

Traditional knowledge of medicinal plants in the Kampung Orang Asli Donglai Baru, Hulu Langat, Malaysia

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Manuscript received: 3 February 2021. Revision accepted: 15 February 2021.

Abstract. Ramli MP, Malek S, Milow P, Aziz NJ. 2021. Traditional knowledge of medicinal plants in the Kampung Orang Asli Donglai Baru, Hulu Langat, Malaysia. *Biodiversitas* 22: 1304-1309. Documentation on traditional knowledge of medicinal plants is important before it is completely exhausted by the loss of natural habitats surrounding it and the passing away of older generations. In this study, an ethnobotanical survey for the medicinal plants in the Kampung Orang Asli Donglai Baru, Hulu Langat, Selangor, Malaysia was carried out. A semi-structured interview was prepared to record the medicinal uses of the local medicinal plants in the study area. The information such as the Orang Asli local name, parts used for medication, methods of preparation, and type of ailments were all collected. The total numbers of recorded species in the study sites were 39 species belonging to 22 families. The families Zingiberaceae, Marantaceae, Leguminosae, Vitaceae, Lamiaceae, Melastomataceae, and Araceae have recorded the highest species of medicinal plants. The most frequently utilized plant parts were the leaves (25%) followed by roots (20%), whole plants (10%), fruit (5%) and flowers (2.5%). Gastrointestinal problems including stomach ache, diarrhea, indigestion and bloating were among the most frequent ailments treated with the medical plants. This study revealed that many medicinal plants are still broadly used by the community for treating various diseases in ailments. Further investigation needs to be carried out to explore the potential of these plants in scientific usage.

Keywords: Ethnobotany, medicine plants, Orang Asli, Kampung Orang Asli Donglai Baru

INTRODUCTION

Nowadays, it is noticeable that traditional knowledge of medicinal plants used as was embedded in rural and indigenous people has slowly been eroding with modernization. The presences of public healthcare, economic development and current systems of formal education have also led to loss of traditional knowledge of medicinal plants (Saynes-Vasquez et al. 2013). This is evident from the research of an indigenous community in Ecuador by Weckmuller (2019), where young people do not have as much knowledge of medicinal plants as older people. In some cases, there is still lack of written documents of local knowledge of medicinal plants in the scientific literature (Napagoda et al. 2018). Study by Hu et al. (2020) indicated that the traditional knowledge of medicinal plants among Mulam community in Guangxi, China is threatened due to lack of written records, conservative inheritance patterns, rapid economic development and low interest in traditional medicinal knowledge among young people. In addition, some medicinal plants are increasingly at risk of habitat loss due to environmental degradation, and over-harvesting of established medicinal plants. Hu et al (2020) reported agricultural activities, firewood collection, overgrazing, logging, and overharvesting of medicinal plants resulted in a decrease in medicinal plant resources and associated traditional knowledge in Guangxi, China.

The importance of traditional knowledge of medicinal plants has been recognized as a potentially valuable source of leads for drug discovery. The active compounds in most parts of the medicinal plants including seeds, roots, leaves, fruits, skins, flowers or even the whole plant have direct or indirect therapeutic effects and are used as medicinal agents (Jamshidi-Kia et al. 2018). For instance, *Catharanthus roseus* (L.) G. Don has been widely used as a traditional medicine to treat various diseases in many countries. Ochwang et al. (2014) reported that the aqueous extract of the leaf or the whole plant is used by Kenyans as complementary and alternative therapies for various types of cancer including throat, stomach and esophageal cancers. Semenya et al. (2013) reported that dried root of *Catharanthus roseus* (L.) G. Don is grounded and decocted for curing gonorrhea in Limpopo Province, South Africa. In Vietnam, the whole plant is boiled with water and taken orally to treat diabetes, hypertension, dysentery, and cancer (Vo 2012). Remarkably, the potential health benefits of phytochemicals extracted from this plant have been proved from scientific evidence. It has been reported that the vinblastine and vincristine isolated from this plant were the first plant-derived anticancer agents deployed for clinical use (Pham et al. 2020).

In Malaysia, documentation of traditional knowledge on medicinal plants among the Orang Asli tribe is still scanty. Although there are few reports on the documentation on the traditional use of medicinal plants in a few other regions (Mohammad et al. 2012; Sabran et al. 2016; Zaki et al. 2019), there is currently no literature

available on the report in this area. Orang Asli are minority groups and indigenous peoples of Peninsular Malaysia. According to Khor et al. (2019), most Orang Asli resides in settlements which are often located in the forest or forest-fringe areas and depend significantly on surrounding forests where they forage for wild fruits, ornamental plants, and wood products, and hunt wild animals as a source of income and food. There are three main groups of Orang Asli in Peninsular Malaysia namely Senoi, Proto-Malays, and Negrito, and eighteen sub-groups including Semai, Temiar, Jahut, Che Wong, Mahmeri, Semoqberi, Temuan, Semelai, Jakun, Kanaq, Kuala, Seletar, Kensiu, Kintak, Jahai, Lanoh, Mendriq and Bateq (Hussain et al. 2017).

Temuan tribe is one of the groups of Proto-Malays who originated from middle Asia and settled in Peninsular Malaysia around 4000 years ago (Fix 1995; Lim et al. 2010). They reside in the jungle areas near the hillside, and still use their natural resources around them for food, daily use and medical purposes. They are therefore among the most knowledgeable Orang Asli tribe on the use of natural resources, especially for medicinal purposes. While there have been several other Temuan studies, there have been few that explicitly identified their use of medicinal plants. Among them are Ong (2012a), Azliza et al. (2012), Ismail et al. (2020), and Ahmad et al. (2020). The objective of the current study is to documents the traditional knowledge of medicinal plants used by the Temuan tribe in Kampung Orang Asli Donglai Baru, Hulu Langat. The significance of this study is to preserve the traditional knowledge before it is completely exhausted by the loss of natural habitats surrounding it and the passing away of older generations.

MATERIALS AND METHODS

The study was conducted in the year 2018 in a village known as Kampung Orang Asli Donglai Baru and lies between 3.114°N to 3.1176°N latitude and 101.908°E to 101.912°E longitude in the Hulu Langat municipality, in the state of Selangor, Malaysia (Figure 1). The village lies approximately at 200 meters above sea level and extends 65.53 ha and only comprises with Temuan tribe. It has a tropical climate with temperatures recorded from 28°C to 32°C through the whole year and 2,000 mm to 2,500 mm of precipitation annually. Land cover includes rubber tree plantations and natural forests. The population, comprising of 279 inhabitants with 59 heads of households. Most of them are working as rubber tappers and also remain strongly dependent on forest resources as source of income and medicine, owing to the vast traditional knowledge among them.

Semi-structured interviews were used to gather information on traditional knowledge of medicinal plants regarding the utilization of medicinal plant species, their usefulness, the utilized part, mode of preparation, or method of processing the plants. All of the head family units were interviewed, except in households that did not agree to participate. Thirty key informants, 19 men and 11 women with ages ranging from 43 to 72 years were interviewed and the research background and purpose were explained prior to each interview. Plant pictures were taken during the field observation. Details on the traditional knowledge were summarizing in Table 1.

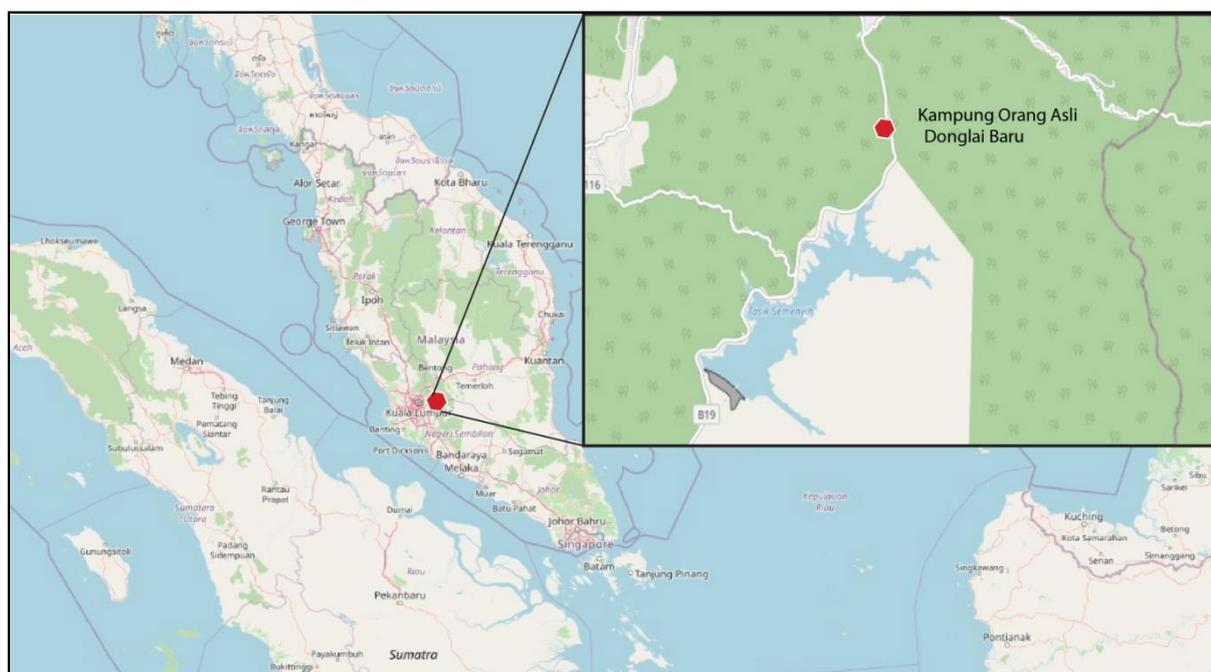


Figure 1. Location of Kampung Orang Asli Donglai Baru, Hulu Langat, Selangor lies between 3.114°N to 3.1176°N latitude and 101.908°E to 101.912°E longitude.

RESULTS AND DISCUSSIONS

In the present study a total of 39 plant species used in traditional medicine by the Temuan tribe of Kampung Donglai Baru belonging to 37 genera and 31 plant families was recorded (Table 1). The total species recorded in this study is less compared to other Temuan villages in Gombak, Selangor and Negeri Sembilan. Azliza et al. (2012) reported that the Temuan of Ulu Kuang village, Gombak uses 49 species of medicinal plants. Ong et al. (2011a) noted the Temuan in a village of Negeri Sembilan uses 56 species of medicinal plants. However, the number of medicinal plant species recorded in this study is higher than those recorded for several local communities of other Orang Asli ethnic groups such as the Jah Hut of a village in Jerantut, Pahang and the Semai of a village in Tapah, Perak. Zaki et al. (2019) recorded that the Temiar community only uses 18 species of medicinal plants. Ong et al. (2012) reported that the Semai ethnic group only uses 37 species of medicinal plants.

Compared to other indigenous communities in other parts of the world, the overall species recorded in this study are considered to be lower. Sulaiman et al. (2020) indicated that the tribal community of Gokand Valley, Pakistan uses 109 species of medicinal plants in the treatment of various ailments. Tefera and Yihune (2018) reported that the indigenous people in Tenta District, Ethiopia uses 121 species of medicinal plants. Gonfa et al. (2020) noted that the indigenous people of Gera district, Ethiopia uses 63 medicinal plants. Sharafatmandrad and Mashizi (2020) recorded that the indigenous community in south-eastern Iran uses 156 species of medicinal plants. The lower total species recorded in this study may be due to the low total number of key informants interviewed. As a comparison, 168 key informants were interviewed by Sulaiman et al. (2020), 96 key informants were interviewed by Tefera and Yihune (2018), 60 key informants were interviewed by

Gonfa et al. (2020) and 85 key informants were interviewed by Sharafatmandrad and Mashizi (2020). In this study, only 30 key informants were interviewed.

The largest proportion of medicinal plants belonged to the families Zingiberaceae, Marantaceae, Leguminosae, Vitaceae, Lamiaceae, Melastomataceae, and Araceae. The present study also is in agreement with other studies that Zingiberaceae is one of the major families of medicinal plants used by Orang Asli community in Peninsular Malaysia. Mohammad et al. (2012) indicated that Zingiberaceae, Asparagaceae, Rubiaceae and Sapindaceae are among the highest plant families of medicinal plants used by Orang Asli community in Lubuk Ulu Legong, Kedah. Zaki et al. (2019) reported that Zingiberaceae was the most represented family in medicinal plant species used followed by Rutaceae, Euphorbiaceae, Annonaceae, and Umbelliferae among Orang Asli in Kampung Pasik, Kelantan. Azliza et al. (2012) indicated that Zingiberaceae, Fabaceae, Annonaceae, Piperaceae, Musaceae, Asteraceae, and Annonaceae.

Leaves, roots, flowers, fruits, rhizomes were the plant parts used for medicinal preparations and in some cases, the whole plants are used, including the roots. The most frequently utilized plant parts were the leaves (25%) followed by roots (20%), whole plants (10%), fruit (5%) and flowers (2.5%). Gastrointestinal problems including stomach ache, diarrhea, indigestion, and bloating were among the most frequent ailments treated with the medical plants (23 % of all remedies). It is followed by hypertension (18%), increasing of immune system (14%), diabetes, muscle pain and poison antidote (7%), woman health, dermatological complaints and fever (5%), and other health problem (2%). The main administration routes of the remedies were taken orally as shown in Figure 2 including drink, eat and chew (66.64%) and topical application (34.15%). The most common method of preparation is decoction (60.9%) as shown in Figure 3.

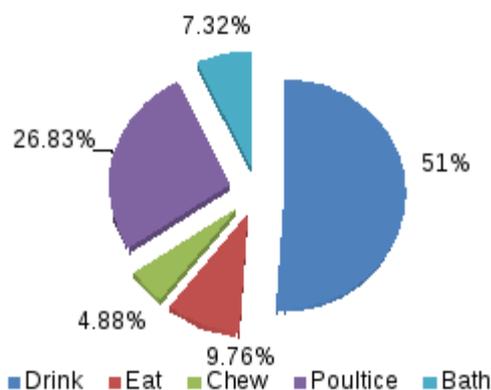


Figure 2. Percentage method of usage of medicinal plants

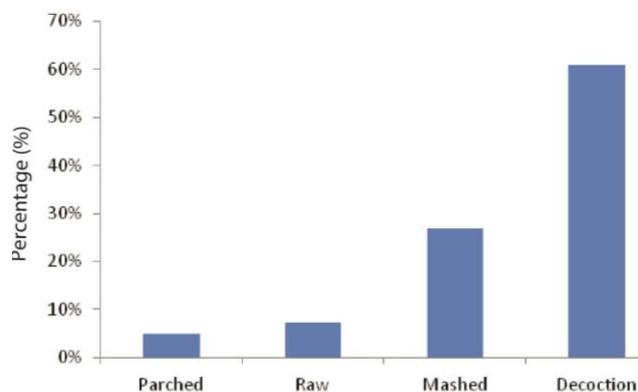


Figure 3. Method preparation of medicinal plants

Table 1. Utilization of plant species as traditional medicine by Temuan tribe in Kampung Orang Asli Donglai Baru, Hulu Langat, Selangor, Malaysia

Scientific name	Local name	Parts (s) used	Preparation(s)	Ailments
<i>Acorus calamus</i> L.	Jerangau	Fruit/rhizome	Decoction	Increase immune body system/ Healing rituals
<i>Archidendron jiringa</i> (Jack) I.C.Nielsen	Pokok Jering	Root	Decoction	Hypertension
<i>Bauhinia bassacensis</i> Pierre ex Gagnepain	Akar dali	Root	Decoction	Increase immune body system
<i>Boesenbergia pandurata</i> (Roxb.) Schltr	Daun kuyen	Root/rhizome	Decoction	Fever
<i>Carica papaya</i> L.	Daun betik	Leaves	Raw	Hypertension
<i>Catharanthus roseus</i> (L.) G.Don	Kemunting cina	Leaves	Decoction	Increase immune body system
<i>Centella asiatica</i> (L.) Urb.	Pegaga	Leaves	Decoction	Hypertension
<i>Chassalia curviflora</i> Thwaites	Bulut	Leaves	Decoction	Constipation disease
<i>Cheilocostus speciosus</i> (J.König) C.Specht	Setawar	Leaves	Decoction	Increase immune body system
<i>Clidemia hirta</i> (L.) D. Don	Senduduk Buluh	Leaves	Mashed	Reduce wound after childbirth
<i>Coleus amboinicus</i> Lour.	Pokok hati-hati	Leaves	Decoction	Prevention of constipation
<i>Crinum asiaticum</i> L.	Daun Tembaga Suasa	Leaves	Parched	Fracture, muscle pain
<i>Curcuma zedoaria</i> (Christm.) Roscoe	Kunyit Putih	Leaves	Mashed	Skin disease
<i>Cyathula prostrata</i> (L.) Blume	Daun cirit-birit	Leaves	Decoction	Reduce diarrhea
<i>Donax canniformis</i> (G.Forst.) K.Schum.	Daun Bemban	Leaves	Mashed	Refreshing eye drop
<i>Elettariopsis curtisii</i> Baker	Semomok	Whole plants	Decoction	Bloating
<i>Eurycoma longifolia</i> Jack	Tongkat Ali	Roots	Decoction	Diabetes, hypetension, muscle pain
<i>Ficus abscondita</i> C.C.Berg	Akar tengkuk jawak	Root	Decoction	Reduce stomachache and waist pain
<i>Henckelia platypus</i> (C.B.Clarke) A.Weber	Akar Meriam geget	Whole plant	Decoction	Herbs for women after childbirth
<i>Hibiscus rosa-sinensis</i> L.	Bunga raya	Flower	Mashed	Reduce stomachache
<i>Homalomena sagittifolia</i> Jungh. ex Schott	Pokok kemoyang	Leaves	Parched	Fever
<i>Iguanura geomoriformis</i> Mart.	Legung Baung	Leaves	Decoction	Reduce worms diseases
<i>Labisia pumila</i> (Blume) Mez	Kacip fatimah/ Meriyan	Leaves + root	Decoction	Increase immune body system for women (after childbirth)
<i>Lawsonia inermis</i> (L.) Pers.	Inai	Leaves	Decoction	Reduce headache (Bath)
<i>Leea indica</i> (Burm. f.) Merr.	Pokok Mali	Leaves	Decoction	Hypertension
<i>Maranta arundinacea</i> L.	Ubi Larut	Root	Decoction	Poison antidote
<i>Muehlenbeckia platyclados</i> Meisn.	Pokok lipan	Leaves	Mashed	Reduce centipede's bite
<i>Orthosiphon stamineus</i> Benth	Misai kucing	Leaves	Decoction	Diabetes, hypertension
<i>Phyllagathis rotundifolia</i> (Jack) Blum.	Tapak Gajah	Leaves	Mashed	Stomach-ache
<i>Piper sarmentosum</i> Roxb	Sirih	Leaves	Raw	Fever, Hypertension
<i>Psidium guajava</i> L.	Daun jambu batu	Leaves	Decoction	Reduces stomachache
<i>Senna alata</i> (L.) Roxb.	Daun linggang (ubat kurat)	Leaves	Mashed	Dermatophytosis
<i>Smilax myosotiflora</i> A.DC	Ubi jaga	Fruits	Decoction	Diabetes
<i>Solanum ferox</i> L.	Terung satok	Fruits-whole plants	Raw	Hypertension, spiritual
<i>Spilanthes acmella</i> (L.)	Subang Nenek	Leaves	Mashed	Toothache
<i>Tacca integrifolia</i> Ker Gawl.	Misai baung	Leaves	Mashed	Skin pain
<i>Tetracera scandens</i> (L.) Merr	Mempelas akar	Root	Decoction	Throat infection
<i>Vitex negundo</i> L.	Daun lemuni	Leaves	Mashed	Reduces stress
<i>Zingiber cassumunar</i> Roxb.	Bonglai	Whole plant	Decoction	Bloating

The findings recorded a total of 9 species of plants are used in the treatment of gastrointestinal problems. Among the species of plants used by the villagers are including *Chassalia curviflora* Thwaites, *Coleus amboinicus* Lour., *Cyathula prostrata* (L.) Blume, *Elettariopsis curtisii* Baker, *Ficus abscondita* C.C.Berg, *Hibiscus rosa-sinensis* L.,

Phyllagathis rotundifolia (Jack) Blum., *Psidium guajava* L., *Zingiber cassumunar* Roxb. Acc. The plants species recorded in this study for the treatment of gastrointestinal problems is higher compared to other Temuan village. Ong et al. (2011a) reported only three species of plants are used by Temuan tribe in Kampung Tering, Negeri Sembilan

including *Apama tomentosa* Eng, *Peucedanum japonica* Thunb and *Psidium guajava* L. Ong et al. (2011b) reported only four species of plants are used by Temuan tribe in Kampung Jeram Kedah, Negeri Sembilan in the treatment of gastrointestinal problems including *Aloe barbadensis* Mill, *Eugenia valdevenosa* Duthie, *Phyllagathis rotundifolia* (Jack.) Bl and *Psidium guajava* L. However, the finding in this study is in agreement with Ong et al. (2011a, 2011b) which indicated that *Psidium guajava* L is one of the most common plants used by the Temuan tribe to treat gastrointestinal problems.

Seven species recorded in this study are used by the villagers in the treatment of hypertension. The plant species are including *Archidendron jiringa* (Jack) I.C.Nielsen, *Carica papaya* L., *Centella asiatica* (L.) Urb., *Eurycoma longifolia* Jack, *Leea indica* (Burm. f.) Merr., *Orthosiphon stamineus* Benth and *Solanum ferox* L. The plants recorded in the treatment of hypertension by Temuan tribe in this study are lower compared to the other Temuan village report by Ong et al. (2011a). The Temuan tribe in the Kampung Tering, Negeri Sembilan used ten species of plants in the treatment of hypertension which is including *Apama tomentosa* Engl, *Archidendron jiringa* (Jack) I.C.Nielsen, *Averrhoa carambola* L., *Bonnaya veronicaefolia* Spreng, *Catharanthus roseus* (L.) Don, *Centella asiatica* (L.) Urban, *Ficus aurantiaca* Griff., *Parkia speciosa* Hassk., *Striga asiatica* (L.) Kuntze and *Tinospora crispa* (L.) Miers. ex Hk.f. and Thoms (Ong et al 2011a). However, there are two species recorded that are similar in both villages in the treatment of hypertension. The species are *Archidendron jiringa* (Jack) I.C.Nielsen and *Centella asiatica* (L.) Urban. Study by Azliza et al. (2012) in Kampung Ulu Kuang, Selangor also indicated that the Temuan tribe in the area are using *Archidendron jiringa* (Jack) I.C.Nielsen and *Eurycoma longifolia* Jack in the treatment of hypertension which is similar in this study.

From the result, it shows that *Clidemia hirta* (L.) D. Don, *Homalomena sagittifolia* Jungh. ex Schott, *Carica papaya* L, *Henckelia platypus* (C.B.Clarke) A.Weber, *Leea indica* (Burm. f.) Merr, *Phyllagathis rotundifolia* (Jack) Blum and *Zingiber cassumunar* Roxb are commonly used by the villagers as compared to other species. *Clidemia hirta* (L.) D. Don is used by the villagers as a natural remedy to close up wounds and stop bleeding after childbirth. This finding is in agreement with the report by Lopez (2016) which indicated that the crushed leaves *Clidemia hirta* (L.) D. Don mixed with saliva are applied as a poultice on wounds to stop bleeding in Malaysia. Rizki et al. (2019) also reported that indigenous people of West Pasaman, Indonesia crushed the leaves of the plant and applied topically on the wound to stop bleeding. In the meantime, the roots and leaves of *Homalomena sagittifolia* Jungh. ex Schott is used in the treatment of fever. *Carica papaya* L is used in the treatment of hypertension, *Henckelia platypus* (C.B.Clarke) A.Weber is used in the treatment for women after childbirth, *Leea indica* (Burm. f.) Merr is used in the treatment of hypertension, *Phyllagathis rotundifolia* (Jack) Blum is used in the treatment of stomach-ache and *Zingiber cassumunar* Roxb is used in the treatment of bloating. However, there are

slight differences in the ailments treat by the plants in other Temuan villages and other Orang Ali tribe. Ong et al. (2011b) reported that *Carica papaya* L is used in the treatment of malarial fever and *Phyllagathis rotundifolia* (Jack) Blum is used in the treatment of stomach discomfort among juvenile. *Carica papaya* L is reported by Muhammad et al. (2012) is used by Kensiu tribe in Kampung Lubuk Ulu Legong, Kedah in the treatment of cough. Azliza et al. (2012) reported that *Leea indica* (Burm. f.) Merr is used in the treatment of wounds by Temuan tribe in Kampung Ulu Kuang. *Leea indica* (Burm. f.) Merr is reported by Muhammad et al. (2012) in the treatment of diabetes.

Semi-structured interviews and field surveys were among the most method used in ethnobotanical studies. These methods were used in this study and most of the recent studies also still use these methods to obtain information on traditional knowledge of the use of medicinal plant species, their usefulness, the part used and the method of preparation. Jadid et al (2020) used semi-structured interviews with informants of Tengger tribe who knew or used plants as medicine in Ngadisari village, Indonesia. Kassa et al. (2020) prepared semi-structured interview method to retrieve qualitative and quantitative ethnobotanical data from informants of Sheka community in southwestern Ethiopia. Islam et al. (2020) also used field surveys and semi-structured interviews to investigate the ethnobotany of medicinal plants used by Rakhine indigenous communities in Patuakhali and Barguna District of Southern Bangladesh.

To conclude, this current ethnobotanical field survey carried out among the Orang Asli living in the Kampung Donglai Baru region of Selangor, Malaysia reveals that many medicinal plants are still broadly used by the community for treating various disease in ailments. These plants are needed for future studies to determine the chemical composition and its efficacy in the treatment of various diseases. Since Zingiberaceae are indicated as the most common family of plants use in traditional medicine in this finding and other studies, this should encourage further study need to be carried out to explore the potential of this family in scientific medicinal investigation. Documentation of traditional knowledge on the use of medicinal plants among local community is necessary to preserve the valuable knowledge from being eroded. Some of the medicinal knowledge on the uses of plants was buried together with the previous generations due to lack of knowledge and interest among the younger generations.

ACKNOWLEDGEMENTS

We thank the University of Malaya and the Ministry of Education of Malaysia for providing facilities and funds that enable this study to be carried out. Publication of this article was funded by PG072-2013A, RF193-12SUS and LL023-16SUS provided by University of Malaya and MyBrain 15 Scholarship provided by Ministry of Education of Malaysia. This study is also to be a part of a Ph.D. contribution of the first author.

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