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Short communication: Traditional medicinal plants and their uses from Sembirai Village, Kota Belud District, Sabah State, Malaysia Borneo

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Abstract. *Mahali SNH, Derak R, Aziz ZA, Tobi B. 2023. Short communication: Traditional medicinal plants and their uses from Sembirai Village, Kota Belud District, Sabah State, Malaysia Borneo. Biodiversitas 24: 5956-5961.* The Sama-Bajau of the Kota Belud District in Sabah, Malaysia, uses traditional medicine as an alternative to conventional medicine. However, this knowledge is at risk of disappearing because it has not been scientifically documented. The aim of this study was to identify the various traditional medicinal plants used to treat various common diseases. The primary data for this qualitative study was collected through semi-structured interviews, pictures, and observations. Two practitioners of traditional Sama-Bajau medicine were selected based on their role as skilled healers and their importance to the villagers during times of emergency. They were also chosen based on their reputation in their community and their vast knowledge of traditional herbs. Based on their interviews, 30 plant species from 22 families were identified as traditional medicines. The Arecaceae, Moraceae, and Zingiberaceae families are among the different herb families used by the Sama-Bajau. The simple treatment methods used by the healers involve the use of leaves, rhizomes, tubers, stems, bark, and fruits. There are various methods of preparing medicines, such as boiling, simmering, brewing, and chewing. The use of plants as traditional medicine is an important part of the indigenous knowledge of the Sama-Bajau society and holds great potential for future development.

Keywords: Local knowledge, medicinal plant, North Borneo, Sama-Bajau traditional knowledge, traditional medicine

INTRODUCTION

Malaysian rainforests are incredibly rich in species diversity due to their unique natural evolution over 130 million years. Sabah, a state in the easternmost part of Malaysia and the northernmost part of the island of Borneo, covers an area of about 28,417 square miles (73,600 square kilometers). The Island of Borneo is the largest island in the Malay Archipelago and the third largest island in the world. It lies southwest of the Philippines and north of Java. Sabah is the second largest state in the Federation of Malaysia after Sarawak, with a total area of about 7.4 million hectares. More than half of this area, about 4.7 million hectares, are forests and incredibly rich in biodiversity (Kulip 2014). Sabah's forests offer a distinct diversity of tropical rainforest species, all of which play an important ecological role. Sabah is home to an estimated 10,000 plant species, almost 30% of which are exclusive to the region (Muhammed and Muthu 2015). Sabah's rich biodiversity resources and diverse demographic backgrounds make it an appropriate place for the study of medicinal plants (Haris et al. 2023).

Sabah is also known for its cultural richness, with over 50 ethnic groups and over 80 spoken languages and dialects (Muhammed and Muthu 2015). Its native inhabitants possess deep knowledge and understanding of the local plant species diversity and their uses. Many Sabah ethnic groups, including the Sama-Bajau, use various local plants as medicine (Kulip et al. 2019). The Sama-Bajau ethnic group is the second largest indigenous community in Sabah after the Kadazan-Dusun, and they make up 13% of the total indigenous population in Sabah (Muhammed and Muthu 2015). In terms of ethnic grouping, the Sama-Bajau ethnic group living in the West Coast region is known as Bajau Darat, while the Bajau living in the East Coast region is known as Bajau Laut. The Bajau Darat lives in the Kota Belud District, while the Bajau Laut resides in the Semporna District. Bajau Darat is also known as ‘Sama’. Other non-Bajau ethnic groups refer to them as ‘Bajau’, while members of the Bajau group use the term ‘Sama’ instead (Mahali 2014).

Kota Belud is a federal constituency in Sabah, Malaysia, and is currently divided into four districts, namely Pintasan (formerly known as Tempasuk), Tempasuk, Usukan and Kadamaian. Kota Belud is located less than 80 kilometers from Kota Kinabalu and covers an area of 1,372 square kilometers, consisting of 173 registered villages as of 2021. Kota Belud is divided into 20 districts, namely Kulambai, Ambong, Sembirai, Kota Belud, Kedatuan, Pirasan, Tempasuk, Rosok, Taun Gusi, Keguraan, Rampayan, Dudar, Kelawat, Kinasaraban, Lasau, Mangkulat, Woriou, Taginambur, Kebayau and Kadamaian (Kota Belud Liaison Office 2021). The residents of Kota Belud belong to various ethnic groups, mainly Sama-Bajau, Iranun, Dusun and Rungus (Awang-Kanak et al. 2018). Kota Belud is also known by its epithet,

the "East Cowboy District", because the Sama-Bajau, famous for their horse-riding skills, are called the cowboys of the East (Yakin 2017; Ismail et al. 2017). Most of them are farmers, pastoralists and those who live in the coastal area are experienced fishermen. In recent times, the younger generations of the Sama-Bajau community prefer to work in government and business. However, most Sama-Bajau still hold on to their traditional practices. For instance, the Sama-Bajau community in Kota Belud continues to use local plants as food and traditional remedies to treat a variety of diseases (Awang-Kanak et al. 2018; Adam et al. 2019). This research aims to demonstrate and identify traditional medicine based on local plants used by the Sama-Bajau in Sembirai Village, Kota Belud, and to determine the function of traditional medicinal plants.

MATERIALS AND METHODS

Study area

The study was conducted in Sembirai Village, District of Kota Belud, Sabah, Malaysia (Figure 1). Sembirai Village (6.367190, 116.412400) is one of the Sama-Bajau-dominated communities in Kota Belud.

Research methods

This qualitative study provides an overview of the traditional medicine practiced by the Sama-Bajau people. Primary data was obtained from semi-structured interviews, photographs, digital camera images and observations. Semi-structured interviews were used as the data collection method because of the absence of predetermined questions provided to the respondents. In the context of the interviews, the respondents were given the opportunity to discuss the medical conditions of the individuals seeking medical attention, enabling them to freely elucidate various disease classifications, treatment modalities and the utilization of medicinal plants in disease management. To capture and classify the many varieties of plants and their applications, photos of the plants are taken with a digital camera to make them clearly identifiable. The two respondents, Rezin Yoh and Saidah Weh, are highly respected within their community for their extensive experience and knowledge as traditional healers. Both individuals, aged between 65 to 70 years old, are prioritized by the locals as the initial providers of medical attention during emergencies, specifically in cases involving pain, before the patients are transported to a hospital. The information collected on each plant species used as medicine by the healers was meticulously documented in terms of the local name, parts used, health problem treated and method of application. The specimens were collected and photographed together with the flowers and fruits when possible. Identification was done using various references such as Zakaria and Ali Mohd (1998), Engle and Phummai (2000), Kurian and Perumal (2013), and Malaysia Biodiversity Information System (MyBis) (2015).

RESULTS AND DISCUSSION

Based on the interviews, it was shown that the Sama-Bajau traditional medicine practitioners believe every kind of plant has health-giving properties. Plants are preferred because, for the Sama-Bajau, they do not contain synthetic chemicals. In general, the Sama-Bajau uses medicinal plants for two main purposes: to relieve pain and to prevent disease.

The Sama-Bajau community in this village uses 30 species of traditional plants as medicinal herbs (Table 1). Aside from modern medicine, which uses synthetic chemicals, the Sama-Bajau also uses nature as a treatment option. The Sama-Bajau practice the traditional knowledge they inherited from their ancestors to alleviate pain and illnesses. These alternative methods are also used by other communities in Asia, for example during circumcision.

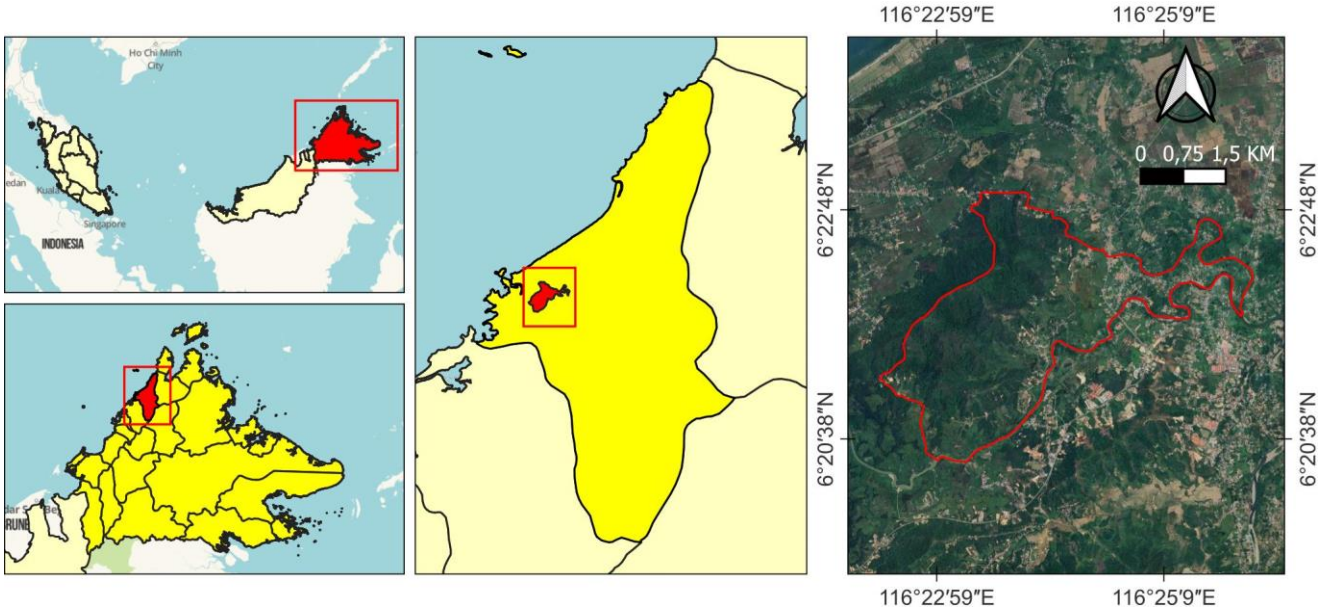

Figure 1. Location of Sembirai Village, Kota Belud, Sabah, Malaysia

Table 1. List of plants for traditional medicine in the Sama-Bajau community in Sembirai Village, Kota Belud, Sabah, Malaysia

Local name (Sama-Bajau Dialect)	Family	Scientific name	Used part	Health problems treated	Processing/ application method
Limau Manuk	Rutaceae	*Citrus hystrix* DC.	Leaf	Bloating	Grind into paste/Smeared
Jarum Tujuh Bilah	Cactaceae	*Leuenbergeria bleo* (Kunth) Lodé	Leaf	Breast cancer	Grind into paste/Smeared
				Vein pain, uterine and reproductive health, vaginal discharge	Boiled/Drink
Lepak-Lepak	Solanaceae	*Physalis minima* L.	Leaf	Helminthiasis, jaundice, hypertension, cholesterol	Boiled/Drink
Lekat-Lekat	Melastomataceae	*Melastoma malabathricum* L.	Rhizome	Menstruation pain, irregular menstruation, body itch, back pain, diarrhea	Boiled/Drink
Delima	Lythraceae	*Punica granatum* L.	Rhizome	Women's internal health problems, irregular menstruation	Boiled/Drink
Temali-Mali	Leeaceae	*Leea indica* (Burm. f.) Merr.	Rhizome	Menstruation pain, body itch, back pain.	Boiled/Drink
Pulut-Pulut	Malvaceae	*Urena lobata* L.	Rhizome	Menstruation pain, irregular menstrual problems, body itch, back pain	Boiled/Drink
Sambung	Asteraceae	*Blumea balsamifera* (L.) DC.	Leaf	Hypertension, post-childbirth treatment	Squeezed or boiled/
				Gastric	Drink or chew
Kemang Tuli	Fabaceae	*Sesbania grandiflora* (L.) Pers.	Leaf	Smallpox	Squeezed or boiled/Drink
			Rhizome	Fever/ Headache	Grind into paste/Smeared
				Phlegm	Boiled/Drink
				Flu	Pounded/Smeared
Belimbing Pusung	*Oxalidaceae*	*Averrhoa bilimbi L.*	Leaf	Hypertension	Boiled/Drink
Pandan	Pandanaceae	*Pandanus amaryllifolius* Roxb. ex Lindl.	Leaf	Gout	Boiled/Drink
Lempoyang	Zingiberaceae	*Zingiber zerumbet* (L.) Roscoe ex Sm.	flower	Hair treatment/Hair nourishment	Squeezed
Kemansi	Moraceae	*Artocarpus camansi* Blanco	Bark	Fever	Boiled/Drink
Tisan	Moraceae	*Ficus septica* Lour.	Leaf	Treatment for general unwellness (wind), post-childbirth treatment, wound treatment	Boiled/Drink
Lunai-Lunai	Asteraceae	*Chromolaena odorata* (L.) R.M. King & H. Rob.	Leaf	Wound treatment	Grind into paste/Smeared
Dukung Anak	Phyllanthaceae	*Phyllanthus niruri* L.	Leaf	Fever	Grind into paste/Smeared
Kunyit	Zingiberaceae	*Curcuma longa* L.	Rhizome	Post-childbirth treatment, wound treatment, flu	Boiled/Drink
Besina Gerimit	Convolvulaceae	*Ipomoea batatas* (L.) Lam.	Tuber	Fever	Boiled or squeezed/Drink
Bungo Raya	Malvaceae	*Hibiscus rosa-sinensis* L.	Leaf	Fever	Pounded
				Hair treatment	Smeared
Suka'	Arecaceae	*Cocos nucifera* L.	Coconut water	Fever	Squeezed
				Measles	Drunk
Sirih	Piperaceae	*Piper betle* L.	Leaf	Bad breath	Soaked/Drunk
				Burning sensation after touching chili	Squeezed
Liabas	Myrtaceae	*Psidium guajava L.*	Leaf	Diarrhea	Boiled/Drunk
				Gastric	Chewed
Serai Mandi	Poaceae	*Cymbopogon nardus (L) Rendle.*	Rhizome Stem	Dispelling 'wind' from the body after childbirth, post-childbirth treatment	Boiled Bath
Lodo Poro'	Solanaceae	*Capsicum frutescens* Standl. non L.	Rhizome	Treating the feeling of being unwell	Boiled/ Drunk
			Leaf	Easing childbirth	Pounded/Squeezed/Drink
Peria Pa'	Cucurbitaceae	*Momordica charantia* L.	Tuber	Diabetes, Cholesterol	Ground/Drink
				Children's rashes	Boiled/Bath
Tambu Kuning	Zingiberaceae	*Curcuma zanthorrhiza* Roxb.	Tuber	Smallpox	Pounded or squeezed/
				Cholesterol	Drink
Lalang	Poaceae	*Imperata cylindrica* (L.) Raeusch. & P. Beauv.	Rhizome	Smallpox fever	Boiled/Drink
Urat Nuali	Menispermaceae	*Tinospora crispa* (L.) Hook.f. & Thompson	Rhizome	Hypertension, Diabetes	Soaked/Drink
				Helminthiasis	Pounded/Smeared
Uduk Kepayas	Caricaceae	*Carica papaya* L.	Leaf	Hypertension	Boiled/Drink

Studies by Awang-Kanak et al. (2019; 2020), Suwardi et al. (2021), Mardiastuti et al. (2021), Cordero et al. (2021), Megersa et al. (2022), Oktavia et al. (2023) and Lestariningsih et al. (2023) discuss how different species of plants are suitable as medicinal herbs and have healing effects when used properly. Many locals believe that some plants can treat the ailments of certain people because of the individual's physiological 'compatibility' with the plants. In reality, these plants may contain chemical compounds with health-promoting properties that help heal patients. Ziraluo (2020) suggests that the active ingredients of a particular plant are substances that can protect people from particular diseases and offer some health benefits.

The results of this study show that the Sama-Bajau people cultivate and use the plant as a traditional remedy for wounds, skin diseases, diarrhea and headaches. The parts of the plant commonly used by the community consist of roots, stems, leaves, fruits, seeds, gums and rhizomes (Wanjohi et al. 2020). The leaves and roots of the plant are the two parts most commonly used (15 species or 50%), while the fruits and bark are the least used (only 1 species or 3.3%) (Table 2). The people of Sembirai use the leaves as medicines because they are abundant and harvesting them does not hinder the growth of the plant. This finding is consistent with Tuasha et al. (2018), Supiandi et al. (2019) and Zhang et al. (2022), all of which state that the leaves are the most accessible part of any plant and equally effective. In other words, the medicinal properties found in the leaves are as beneficial as those of the various parts of the plant. The leaves of Bunga Raya or Bungo Raya (Hibiscus rosa-sinensis), Sambung (Blumea balsamifera), Kemang Tuli (Sesbania grandiflora) and Lepak-Lepak (Physalis minima) are examples of leaves that are used as medicine.

The Sama-Bajau people handle and process plants for medicinal purposes in ways similar to the practices in other traditional Asian societies, such as boiling or brewing the plants for use as a drink or bath water, or pounding, crushing or pulverizing the plants for use as a bandage on the affected area. Boiling or brewing the plants is the most common method of processing (20 species or 50%) because the solubility of the herbs increases with higher temperatures (Sari et al. 2015), followed by pureeing and crushing the plants to use as a paste (8 species or 20%) (Table 3). Other Asian communities have also adopted these techniques to use plants for medicinal purposes (Aziz et al. 2020; Has et al. 2020).

Discussion

All the mentioned herbaceous and medicinal plants are found near Sama-Bajau homes. The close relationship they have with nature enables them to find and use these herbaceous materials as traditional medicine. According to Shah and Bhat (2019), Sutrisno et al. (2020), Wiryono et al. (2020), Sitanggang et al. (2022), Oktavia et al. (2022), Utaminingrum et al. (2022), Chikmawati et al. (2023) and Julung et al. (2023), forest ecosystems are an essential resource in traditional health care in many communities. In addition, forests offer a wealth of resources that people can use for their daily needs, health, survival, and other purposes.

Arecaceae, Moraceae and Zingiberaceae are among the plant families commonly used by the Sama-Bajau people. For example, the Zingiberaceae plant family is very practical because it grows in their backyards and is often used as a spice for cooking and as a safe, effective traditional remedy (Moreira et al. 2014).

Arecaceae and Zingiberaceae are usually used together as treatment materials. For example, turmeric is combined with artisanal leaves to treat body irritations or boils. Zingiberaceae can also be mixed with Arecaceae to speed up the progress of chickenpox (varicella) or measles (rubella) by causing the rashes to appear faster on the patient's body while lowering the body temperature. They are used as a medicinal material in ethnomedicine to this day. This treatment method is similar to how members of the Zingiberaceae family can be used in ethnomedicine, as reported by Kumar et al. (2013). Ansar et al. (2020) suggest that the active ingredients in question have anti-inflammatory, hepatoprotective, anti-cancer, anti-fungal and neuroprotective properties. Naturally, the parts of the plant also contain anti-inflammatory, antioxidant compounds (Alsarhan et al. 2021).

Piper betle is another readily available and widely herb used in the Sama Bajau community. The Sama-Bajau believes that these leaves can eliminate body odor, the burning sensation on the skin caused by chili, and other benefits. Betel leaves contain various useful elements such as alkaloids, amino acids, steroids, tannins, terpenes (cineole, cadinene, camphene, caryophyllene, pinene, limonene, chavicol, allylpyrocatechol, carvacrol, safrole, eugenol and chavibetol) (Pradhan et al. 2013). The oil from betel leaves has antibacterial phenolic chemicals and antifungal properties that are very useful for villagers who have limited access to modern antibiotics and antifungals.

Table 2. Parts of plants used as medicine by the Sama-Bajau people

Part of the plant used	Total (No.)	Percentage (%)
Leaf	15	50
Rhizome	9	30
Tuber	3	10
Bark	1	3.3
Fruit	2	6.6

Table 3. Methods of processing medicinal plants by the Sama-Bajau people

Processing method	Total (no.)	Percentage (%)
Boiled	20	50
Pounded and grind into paste	8	20
Chewed	2	5
Squeezing	8	20
Soaking	2	5

The medicinal herbs collected by Sama-Bajau traditional healers show the presence of local expertise and knowledge. They provide the local communities with an alternative route to recovery, especially for those who are unwilling or afraid to seek modern medical help. The results of this preliminary study highlight the need to preserve the Sama-Bajau people's traditional knowledge and practice of medicinal plants. Plants are a valuable resource for the prevention and treatment of a wide range of human ailments because of their high active phytochemical content (Gangola et al. 2017). The use of traditional medicines is potentially more profitable because the raw materials can be grown in the backyard, either for landscaping or medicinal purposes, and are also much easier and cheaper to obtain (Tambaru 2016). The Sama Bajau community continues to rely on locally grown plants as a source of traditional and alternative medicine, based on the knowledge passed down to them by their ancestors.

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