Ethnomedicinal Study of the Use of Zingiberaceae by the Mentawai People in Siberut, West Sumatra, Indonesia

Nurainas1(*), Ratna Sulekha2, Syam Zuhri3, Samantha Lee4 and Syamsuardi2

1Herbarium Universitas Andalas (ANDA), Biology Department, Faculty Mathematics and Natural Science, Andalas University, Kampus UNAND Limau Manis Padang, West Sumatra, Indonesia
2Laboratory of Plant Taxonomy, Biology Department, Faculty Mathematics and Natural Science, Andalas University, Kampus UNAND Limau Manis Padang, West Sumatra, Indonesia
3Laboratory of Plant Ecology, Biology Department, Faculty Mathematics and Natural Science, Andalas University, Kampus UNAND Limau Manis Padang, West Sumatra, Indonesia
4Forest Research Centre, Southern Cross University, Lismore, 2480, Australia

ABSTRACT

The Mentawai archipelago is situated to the west of mainland Sumatra and is part of the West Sumatra province. The Mentawai people are indigenous to this archipelago and are well known for their traditional healing practices performed by their Sikerei healers. Only a few studies on the traditional plant medicines of the Mentawai people have been published, which mostly suggest that Zingiberaceae is one of the most widely used families. This study examines the indigenous knowledge of Zingiberaceae by the Mentawai people living in Siberut. Field surveys were undertaken at four locations in the island where the Sikerei healers were interviewed directly to obtain information about medicinal treatments using plants from the Zingiberaceae family. Voucher specimens were collected, dried and deposited at the Herbarium of Andalas University (ANDA), Padang, West Sumatra. The study suggests that at least 32 Zingiberaceae species are used in the Mentawai’s traditional medicines. The floristic aspects, the plant part used, and the type of disease treated are discussed.

KEYWORDS

indigenous knowledge, Sikerei, Sumatra, traditional medicine

*CORRESPONDENCE

email: nurainas@sci.unand.ac.id

INTRODUCTION

Siberut is the largest island in the Mentawai Islands district. The Mentawai people are believed to have occupied Siberut for over 3000 years (Whittaker, 2006). The Mentawai people are renowned for their use of plant medicines by traditional healers (called Sikerei) to treat various kinds of diseases and health issues. The practice is unique, particularly since Mentawai medicines rely on Siberut’s unique biodiversity. The transmission of Mentawai plant knowledge and healing practices are usually passed through oral traditions from Sikerei to younger Sikerei. Thus, the loss of one Sikerei is like losing a library. Recent observation suggests that the younger generations do not seem interested in learning about the uses of Mentawai medicinal plants. Most of the Sikerei are over 50 years of age, and most have no replacement from the younger generations (RISTOJA, 2012).

Scientific information on Zingiberaceae for native Sumatran species is not easy to find, with only a few studies on the taxonomy of the Zingiberaceae family available, particularly for the genera Globba L., Amomum Roxb., and Hornstedtia Retz. (Takano and Okada, 2003; Nurainas, 2013; Droop and Newman, 2014). Previous studies conducted in Siberut National Park report 24 wild species related to the Zingiberaceae family (Nurainas and Yunaidi, 2006). However, the medicinal uses of the family have not been specifically studied and there is currently little information available (RISTOJA, 2012; Ave and Sunito, 1990). This article provides a more detailed understanding of the species of Zingiberaceae that are commonly used by the Mentawai people for medicinal and cultural purposes.
RESEARCH METHODOLOGY

Study area
We collected data from four villages in Siberut, Mentawai Islands, West Sumatra, Indonesia, namely: Bojakan in Northern Siberut sub-district, Matotonan and Muntei in Southern Siberut sub-district, and Sirisurak in Central Siberut (Figure 1).

Data collection and species identification
Information on the use of Zingiberaceae as traditional medicines was gathered primarily through unstructured interviews with Sikerei. The species of Zingiberaceae used for traditional medicines were identified through direct observation and through plant collection and later identification at ANDA. All collected plant material was preserved as herbarium specimens, and all flowers were preserved in wet collection using FAA with the following concentration: formalin: acetate acid: ethanol (5:5:90). All preserved specimens are stored at ANDA. Botanical terminology follows standard guidelines (Harirs and Harris, 1994; Smith, 1981; Stearn, 1995; Hickey and King, 2000).

RESULT AND DISCUSSION

Floristic aspects
Thirty-two species from 13 genera of Zingiberaceae that are used for traditional medicines by the Mentawai people on Siberut Island were collected during the study period (Table 1). The dominant species used are from the genera Etlingera and Globba, consisting of six species per genus.

Most of the Zingiberaceae species used in traditional Mentawai medicines come from Siberut and are harvested from the wild and the forests surrounding the villages. In addition, most of cultivated species are introduced from mainland Sumatra which are commonly used for spices and traditional medicines in other areas in Indonesia, such as Zingiber officinale Roscoe (gingers), Curcuma longa L. (turmeric), and Kaempferia galanga L. (kencur). The results of this study indicated that the species of Zingiberaceae used by the Mentawai people originate more from wild species for traditional medicines, while the people of mainland Sumatra use more cultivated species (RISTOJA, 2012; Hartanto et al. 2014; Kuntorini, 2005).

Figure 1. Map of the study localities on the Siberut Island, Kepulauan Mentawai district (see the legend for details). Inset: the map of West Sumatra province highlighting the position of Siberut island.
Table 1. List of species from the family Zingiberaceae used for traditional medicines by the Mentawai tribes on Siberut Island.

| No. | Scientific names                  | Local names             | English or Indonesian names | Parts Used       | Uses                                      | Wild/Cultivated |
|-----|-----------------------------------|-------------------------|-----------------------------|-----------------|-------------------------------------------|-----------------|
| 1   | Alpinia malaccensis (Burm.f.) Roscoo | Pasisingin              | Malacc galangal             | Stem            | Childbirth cramps, cuts and wounds, diarrhea | Wild            |
| 2   | Anomum mentavaiense A.J.Droop     | Gojot leleu             | -                           | Stem            | Cough                                     | Wild            |
| 3   | Boesenbergia angustifolia (Hallier f.) Schltr. | Egleu | Chinese ginger | Leaf, whole plant | Hypertension, headache | Wild |
| 4   | Curcuma longa L.                  | Kinu                    | Turmeric                    | Rhizome, Leaf   | Stomach ache                              | Cultivated      |
| 5   | C. zanthorrhiza Roxb.             | Kinu-ra’ba’             | Temu lawak                  | Rhizome         | diarrhoea, back pain, Childbirth cramps, bruises and sores, dye body. | Cultivated      |
| 6   | Elettaria longiaba (Ridl.) Holttum | Alutuef                 | -                           | Flower, Leaf, Stem | Headache, stomach ache, back pain, allergies to insect bites | Wild |
| 7   | Etlingera coccinea (Blume) S.Sakai & Nagam. | Pelekak | - | Flower | Addition on medicinal herbs | Wild |
| 8   | E. eliator (Jack) R.M.Sm.         | Totonan                 | Rose torch lily             | Rhizome         | Headache, vomiting, eye infections, breast swelling | Wild/Cultivated |
| 9   | E. eliator var. alba              | Gojo                    | White torch lily            | Rhizome         | headache, vomiting, eye infections, breast swelling | Wild/Cultivated |
| 10  | E. foetens (Blume) R.M.Sm.        | Kukaan                  | -                           | Stem            | Headache                                  | Wild            |
| 11  | E. pyramidophora (K.Schum.) R.M.Sm. | Sumamaik              | Black tulip ginger          | Rhizome         | Internal injury                           | Wild/Cultivated |
| 12  | E. littoralis (J.Koenig) Giseke   | Pelekak                 | -                           | Flower          | Addition on medicinal herbs               | Wild            |
| 13  | Geocharis sp.                     | Sipublagao              | -                           | Stem            | Boils                                     | Wild            |
| 14  | Globba flaviviridiflora A.Takano & H.Okada | Silukkuk | - | Whole plant | Asthma, Cough                             | Wild            |
| 15  | G. atrosanguinea                  | Tamalalaak              | -                           | Whole plant     | Headache                                  | Wild            |
| 16  | G. unifolius Ridl.                | Leigat lelu, Silukuk onaja | - | Whole plant | Asthma | Wild |
| 17  | G. variabilis Ridl.               | Sipu popoirag           | -                           | Whole plant     | Asthma                                     | Wild            |
| 18  | G. multifolia A.Takano & H.Okada  | Silukkuk                | -                           | Whole plant     | Cough                                      | Wild            |
| 19  | G. leschantha Mj.                 | Sipu popoirag simabulan | -                           | Whole plant     | Asthma                                     | Wild            |
| 20  | Hedychium flavescens              | Simakano                 | Cream ginger lily           | Leaf, Flower    | Stomach ache, back pain, fever             | Cultivated      |
| 21  | H. coronarium J.Koenig           | Tainao simabulan        | White ginger lily           | Flower, Stem    | headache                                   | Cultivated      |
| 22  | H. longicornutatum Griff. ex Baker | Kinande                 | Hornbill’s ginger           | Rhizome         | diarrhoea, Stomach ache, titchness         | Wild            |
| 23  | Hornstedlia c. deliana           | Kara-kara               | -                           | Stem            | Fever                                     | Wild            |
| 24  | H. comica Ridl.                  | Sikukut                 | -                           | Stem            | Childbirth cramps                         | Wild            |
| 25  | H. pareflora Ridl.               | Kanunnulek, Roddot       | -                           | Rhizome         | Headache, Cough, Poison crab allergy       | Wild            |
| 26  | H. tomentosa (Blume) Bakh.f.      | Saifuluua               | -                           | Rhizome         | Childbirth cramps, back pain              | Wild            |
| 27  | Horstedtia sp.                    | tatadak, sibeuususi     | -                           | Stem            | Vomiting                                  | Wild            |
| 28  | Kaempferia galanga L.             | Kupuk                   | Kencur                      | Rhizome         | Stomach ache, fever, rheumatism           | Cultivated      |
| 29  | Plagiostachysmacidia Holttum      | sikak-sikak, pasissikak | -                           | Leaf            | Fever, vomiting                           | Wild            |
| 30  | Zingiber officinale Roscoe        | Laigak                  | Ginger                      | Rhizome         | Stomach ache, Childbirth cramps           | Cultivated      |
| 31  | Z. zerumbet (L.) Roscoe ex Smith  | Sigiuju'                | Zerumbet ginger             | Rhizome         | Stomach ache                              | Cultivated      |
| 32  | Z. zerumbet var. littoralis Valeton | Palakokoak, Laigak saileu | Zerumbet ginger             | Rhizome, Leaf   | Fever, back pain                          | Cultivated      |
Plant part used
The most common plant parts used for medicines are rhizomes (32%), stems (24%), the whole plant (18%), flowers (13%) and leaves (13%) (Figure 2). The use of rhizomes for medicinal preparations is not surprising, since Zingiberaceae rhizomes are commonly used for various health needs in many other communities, for example in Banjar Baru, South Kalimantan (Kuntorini, 2005).

Fresh plants are harvested directly from the forest or garden around the house if they are to be used as medicine. The Sikerei rarely use herbs in their dry form. It is considered taboo to harvest medicinal plants if they are not needed.

Types of ailments
At least 21 ailments and other health issues were cited during the investigation period (Figure 3). Ailment types were categorised according to information gathered from traditional healers and Sikerei. Ailment types that had similar symptoms were grouped together, even where local differences emerged, for example: dizziness and pain anywhere in the head was categorised as headache. The most common health issue treated by plants in the Zingiberaceae family is headache, followed by stomachache, health problems related to pregnancy, back pain, and fever. Each treatment uses at least five species from the Zingiberaceae family. Eight species of Zingiberaceae are used to treat headaches, commonly through drinking the boiled plants.

It was observed that medicinal plants are usually mixed with other plants or natural products and are rarely used in isolation. It was also found that some plant species are used as accessories for healing rituals. For example, the leaves of Hedychium flavescens G. Lodd. are used in medicinal preparations, but the flowers are an important part of Mentawai ceremonies and rituals and are often worn by Sikerei during a healing ceremony.

![Figure 2. Plant parts used of medicinal Zingiberaceae species by the Mentawai people living in Siberut](image)

![Figure 3. Number of Zingiberaceae species used for traditional medicine of Mentawai tribe in the Siberut Island](image)
CONCLUSION

For centuries, various groups in Indonesia have used plants from the Zingiberaceae family for treating a range of diseases and illnesses. The Mentawai people utilise at least 32 species in the Zingiberaceae to treat 21 diseases and other ailments prevalent in Siberut. The most common plant part used is the rhizome.

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