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Short Communication

A Preliminary Survey on Edibles and Medicinal Plants Used By Dusun of Kampung Pinolobu, Kadamaian, Kota Belud, Sabah, Malaysia

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Abstract

This paper provides a brief enumeration of 22 species of plants and four species of fungi as wild edibles, and 13 species of plants that have been used for medicinal purposes by Dusun people of Kampung Pinolobu, Kadamaian, Kota Belud, Sabah. Seven informants were selected using snowball sampling technique, and data on edibles and medicinal plants were collected using semi structured interviews. This study reveals how Dusun people of Kampung Pinolobu used 13 species of medicinal plants to treat ailments and diseases like fever, high blood pressure, flatulence, rheumatism, cold, cough, and gastric pain. The flower of *Carica papaya* and fruit of *Passiflora foetida* are used for high blood pressure treatment, leaves of *Manihot esculenta* serve two purposes, as traditional vegetables and also consumed to avoid flatulence. Decoction made from the root of *Ficus septica* was given to women during postpartum recovery as they believed that it would help to keep the body warm, treat headache, and stomach pain. Paste made from leaves of *Melastoma malabathricum* is used to treat wounds. Meanwhile crushed leaves of *Hibiscus rosa-sinensis*, root decoction of *Imperata cylindrica*, sap from *Calamus sp*. are used to treat high fever, crushed leaves of *Hibiscus rosa-sinensis* is also used to subside carbuncle. Decoction of young leaves of *Psidium gujava* and *Leucosyke capitella* are used to treat stomach pain. Meanwhile decoction of crushed tuber of *Curcuma longa* is used to treat gastric pain.

Keywords: Dusun, Kadamaian, medicinal plants, wild edibles, Sabah.

Introduction

Statistics on mortality and morbidity rates for Malaysia in 2016 indicate an increasing trend for both communicable and non-communicable diseases (Health, 2018). The urgency of producing valuable and innovative treatments have influenced skyrocketing drug discovery research activities. These are associated with a wide range of medicinal drugs testing activities that have been extensively conducted from various natural resources, including plants, animals,

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marine organisms, bacteria, and fungi (Baltz, 2019; Thomford et al., 2018). In fact, natural products remain relevant sources for producing new drugs, as most commercial products originate from natural resources and their derivatives (Heinrich, 2014; Chin et al., 2006).

Plant-derived medicine has proven its significance in drug development, as plant utilization has been rooted since ancient time. The presence of secondary metabolites in plants has not only been shown to be useful for defence systems, but also proven to harbour both preventative and curative effects (Li et al., 2020). As traditional knowledge of plant usage is usually passed from one generation to another, the pharmacological basis of these culturally important plants is what may relate the drug discovery study with ethnopharmacology (Patwardhan, 2005).

Ethnopharmacology research is popular as it always believes in promises for silver bullets. Ethnopharmacology based on Heinrich (2014) is a scientific study of any substances used by humans which can give pharmacological effects to consumers. Broader interpretation of this field of study has included traditional medicinal knowledge of a community as well as their documentation and systematic review. Bruhn & Rivier (2019) devoted reviews for Holmstedt's research in their paper by quoting ethnopharmacology as interdisciplinary exploration in evaluating the remedies in cultural heritage, which later aim for rescue and documentation of these material medica in their aboriginal form. Uniquely, discoveries from the ethnopharmacological side may not only open chances to advancement in medicinal aspects, but also may influence studies in other fields such as socio-culture, history and anthropology (Heinrich, 2014). These may be seen through the mushrooming of research papers related to biological potential of traditional knowledge based on demography or ethnicity. Hence, a scientific study was conducted among selected communities in Sabah, Malaysia to investigate their medicinal practices. The objective of this paper is to properly record edibles and medicinal plants that have been traditionally used by Dusun people in Kampung Pinolobu, Kadamaian, Kota Belud.

Methodology

Study Area

Kampung Pinolobu, Kedamaian (GPS: 6.282968376545483, 116.49234251189354) is located in Kota Belud District. Kota Belud is about an hour's drive from Kota Kinabalu and is a growing township located on the west coast of Sabah (Figure 1). According to Informant 1 (INF1) and also a local Dusun guide who assisted

this survey, Kampung Pinolobu is primarily inhabited by the Dusun tribe while Kota Belud is populated by several ethnic groups, including Bajau, Dusun, Irranun, and Rungus. Informant 1 (INF1) was also a village committee member, he verbally communicated that the villagers of Kampung Pinolobu are working as farmers, rubber tappers, or are self-employed. Kampung Pinolobu is located between the Kampung Podos and Wasai Waterfall Homestay area.

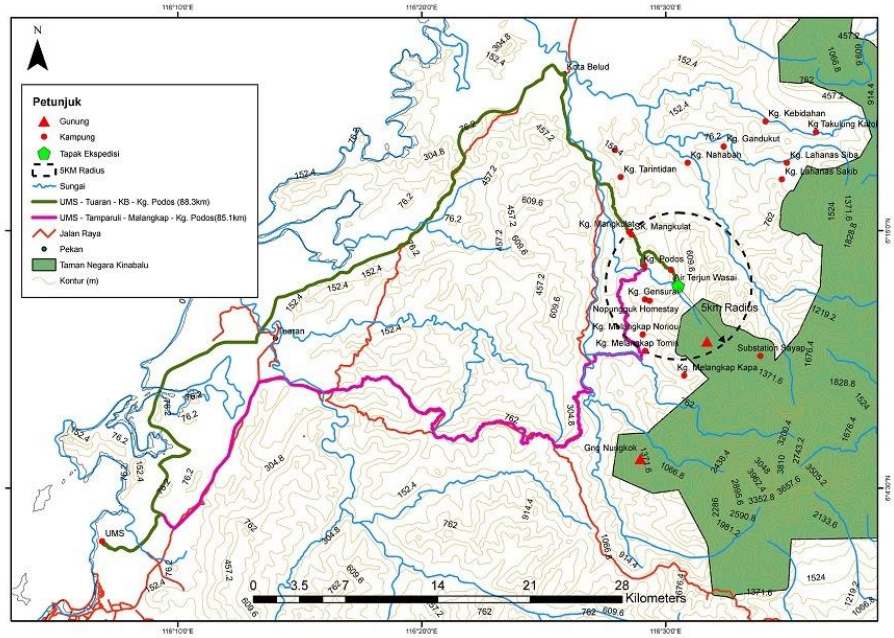

Figure 1. Map of Kota Belud and location of Borneo Geographic Expedition 2019 (in circle).

Data collection and identification

Data sampling through interviews was carried out during The Borneo Geographic Expedition 2019 on 21st October. In Figure 1, the site involved in the expedition is indicated in a dashed-circle-line. In this study, the interviews were conducted by using snowball sampling technique and through semi-structured interviews among seven Dusun informants from Kampung Pinolobu, Kedamaian, Kota Belud. In general, the informants have learned their traditional knowledge of edibles and medicinal plants from the older generation, i.e. their parents and grandparents, as well as through self-experience. None of the informants are qualified as herbalists nor are they formal practitioners of traditional herbal medicine. The interview session was conducted in their house compound using Bahasa Malaysia with a mix of Dusun language. Translation of the Dusun language was assisted by Informant 1 (INF1). The details of informants are shown in Table

1. After the interview, informants provided information about edibles and medicinal plants used by villagers by showing what was available in a nearby bush, just 3 to 5 metres away and around the village. Informants pointed out plants they use during an excursion around the village. Available plant species were photographed and the identification process was supported by Mr. Faiz and Mr. Razy, both of whom are staff from the Sabah Forestry Department, Sandakan. Meanwhile, the holding of the specimens was assisted by Mr. Bartwolomieus Jalius (PPST, UMS).

Table 1. Details of the informants from Kampung Pinolobu, Kedamaian, Kota Belud, Sabah

Informer	Age	Gender	Occupation	Education	Race/Religion
INF1	41	Male	Self-employed	University	Dusun/Christian (Seventh Day Adventist)
INF2	28	Female	Housewife	Secondary school (SPM)	Dusun/Christian (Seventh Day Adventist)
INF3	31	Female	Housewife	Primary school	Dusun/Christian (Seventh Day Adventist)
INF4	67	Female	Farmer	None	Dusun/Christian (True Yesus)
INF5	38	Male	Self-employed	Primary school	Dusun/Christian
INF6	50	Male	Farmer/Rubber tapper	Primary school	Dusun/Christian
INF7	54	Female	Farmer/Rubber tapper	None	Dusun/Christian

Results and Discussion

The study found 22 species of plants and four species of fungi consumed by the Dusun people of Kg. Pinolobu, Kadamaian in their daily life as food plants. Meanwhile, 13 species have been used as medicinal plants. The medicinal plants were administered traditionally in the form of decoction, crushed leaves, paste, eaten, or ingested fresh from the sap. The details of these edible and medicinal plants are shown in Table 2.

The root sap of *Calamus s*p. or locally known as 'lambah' is taken orally to cool the body from fever. High fever is also treated by utilizing a decoction of *Imperata cylindrica* root, and by applying crushed young leaves of *Hibiscus rosa-sinensis* to the body. They also use crushed young leaves of *Hibiscus rosa-sinensis* to ease the swollen carbuncle. The practice of using *Imperata cylindrica* as traditional medicine was previously recorded by the Dusun of Tambunan and Murut from Kalabakan (Kulip, 2003; Kulip, 2014). The root of *Ficus septica* or known as 'lintatobu' is made into decoction and given to women during

postpartum confinement. The *Ficus septica* root decoction is used for headache and stomach pain treatment.

The boiled flower of *Carica papaya* has been used to reduce high blood pressure. Dusun in Penampang, Tambunan, Keningau have reported using decoction made from the root of *Carica papaya* for birth control after giving birth. This potion is also used to alleviate menstrual pain (Ahmad & Holdsworth, 2003). Meanwhile, decoction made from *Crotalaria pallida* plant stem and leaves is used for cold and cough treatment. Villagers from Kampung Pinolobu drink decoction made from tubers of *Curcuma longa* to treat gastric pain, while Sama Bajau from Kampung Menunggui, Kota Belud use tuber of *Curcuma longa* for post-partum treatment (Awang-Kanak et al., 2018b). Dusun of Kampung Pinolobu also eat fruit of *Passiflora foetida* to reduce high blood pressure. However, the Sama Bajau of Kampung Taun Gusi were previously reported to only consume the fruit (Awang-Kanak et al., 2018a).

Conclusion

The study has listed 22 plant species and four fungi species consumed by the Dusun of Kampung Pinolobu, Kadamaian in their daily life as food plants. Meanwhile, 13 species have been used as medicinal plants. Vernacular names stated in this paper were based on oral communication with the Dusun of Pinolobu, it may have similarity with Dusun dialects from other districts in Sabah e.g. Tambunan and Keningau. The survey on traditional knowledge of Dusun people from Kampung Pinolobu, Kadamaian ensures that the traditional knowledge on edibles including some species of fungi, and medicinal plants used by the community can be preserved based on sustainable practice. The findings provide a screened set of useful plants for further potential ethnopharmacological research in plant-based medicine and may eventually unveils some valuable phytotherapeutic and traditional medicinal agents.

Table 2. List of wild edibles and medicinal plants used by Dusun of Kampung Pinolobu, Kedamaian, Kota Belud, Sabah.
Fo: Food; Me: Medicinal plant; Asterisk*: Fungi.

Family	Scientific Name	Local Name (Dusun)	Uses	Informant(s)	Remark	Previous record in Sabah
Amaranthaceae	*Amaranthus oleraceus*	Bayam kampung	Fo	INF4		Jualang et al. (2016).
Amaryllidaceae	*Allium tuberosum*	Losun/Lokio	Fo	INF1		Kulip, (2014).
Araceae	*Schismatoglottis achmadii*	Dukaruk	Fo	INF6, INF7		Kulip, (2014); Kulip, (2003)
Araceae	*Colocasia esculenta*	Ubi keladi	Fo	INF7		Nassir & Low, (2015)
Arecaceae	*Calamus* sp.	Lambah/Lamba	Me	INF5	Cooling the body from fever	Kulip, (2014).
Arecaceae	*Arenga undulatifola*	Polud (young shoot)	Fo	INF6, INF7		Kulip, (2014)
Drypteridaceae	*Diplazium esculantum*	Pakis	Fo	INF5, INF7		Awang-Kanak et al. (2020); Awang-Kanak et al. (2018a);
Asteraceae	*Cosmos caudatus*	Ransa ransa	Fo	INF1		Jualang et al. (2016).
Blechnaceae	*Stenochalena palustris*	Lemiding	Fo	INF1		Kulip, (2014)
Caricaceae	*Carica papaya*	Tepayas	Fo, Me	INF1	Flower is used to lower blood pressure	Awang-Kanak et al. (2018a); Awang-Kanak et al. (2018b) Nassir & Low, (2015); Kulip, (2014); Ahmad & Holdsworth, (2003)
Convolvulaceae	*Ipomoea batatas*	Ubi manis	Fo	INF7		Awang-Kanak et al. (2018a); Kulip, (2014)

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Table 2. (Continued)

Family	Scientific Name	Local Name (Dusun)	Uses	Informant(s)	Remark	Previous record in Sabah
Cucurbitaceae	*Cucumis sativus*	Timun	Fo	INF1		Awang-Kanak et al. (2018a)
Dryteridaceae	*Diplazium esculantum*	Pakis	Fo	INF5, INF7		Kulip, (2014)
Euphorbiaceae	*Manihot esculenta (leaf)*	Daun ubi kayu	Fo, Me	INF1, INF2, INF3, INF4 NF1	To avoid flatuance	Awang-Kanak et al. (2018a); Kulip, (2014)
Euphorbiaceae	*Homalanthus populneus*	Mato/Dolimato	Me	INF1	For swollen feet/rheumatism treatment	Kulip, (2014); Kulip, (2003)
Fabaceae	*Crotalaria pallida*	Kirik kirik/ Ngirik ngrik	Me	INF1, INF4	Decoction made from plant for cold and cough treatment	Latiff et al. (2001)
Malvaceae	*Hibiscus rosa-sinensis (young leaf)*	Pucuk bunga raya	Me	INF1	Crushed leaves can be used to treat carbuncle and fever	Kulip, (2003).
Melastomataceae	*Melastoma malabathricum*	Gosing	Me	INF4, INF5	Crushed leave to treat wound	Ahmad & Holdswort, (2003)
Moraceae	*Ficus septica*	Lintotobou/ Hintotobou	Me	INF2, INF3, INF4	Drink root decoction during post-partum recovery to warm body, to treat stomach pain, and headache	Kulip, (2014)
Musacaeae	*Musa* sp. (inner pith)	Batang pisang (umbut)	Fo	INF1		Awang-Kanak et al. (2018b)
Myrtaceae	*Psidium guajava* (young leaf)	Pucuk jambu	Fo, Me	INF4	Decoction of use to treat diarrhea	Nassir & Low, (2015); Kulip, (2003)

(Continued on next page)

Table 2. (Continued)

Family	Scientific Name	Local Name (Dusun)	Uses	Informant(s)	Remark	Previous record in Sabah
Passifloraceae	*Passiflora foetida* (fruit)	Lapak lapak	Me	INF2	Treat high blood pressure	Awang-Kanak et al. (2018a)
Phyllantaceae	*Baccaurea lanceolata*	Liposu/Limposu	Fo	INF1, INF5		Kulip, (2003).
Poaceae	*Imperata cylindrica*	Paka (lalang)	Me	INF4	Root decoction use to treat fever/anti-pyretic medicine	Kulip, (2014); Kulip, (2003)
Unknown	Unknown	Melapau/Molopau/ Malapau	Fo	INF1, INF4, INF5		
Urticaceae	*Leucosyke capitella*	Mandahasih	Me	INF4, INF7	Abdominal pain	Ahmad & Holdsworth, (2003)
Zingiberaceae	*Curcuma longa*	Kunyit	Fo, Me	INF1, INF4, INF7	Tuber decoction use for gastric treament	Awang-Kanak et al. (2018a); Ahmad & Holdsworth, (2003)
Zingiberaceae	*Etlingera coccinea*	Tuhau	Fo	INF1		Kulip, (2014)
*Lyophyllaceae	*Termitomyces eurrhizus*	Kulat tamburong	Fo	INF7		Foo et al. 2018
*Schizophyllaceae	*Schizophyllum commune*	Kulat kodop	Fo	INF7		Foo et al. 2018
*Unknown	Unknown	Kulat purak mata	Fo	INF7		
*Unknown	Unknown	Kulat sorukan	Fo	INF7		

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