifically known as *Cinnamomum burmannii*, is a plant belonging to the Lauraceae family and is considered a spice that is beneficial as a culinary seasoning and traditional herbal medicine. The community in Kemujan Village uses cinnamon as a remedy for muscle aches and stiffness. The processing involves cleaning all the cinnamon ingredients, then mixing them with other ingredients such as galangal and ginger. Afterwards, all the ingredients are boiled with an adequate amount of water until it boils. The cinnamon infusion is consumed every 2 days to treat muscle aches and stiffness.

### 3.2.10 *Jeruk Nipis* (Key Lime)

*Jeruk nipis*, scientifically known as *Citrus aurantiifolia*, is a plant commonly found in coastal areas such as Karimunjawa. This plant is often used to clean fish of fishy odors or to make *sambal*. The people in that area use lime to treat coughs. The processing methods vary, ranging from simply squeezing the juice to first roasting it before juicing. Other additional

ingredients mixed for treatment include a raw Javanese chicken egg yolk, honey, or soy sauce. Treatment using lime for individuals with coughs is typically done 2–3 times a day. This alternative treatment option is applicable for both children and adults.

### 3.2.11 *Kelapa/Krambil* (Coconut)

*Kelapa/Krambil*, scientifically known as *Cocos nucifera*, is a plant that can be utilized to meet human needs. The people of Kemujan Village utilize coconuts for various medical treatments such as sprains, heat remedies, herpes, mouth ulcers, cooking oil, infant safety, itching, mosquito repellent, and to enhance breast milk production. The processing methods vary, from grating and squeezing to extract the coconut milk for making oil that is then applied to sprained areas or used as mosquito repellent. Additionally, coconut oil can be used for cooking. Furthermore, coconuts can be processed by roasting or boiling to consume both the water and the fruit. Treatment using coconut can be consumed 2–3 times a day, in the morning, afternoon, and evening or night.

### 3.2.12 *Kopi* (Coffee)

*Kopi*, scientifically known as *Coffea* sp., is a tree-shaped plant belonging to the Rubiaceae family and *Coffea* genus. This plant grows upright and branches out. The people of Kemujan Village use coffee as a remedy for headaches. The process involves pounding authentic Jepara coffee, roasting it, and adding lime (derived from sea coral) after roasting. Once roasted, the coffee is stored in a jar which can last for up to one month. Coffee can be consumed in amounts of 1–2 spoonfuls and brewed with hot water. Treatment with coffee is typically taken twice a day, in the morning and in the evening or at night.

### 3.2.13 *Kunyit/Kunir* (Turmeric)

*Kunyit/Kunir*, scientifically known as *Curcuma longa*. The people of Kemujan Village use turmeric for treating herpes, cough, diarrhea, infant colic, body freshness, and easing menstrual cramps. The processing methods vary, from slicing it and mixing it with coconut oil to apply on areas affected by herpes, to boiling it with tamarind and consuming the liquid, commonly known as "*jamu kunir asem*," and pounding it finely to make into infant colic medicine. Treatment using turmeric is typically consumed 2–3 times a day, in the morning, afternoon, and evening or night.

### 3.2.14 *Temulawak* (Java Ginger)

*Temulawak*, scientifically known as *Curcuma xanthorrhiza*. is a plant commonly used as a medicinal herb and is often found in tropical forests. The part of the plant typically utilized is its rhizome. The people of Kemujan Village use temulawak for liver issues, stomach problems, and muscle aches. The processing methods vary, including roasting it and placing it inside a coconut to consume the water, pounding it with added water for consumption, and boiling it to make a drink. Treatment with temulawak is typically consumed twice a day, in the morning and in the afternoon or evening.

### 3.2.15 *Sereh* (Lemon Grass)

*Sereh*, scientifically known as *Cymbopogon citratus*. The people of Kemujan Village use lemongrass for muscle aches, itching, boils, repelling mosquitoes, body freshness, cough relief, and easing menstrual cramps. The processing methods vary, from boiling and consuming the liquid to producing lemongrass oil for topical application. To address muscle

aches, itching, boils, mosquito repellent, body freshness, cough relief, and menstrual cramps, lemongrass is consumed 2–3 times a day, in the morning, afternoon, and evening.

### 3.2.16 *Wortel* (Carrot)

*Wortel*, known scientifically as *Daucus carota*, is an annual plant in the form of grass and is commonly grown in highland areas. The people in Kemujan Village use carrots as an alternative treatment for eye ailments. The processing involves taking 5 pieces of carrots and a handful of Moringa leaves, pounded finely. To address eye ailments, the crushed mixture or Moringa leaf juice can be consumed twice a day, in the morning and evening.

### 3.2.17 *Dewandaru* (Surinam Cherry)

*Dewandaru* (*Eugenia uniflora*) tree is a typical endemic plant of Karimunjawa. It is utilized as an alternative medicine for individuals suffering from high blood sugar or diabetes. The part of the plant used is its leaves. The processing involves boiling them. The boiled *dewandaru* leaf infusion can be consumed directly twice a day, in the morning and evening. *Dewandaru* plants can be found in every corner of the Karimunjawa region, whether cultivated or growing wild.

### 3.2.18 *Kencur* (Aromatic Ginger)

*Kencur*, scientifically known as *Kaempferia galanga*. In Kemujan Village, the locals use aromatic ginger as an alternative treatment for infant health care. This involves using aromatic ginger as an herbal compress placed on the baby's forehead. This practice aims to provide comfort to the baby and make the baby's eyes clearer and brighter. The processing involves crushing the aromatic ginger into a fine powder, mixing it with lime, and then applying it to the baby. Usually, this treatment is done once a day, either by a traditional healer or the baby's mother.

### 3.2.19 *Rumput Laut* (Green Seaweed)

*Rumput laut* (*Kappaphycus alvarezii*) is a type of low-level plant in the algae group that grows in seawater. Seaweed is one of the marine commodities with a fairly high economic value. While in other regions seaweed is utilized as a primary ingredient in food and cosmetics, in Kemujan Village, seaweed is used as an additive when making turmeric tamarind herbal medicine. The addition of seaweed to this herbal medicine aims to provide a fresh aroma and taste. In Karimunjawa, there are two types of seaweed cultivated, brown and green. Typically, green seaweed is used in herbal medicine preparation. Seaweed is usually harvested after about 3 months of cultivation. Those who regularly consume the herbal medicine mention that the addition of seaweed provides a distinct flavor to the herbal drink.

### 3.2.20 *Labu Putih* (Calabash)

*Labu putih* (*Lagenaria siceraria*) is an herbaceous plant that grows by trailing, with watery and soft stems. The community in Kemujan Village utilizes bottle gourd for infant care. Bottle gourd is often used as a cooling agent for babies. It is believed by the local people to provide comfort to infants and alleviate symptoms of elevated body temperature. The processing involves cleaning and grating or crushing the bottle gourd and shallots. Once both ingredients are crushed, they are placed on the baby's fontanel (remedy for infant fever).

### 3.2.21 Kelor (Moringa)

*Kelor*, or scientifically known as *Moringa oleifera*. The people in Kemujan Village utilize Moringa leaves as an alternative treatment for sore eyes, improving breast milk production, and treating body aches or wind-cold afflictions. The processing methods vary, including pounding with carrots until finely ground, boiling, drying in the sun, and blending. Other additional ingredients mixed for treatment include flavor enhancers. Treatment using Moringa for individuals with eye problems, to improve breast milk production, and for body aches (wind-cold) is carried out 2–3 times a day. This alternative treatment option is suitable for both adults and the elderly.

### 3.2.22 Pisang/Gedang (Banana)

*Pisang/Gedang*, scientifically known as *Musa acuminata*, are one of the many types of herbal plants. Bananas have numerous benefits for the community in Kemujan Village, serving as both an alternative healthcare option and for ritual purposes. The parts of the banana plant utilized are the stem and leaves. The water from the banana tree's stem is used for hair treatment to promote thickness. After harvesting bananas, the remaining plant stem is typically left with part of the stem and its roots intact. A hollow is then fashioned into the remaining stem portion. After being left for approximately 1–2 days, water will seep out from the stem's crevices and fill the hollow. Besides hair treatments, banana fruits are also employed in various ritual activities such as weddings, funerals, and during house construction. Bananas utilized in wedding traditions typically symbolize safety, warding off evil and averting potential misfortunes. Various types of bananas utilized include kapok bananas, raja bananas, and emas bananas.

### 3.2.23 Tembakau (Tobacco)

*Tembakau*, known scientifically as *Nicotiana tabacum*. The people of Kemujan Village use tobacco for body freshness (chewing for refreshment). Tobacco leaves are chewed with betel leaves and gambier. An additional ingredient used is lime, typically consumed 2–3 times a day, in the morning, afternoon, and evening.

### 3.2.24 Padi/Beras (Paddy Rice)

*Padi/Beras*, scientifically known as *Oryza sativa*. The people of Kemujan Village utilize rice as an ingredient to make postpartum medicinal rice for mothers or children. The process involves washing the rice that will be used to make the traditional medicine in the required quantity. Following this, herb called kencur, which is used as an additional ingredient for the traditional medicine, is finely sliced. These two ingredients are then mixed and blended together. Once the mixture is smooth, it can be stored in jars or bottles for preservation over the next few days, then refrigerated. When preparing the medicine, it can be taken in small quantities.

### 3.2.25 Padi/Beras Ketan (Paddy Sticky Rice)

*Padi/Beras ketan*, scientifically known as *Oryza sativa var. glutinosa*. The people of Kemujan Village use sticky rice for a ceremony called "udun-udun" or a traditional belief ceremony believed to provide safety for babies. The method involves steaming the sticky rice, coloring it in seven colors, and placing it on a tray. The baby will then step on each of the arranged sticky rice grains on the tray. This event is typically carried out when the baby is about to start walking or stepping on the ground.

### 3.2.26 *Pandan Wangi* (Pandan)

*Pandan wangi*, scientifically known as *Pandanus amaryllifolius*, is a monocot plant from the Pandanaceae family. The plant is commonly used for its antidiabetic, antioxidant, analgesic (toothache medication), and antibacterial properties. The people of Kemujan Village in Karimunjawa utilize pandan roots to expedite or induce pregnancy by boiling the roots in water until it boils, then separating the roots from the water. The boiled water infusion is consumed twice a day, in the morning and evening.

### 3.2.27 *Kayu Stigi* (Stigi Wood / Bantigue)

*Kayu Stigi*, scientifically known as *Pemphis acidula*, is a shrub plant that grows in rocky coastal areas, sandy areas, or on the edges of mangrove forests. Karimunjawa is a suitable region for this plant. People in this region utilize *stigi* wood as an alternative treatment for individuals stung by venomous animals like scorpions and wasps. The part of the plant used is its wood. A handful of *stigi* wood is boiled in boiling water. Then, the boiled *stigi* wood infusion is strained and administered to individuals stung by poisonous animals. *Stigi* wood can be easily found in the Kemujan Village area. This tree is not cultivated but can be found growing wild along the coastal areas.

### 3.2.28 *Sirih Cina* (Pepper Elder)

*Sirih cina*, scientifically known as *Peperomia pellucida*. The people in Kemujan Village utilize Chinese Knotweed as an alternative treatment for high blood pressure. The processing method involves boiling a handful of Chinese Knotweed along with all parts of Ciplukan, including leaves, stems, roots, and fruits until boiling. The liquid is separated from the dregs, and then consumed. To address high blood pressure, the decoction is consumed twice a day, in the morning and evening.

### 3.2.29 *Ciplukan* (Angular Winter Cherry)

*Ciplukan*, known scientifically as *Physalis angulata*, belongs to the Solanaceae family. The people of Kemujan Village utilize ciplukan as an alternative treatment for high blood pressure. The processing method involves boiling all parts of the plant - leaves, fruit, stem, and roots - with the addition of a handful of Chinese knotweed leaves. After boiling, the dregs from the liquid should be separated. To treat high blood pressure, the decoction is consumed twice a day, in the morning and evening.

### 3.2.30 *Sirih/Suroh* (Betel)

*Sirih/Suroh*, scientifically known as *Piper betle*. The people of Kemujan Village utilize betel leaf as an alternative treatment for high blood pressure, eye ailments, body freshness (chewing for refreshment), and feminine hygiene. The processing methods vary, ranging from boiling, extracting the liquid, and consuming it directly (chewing). Additional ingredients mixed for treatment include lime. Treatment using betel leaf for individuals with high blood pressure, eye ailments, and body freshness is typically done 2–3 times a day, in the morning, afternoon, and evening.

### 3.2.31 *Jambu Biji* (Guava)

*Jambu Biji*, scientifically known as *Psidium guajava*. Guava is an agricultural commodity that is easily found in the Southeast Asian region, including Indonesia. The people in Kemujan Village utilize guava leaves to treat diarrhea. The processing involves taking a handful of guava leaves and 2–5 turmeric rhizomes, pounding them finely, and then adding

salt. To address diarrhea, the juice extracted from the guava leaves can be consumed twice a day, in the morning and in the afternoon.

### 3.2.32 *Tebu* (Saccharum/Sugarcane)

The community in Kemujan Village utilizes *tebu* (*Saccharum* sp.) for local ritual and cultural traditions, particularly concerning the human life cycle, especially when a child starts walking. This tradition is called *tedhak siten*, or locally referred to as *udun-udun*. The sugarcane is arranged in the form of steps, with two sugarcane sticks placed at the right and left ends. In the middle, the sugarcane is hollowed out and another sugarcane is inserted to form steps. These steps serve as platforms for the children, who will climb them one by one during this tradition. Usually, parents also hold their children's hands to prevent them from falling while walking/climbing the sugarcane steps. In addition to sugarcane, there is also sticky rice that has been prepared and colored in seven hues, placed in a tray or basin for the children to step on during the *udun-udun* tradition. The purpose of this tradition is to signify the hope that the child will walk through life well until adulthood, experiencing good fortune and staying away from all harm.

### 3.2.33 *Katuk* (Star Gooseberry)

*Katuk*, scientifically known as *Sauropus androgynus*, is a leafy vegetable plant widely found in Southeast Asia, growing in lowlands up to 1,300 meters above sea level. Sweetleaf leaves are known for their ability to improve the flow of a mother's breast milk. In Kemujan Village, the community utilizes sweetleaf leaves to aid in breastfeeding for mothers who have recently given birth. Abundant and high-quality breast milk is crucially needed by mothers postpartum until the baby is around 6 months old. Therefore, sweetleaf leaves become an alternative choice to enhance breast milk production by preparing sweetleaf as a clear soup. Sweetleaf plants are usually easily found and cultivated in household gardens.

### 3.2.34 *Turi* (Hummmingbird)

*Turi* plant, scientifically known as *Sesbania grandiflora*, originates from Southeast Asia and South Asia. However, presently, *turi* is widely distributed and found in tropical regions around the world. In the local community, *turi* is utilized solely for its flowers as a fresh vegetable condiment in meals. In Kemujan Village, *turi* is used for baby cleansing or to clear a baby's throat. The purpose is to remove mucus from the baby's throat. Newborn babies usually have residual mucus in their throats. The part of the plant used is its leaves. The processing involves grinding *turi* leaves into a fine paste, wrapping them in a clean cloth, and then applying the paste to the baby's mouth or tongue. The bitterness released from the crushed *turi* leaves stimulates the baby to cough, helping to expel mucus from the throat. This method is considered the most effective way to help clear any remaining or trapped mucus in the baby's throat.

### 3.2.35 *Salam* (Indonesian Bay Leaf)

*Salam*, scientifically known as *Syzygium polyanthum*. The people of Kemujan Village use bay leaves as an alternative remedy for muscle aches. The preparation involves boiling 1–3 bay leaves along with ginger, lemongrass, and galangal. Once the mixture boils, the decoction is ready for consumption. To address muscle aches, the ginger decoction can be consumed twice a day, in the morning and evening.

### 3.2.36 *Asem* (Tamarind)

*Asem*, scientifically known as *Tamarindus indica*, is a long-lived hardwood tree. The people of Kemujan Village use tamarind as an alternative remedy for reducing fever, cough, body freshness, and easing menstrual cramps. The processing methods vary, ranging from boiling or roasting with coconut water, to boiling with turmeric and consuming the liquid. Treatment using tamarind is typically consumed twice a day, in the morning and in the evening or at night.

### 3.2.37 *Gambir* (Gambier)

*Gambir*, scientifically known as *Uncaria gambir*. The people of Kemujan Village use *gambier* for body freshness (chewing for refreshment) by chewing it (locally known as "*nginang*"). Along with betel leaves, tobacco, and lime, it is usually consumed twice a day. Although *gambier* leaves have a strong distinctive aroma (in Javanese referred to as "*langu*"), the community still enjoys it and the smell does not deter them from consuming it as part of the chewing tradition in this area. Even though *gambier* is not found in Kemujan Village, it can be obtained or bought at shops, making it easily accessible to the locals.

### 3.2.38 *Jahe Merah* (Red Ginger)

*Jahe Merah*, scientifically known as *Zingiber officinale var rubrum*. The people of Kemujan Village use ginger for treating muscle aches. The processing involves boiling 1–3 pieces of ginger with bay leaves, lemongrass, and galangal. Once the mixture boils, the decoction is ready for consumption. To alleviate muscle aches, the ginger decoction is consumed twice a day, in the morning and evening.

In the preparation of various plants for medicinal purposes, the local community also uses additional ingredients such as brown sugar, salt, and honey. Brown sugar, or as the people in Kemujan Village refer to it, "*gula merah*," is used to add sweetness to herbal remedies. Some herbal concoctions derived from specific plants tend to have a bitter taste when processed and boiled. Therefore, brown sugar is added to make them sweet and pleasant to drink. Salt incorporated in the making of traditional herbal remedies serves to enhance the existing flavors of the plants that are boiled or processed fresh for the herbal drink. Honey is a crucial component in the production of traditional herbal remedies as it provides a cooling sensation during the healing process. For external treatments (not for oral consumption) such as muscle aches, stiffness, or strains, oils are used to assist in massaging the affected area. This provides smoothness and ease during massage. The oils commonly used are regular cooking oil, coconut oil, or baby oil from local shops.

## 3.3 Utilization of Medicinal Plants for Traditional and Cultural Practices in the Community

### 3.3.1 *Pilisan* for Newborn Babies

*Pilisan* for infants is carried out by the local community to provide healthcare for newborns. Typically, the *pilisan* is administered by the mother to her newborn baby. In Kemujan Village, the *pilisan* is performed using plants found in the vicinity. It is placed on the baby's forehead.



"After giving birth, once the umbilical cord is out and cut, the next step is applying turmeric and lime as a pilis placed on the baby's forehead. Lime is made from stones taken from the mountains, burned, melted, and eventually becomes lime ready for use. Turmeric is grated, then mixed with a bit of lime, so that the child's eyes do not become cloudy." (Interview with Mrs. S, housewife, March 9, 2024)

"Setelah melahirkan, jika tali pusarnya sudah keluar dan dipotong. Tahap selanjutnya adalah mengolesi kunyit dan kapur sebagai pilis yang diletakkan di dahi anaknya. Kapur terbuat dari batu yang diambil dari gunung, dibakar, lalu mencair, akhirnya menjadi kapur yang siap dimanfaatkan. Kunyit diparut, setelah itu di campurkan dengan sedikit kapur, supaya tidak buram matanya." (wawancara dengan Ibu S, ibu rumah tangga, 9 Maret 2024)

A newborn baby, around 1–7 days old (one week), is usually given a *pilisan* on their forehead. Based on the interview with one mother who has experience in preparing *pilisan* for her child, it is mentioned that the plant used to make *pilisan* is turmeric. The finely grated turmeric is mixed with lime. The mixture of *pilisan* will result in a red color. It is then placed on the forehead of the newborn baby. This practice is believed by the community to prevent the baby's eyes from becoming cloudy and keep them clear.

### 3.3.2 Treatment for Local Illness 'sawan' in Babies

In local people believe, *sawan* in babies occur as a result of unexplained disturbances originating from outside. *Sawan* comes in various types, such as *sawan* associated with a wedding or *sawan* linked to a person's passing. The *sawan* related to a person's passing refers to a situation where a small child is taken by their mother to the place of a deceased individual. According to local beliefs, there are unseen entities following the child. As a result, the child experiences various illnesses and a fever. To treat this, the local baby healer provides several options to address these local illnesses.

"The remedy uses jamu sawanan, not ingested but made into a compress. For instance, excuse me, if someone passes away, just a brief encounter can result in sawan. This is treated by obtaining soil from the deceased person's grave, leftover bathing water of the deceased, if possible. This is then made into a compress with grave soil and enchantments from jamu sawanan. Sometimes, these sawan in children don't occur immediately after the passing of someone. There have been incidents occurring after seven days (35 days). Then I say, 'Go fetch it there, and there will be healing.' The sawan relief is made with grave soil from the deceased person. Subsequently, seeking intermediary help from the deceased person. For instance, if their name is 'Bu Salamah', the deceased person's name must be invoked. Seeking an intermediary as a facilitator. This intermediary is indeed Allah SWT." (Interview with Mrs. SL, baby healer, March 10, 2024)

"Obatnya menggunakan jamu sawanan, tidak diminum tapi dibuat menjadi parem. Contohnya, maaf, jika ada orang yang meninggal, yang hanya berpapasan saja bisa terkena sawan. Itu disembuhkan dengan cara diambilkan tanah kuburannya, air sisa mandi jenazah, kalau bisa. Nanti dibuat parem dengan tanah kuburan dan jampi jamu sawanan. kadang kejadian sawanan pada anak ini tidak langsung saat hari ada orang meninggal. Pernah ada kejadian setelah selapan hari (35 hari). Terus saya bilang, ambilkan sana, nanti akan sembuh. Diambilkan jamu sawan itu dengan tanah kuburan orang yang meninggal. Kemudian, meminta wasilah dari orang yang meninggal. Misalkan namanya adalah 'Bu Salamah', maka harus diucapkan orang yang meninggal itu. Meminta wasilah sebagai perantara. Perantaranya itu kan Allah SWT." (wawancara dengan Ibu SL, dukun bayi, 10 Maret 2024)

### 3.3.3 Wedding Tradition

Marriage is sacred in Karimunjawa Island. There are special stages that must be passed and specific rituals that must be undergone by the bride and groom. In Kemujan Village, in the wedding tradition, there is no *siraman* ceremony as commonly found in Javanese regions. However, there are several food preparations that must be made for the wedding ritual. This is done with the belief in the safety and smoothness of the marriage, and to ward off misfortune.

*“Here, there is no ceremonial tradition of siraman. As for the bride and groom, they simply wear kupat lepet, which is then mixed with whatever is processed there. Anything available there, such as rice, cigarettes, and sugar, is given to the one organizing the event. The organizer is the bridal shaman for the young couple.” (Interview with Mrs. SF, housewife, March 9, 2024)*

*“Disini tidak ada tradisi siraman. Kalau pengantin ya hanya seperti itu, pakai kupat lepet saja, apa yang diolah disana kemudian dicampurkan. Apapun yang ada disana, seperti beras, rokok, dan gula. Diberikan kepada orang yang menata. Yang menata adalah dukun pengantin bagi orang-orang muda.” (wawancara dengan Ibu SF, ibu rumah tangga, 9 Maret 2024)*

### 3.3.4 House Construction Tradition

There is a unique tradition among the people of Kemujan Village and Karimunjawa when they plan to build a house. It is not just about physical or material preparations such as money; there are other traditions that need to be prepared, including special rituals.

*“The main tradition is selamatan. Usually, bananas are tied at the top of the house, one bunch of bananas. There are special bananas known as pisang raja or pisang kepok tahun, sugar cane, then tied on the roof tiles. Additionally, they make janur to create ‘kupas lepet’, prepare chicken ‘ungkep/ingkung’, and also young coconuts. These are given to the house builders to be eaten together. It’s a hereditary tradition from our grandparents and cannot be abandoned.” (Interview with Mrs. SF, a homemaker, March 9, 2024)*

*“Tradisi yang utama adalah selamatan. Biasanya pisang di tali di bagian atas, pisang 1 tandan (pisang utuh). Ada pisang raja, atau pisang kepok tahun, tebu, terus diikat di atas rumah di bagian genteng. Kemudian juga membuat janur dibuat kupas lepet, membuat ayam ungkep/ingkung, dan juga kelapa muda. diberikan kepada orang yang membangun rumah, untuk dimakan bersama. Ya itu tradisi turun temurun dari kakek nenek dan tidak bisa ditinggalkan.” (wawancara dengan Ibu SF, ibu rumah tangga, 9 Maret 2024)*

## 3.4 The Role of Local Healers for the Community in Kemujan Village

In the remote rural area situated in the middle of the island, the presence of traditional healers becomes crucial and is chosen as a primary option for treatment. Local healers or shamans are individuals trusted by the community as an alternative treatment option, apart from modern medical treatments provided by doctors. In the Kemujan Village area, these healers are known as *dukun bayi* (baby healers). There are two active healers up to this day, namely Mrs. S and Mrs. K. Both are healers who are called upon when a mother has given birth and they help care for the baby. Typically, they assist in caring for the baby up to 36 days of age. In addition to aiding in caring for the baby, they are also trusted to treat other ailments such as muscle aches, stomachaches, gastric issues, and other internal ailments. Traditional healers are no longer permitted to handle childbirth; if a birth occurs, their role is purely supportive. Current regulations provide

an opportunity for healers to undergo a 3-month training before officially becoming certified healers. The healers in this area utilize plants in their treatments, such as turmeric, Java ginger, aromatic ginger and other herbal concoctions readily available in the surrounding environment. The processing methods are kept simple, whether using dried or fresh herbs, tailored to the specific ailments presented by patients seeking treatment from the traditional healers. Additionally, these baby healers do not forsake their Muslim beliefs. They recite special prayers while conducting treatment practices on patients.

*“The prayers are varied. In medical practice, there are no prayers. In medicine, they tend to mention the specific diseases, whereas traditional healers treat ailments by massaging the affected area and reciting prayers that are accepted by Allah SWT. The prayers are in Javanese language for efficacy. Each ailment has its specific prayer, so it varies.” (Interview with Mrs. S, baby healer, March 10, 2024)*

*“Doanya itu bermacam-macam. Jika medis kan tidak ada doa-doanya. Di medis itu kan cenderung menyebutkan penyakit-penyakitnya apa saja, kalau dukun itu menyembuhkan dengan cara memijat bagian sakit, menyemburkan doa-doa yang itu diridhai oleh Allah SWT. Doanya menggunakan bahasa Jawa supaya mujarab. Setiap penyakit ada doanya masing-masing, jadi berbeda-beda.” (wawancara dengan Ibu S, dukun bayi, 10 Maret 2024)*

An interview with one of these traditional healers highlights how the collaboration between local knowledge and religion occurs. When conducting healing practices, these healers incorporate prayers to further strengthen their treatment. It is not just a collaboration between the traditional healers and religious teachings or prayers; there is also collaboration between local healers and medical healers—doctors serving as representations of modern medical practitioners. According to the local healer, doctors often seek the assistance of traditional healers to treat their patients. If a patient does not recover promptly or fully under a doctor’s care, the doctor might not hesitate to suggest and refer the patient for traditional treatment.

*“There was a case of typhoid fever, and Dr. S (doctor at the local community health center) was the primary choice for patients seeking treatment for that illness. She reached out to me: ‘Cik, if they are brought here and don’t recover, please assist with natural treatment.’” (Interview with Mrs. S, baby healer, March 10, 2024)*

*“Pernah ada yang sakit tipes, Dr. S (dokter di puskesmas setempat) menjadi andalan pilihan pasien untuk berobat jika terkena penyakit tersebut. Meminta tolong pada saya: Cik kalau misal dibawa kesini belum sembuh, minta tolong untuk diobati secara alami saja ya.” (wawancara dengan Ibu S, dukun bayi, 10 Maret 2024)*

Mrs. S recounted her experience of being asked for help by a doctor to assist a patient with typhoid fever who was not recovering. She was requested to treat the illness using natural methods and ingredients according to her expertise. In her treatments, the traditional healer also needed to be proactive in providing herbal remedies when someone fell ill. The herbal remedies typically given by the healer are traditional herbal drinks or *jamu*. It is not uncommon for the healer to add additional ingredients to make the herbal drink more palatable. For instance, when targeting treatments for children’s illnesses, the healer might add syrup to the herbal drink. The purpose of adding syrup to the herbal drink is to make it enjoyable, sweet, and appealing to children so that they are willing to consume it. Children would not perceive the beverage as *jamu* but simply as a regular syrup-based drink.

This study identified 38 plant species utilized by the community to address various health issues, including colds, fever, stomach aches, high blood pressure, and muscle aches. Additionally, these plants are used for wound treatment,

postpartum care, and child health. The community employs simple preparation techniques such as boiling, grinding, or mixing the plants with other natural substances like honey and coconut. The practice of using plants as medicine is not only carried out as a form of family healthcare but is also prepared by traditional healers in Karimunjawa for their clients. The people of Kemujan Village access these plants by intentionally cultivating them in their home gardens, which reflects the community's sustainability practices. Plants that are not readily available at home are typically purchased from local markets in the village.

Most of these plants are also used in traditional medicinal practices by other ethnic groups in Indonesia, including turmeric (*Curcuma longa*), Java ginger (*Curcuma xanthorrhiza*), and aromatic ginger (*Kaempferia galanga*), are key ingredients in the traditional herbal drink *jamu* among the Javanese community in Indonesia (Sumarni, Sudarmin and Sumarti, 2019, Husain et al., 2019). In Karimunjawa, specifically, turmeric is also used to maintain children's eye health.

The green chiretta plant (*Andrographis paniculata*) is also used by the community in Semarang City to address skin problems, improve blood circulation, and treat hypertension (Husain et al., 2019). We also observed use of plants for children's health. Red onion mixed with coconut oil is used as a rub to provide warmth for children. During the baby ceremony known as *udun-udun*, sticky rice is used to offer protection for the baby. For maternal health, aromatic ginger (*kencur*) is utilized for mothers who have just given birth. This differs from the community in Magelang, Central Java, where binahong (*Madeira vine, Anredera cordifolia*) is used to treat postpartum wounds (Wijayanti and Esti, 2017). For mothers experiencing difficulties in breastfeeding, it is common across Indonesia to consume boiled katuk (*Sauropus androgynus*). Additionally, lemongrass (*Cymbopogon citratus*) is used as a food spice and as a main ingredient in the herbal drink *jamu*, which is typically served with warm water.

The use of betel (*Piper betle*) varies between the Sasak community in Lombok and the Batak community in North Sumatra (Malau and Hutasoit, 2015, Husain and Wahidah, 2018). The Batak Toba community applies betel leaves as one of the ingredients in the preparation of *dampol tongosan*, a type of oil used to treat bone conditions. Meanwhile, the Sasak community in Lombok uses betel as part of *obat sembek*, a remedy for various ailments.

However, certain coastal and endemic plant species are consumed for health purposes, including seaweed (*Kappaphycus alvarezii*) to treat coughs and menstrual issues in women, kayu stigi (bantigue, *Pemphis acidula*) to heal wounds caused by animal bites, and dewandaru (Surinam cherry, *Eugenia uniflora*) to lower blood sugar levels. Another plant utilized is pandan wangi (fragrant pandan, *Pandanus amaryllifolius*), which is believed to expedite pregnancy in women, although this plant is not widely used by other communities in Indonesia. The use of these coastal plant resources also reflects the community's adaptation to coastal and island ecosystems.

In addition to their role in promoting health, some plants are used in specific rituals, such as house construction. Banana fruit, sugarcane stalks, coconut leaves, and coconuts are commonly used during house-building ceremonies. These plants hold symbolic meaning for the homeowners and the community, representing their wishes for the well-being and prosperity of the family residing in the house.

Although this study involved only 18 informants, the use of in-depth interviews allowed for the collection of more detailed data regarding the use of plants for health and rituals. However, scheduling interviews posed a challenge, as many informants were occupied with work during the day.

A specific understanding of local knowledge and practices could not be fully achieved due to the diverse ethnic backgrounds of the informants. Since this study was limited to Karimunjawa Island, particularly the village of Kemujan, it

is not possible to generalize the findings to other coastal communities in Indonesia, given the cultural and environmental differences. The study also has limitations in comparing the practices of this community with those of urban populations or agrarian communities.

The research did not include quantitative data that could have enriched the findings. Nevertheless, the study employs a qualitative approach aimed at understanding the meanings and practices associated with medicinal plant use and the incorporation of plants in rituals.

## 4. Conclusions

In conclusion, use of medicinal plants in traditional medicine represents an important part of cultural heritage. Its preservation should include documenting the knowledge passed down through generations, documenting the types of plants, their uses, and their role in cultural practices. In line with this study, the local knowledge in Karimunjawa should be written and documented to ensure it is accessible and readable by all members of the community, both older and younger generations.

The practice of cultivating medicinal plants should be promoted in households as a way to support the conservation of medicinal plants. This not only helps sustain biodiversity but also provides easy and free access to the plants needed.

Preserving and conserving medicinal plants is not only about maintaining biodiversity and environmental sustainability from a natural perspective but also about protecting the socio-cultural aspects of local knowledge, ensuring it does not disappear over time.

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