

## Traditional Knowledge of Medicinal Plants among the Malay Villagers in Kampung Mak Kemas, Terengganu, Malaysia

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**ABSTRACT** This study was carried out to assess the traditional knowledge on medicinal plants in a Malay village in Malaysia. It was carried out through face to face interviews with respondents and collection and identification of medicinal plants in the village. A total of 56 species of medicinal plants were recorded during a series of folk botanical surveys at a village at Terengganu, Malaysia. A majority of these species are herbaceous angiosperms, followed by trees and shrubs. The most common part of plant used in preparing herbal medicine is the leaves. More plants are used for general health, to treat dermatological complaints, reproductive system, abdominal problems and fever compared to other ailments. The most common method of preparation is poultice, followed by decoction and infusion. Thus, more medicinal plants are used topically than orally.

### INTRODUCTION

Documentation of traditional knowledge on medicinal plants is still carried out in many parts of the world. The main reasons for such efforts to continue are poor transmission of the knowledge to younger generations, the potential use of this knowledge in the exploitation of plants pharmaceutical industries, and the need to conserve rare or highly demanded plant species in traditional medicine. Ayyanar and Ignacimuthu (2005) conducted an ethnobotanical survey among ethnic groups in Southern Western Ghats of India. Their investigation showed that the tribes of the region used 54 species of medicinal plants. Medicines were prepared in the form of powder, decoction, paste and juice. Wondimu et al. (2007) conducted ethno-botanical study of medicinal plants around a town in Ethiopia. They discovered that most of medicinal plant species are not cultivated but gathered from the wild. Agra et al. (2008) have documented medicinal plants that are used in north-east of Brazil. They noted that most medicinal plants species are higher plants, used internally, and prepared in the form of decoction, infusion and maceration.

In Malaysia, documentation on traditional knowledge on medicinal plants is still on-going. Previous such studies include that by Ahmad and Holdsworth (1995), Kulip (2003), Lin (2005), and Samuel et al. (2010). Ahmad and Holdsworth

(1995) studied the traditional medicinal plants used by the Rungus people in Sabah. They described medicinal uses of 31 species of plants by the Rungus. An ethno-botanical survey on medicinal plants used by the Muruts in Sabah by Kulip (2003) revealed that the people use 68 species of plants for medicinal purposes. Lin (2005) documented 16 species of plants that are used by the Jah Hut people of a village in a district in Peninsular Malaysia. Samuel et al. (2010) noted 62 species of medicinal plants were used by the Orang Asli of a village in Peninsular Malaysia. The present paper describes a traditional knowledge on medicinal plants of a village named Kampung Mak Kemas in the state of Terengganu, Malaysia. No study on the medicinal plants used in this particular village has been published before. Some studies on medicinal plants used in other Malay villages in different states of Malaysia have been published before this (Ong and Norzalina 1999; Ong and Nordiana 1999). A parallel study was carried out with another co-researcher at another Malay village not too far from this study area (Ong et al. 2011). This study also serves to compliment past, present and future works on traditional knowledge of medicinal plants in Malaysia which is still far from complete (Fig. 1).

### MATERIAL AND METHODS

A folk botanical survey of medicinal plants was carried out in a village named Kampung Mak Kemas in the state of Terengganu, Malaysia. Kampung Mak Kemas is located 15 km south of

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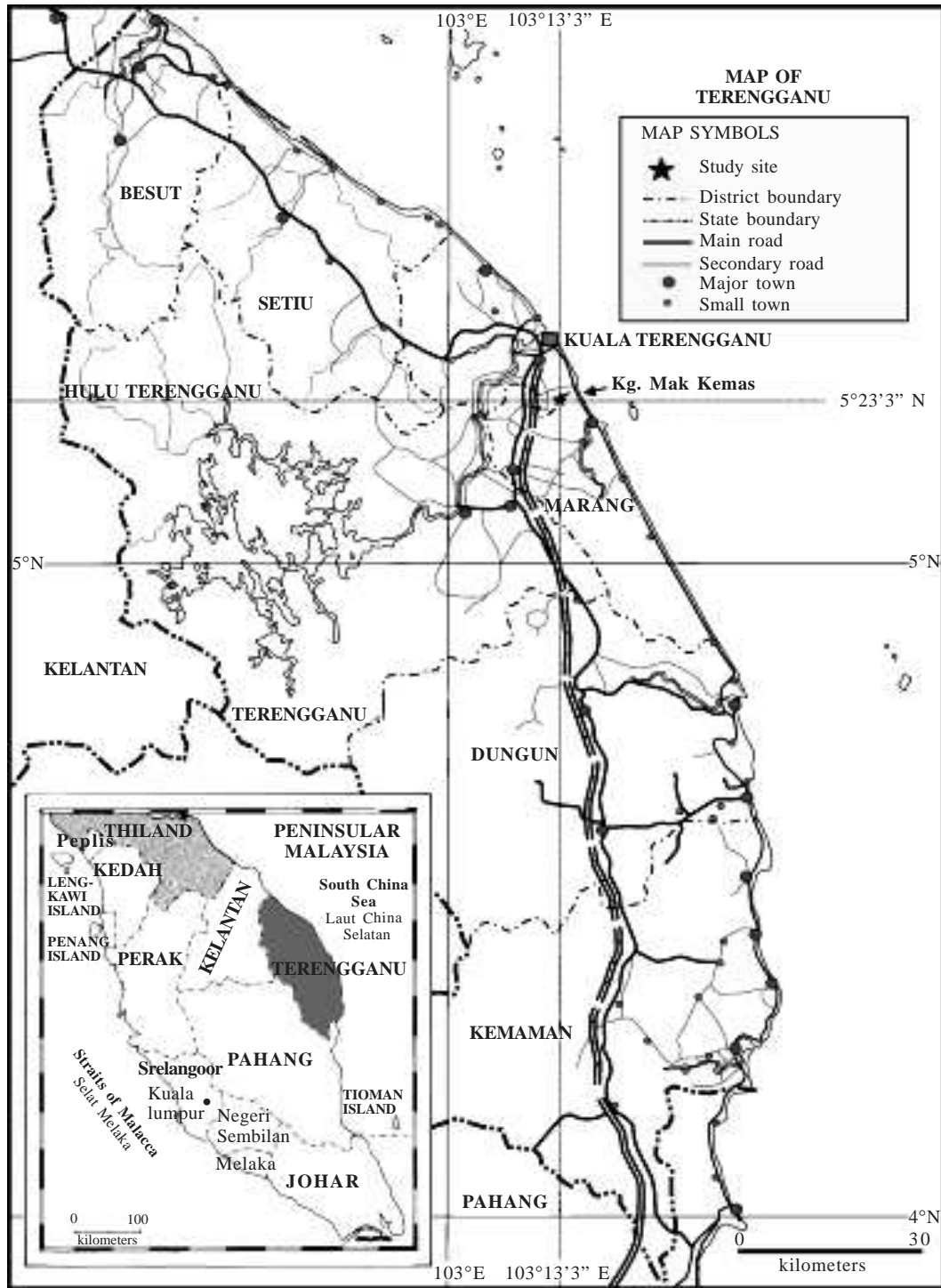


Fig. 1. Location map of the study site

Kuala Terengganu, the capital city of the state of Terengganu, in Peninsular Malaysia. The latitude is 5.233°N while the longitude is 103.133°E. The village is a traditional Malay village with forests and paddy fields nearby. The villagers still practice herbal medicine based mainly on plants that grow naturally in the surrounding habitats and also cultivated plants. Traditional knowledge of medicinal plants in the study site is still based on memory of what they have learned from village elders and herbalists. It is thus very important to record this traditional knowledge. The occupations of the villagers include agriculture, civil service, private sector, home makers.

Information was obtained through observation, participation and face to face interviews with adult villagers, local healers and herbalists during each visit using the method of ethno-botanical enquiry. The ages of the informants range from about 30 years to 60 years. The parts of the plants used to treat diseases, types of diseases treated, doses and method of administration were carefully recorded in the field. The villagers were mostly willing to share their traditional knowledge on herbal medicine.

Medicinal plant specimens mentioned or quoted by informants were collected from the village area during the visits. Each specimen was numbered and detailed notes were recorded in a field notebook during the field trips. The specimens were identified and deposited in the University of Malaya. Photographs of each specimen were also taken to help in its identification and for record. Identification of specimens was carried out by comparing them with references by de Guzman and Siemonsma (1999), Lemmens and Bunyaphatsara (2003), Oyen and Nguyen (1999), de Padua et al. (1999), van Valkenburg and Bunyaphatsara (2001), Verheij and Coronel (1992), and Piggott (1988).

## RESULTS

This survey recorded 56 plant species used in traditional medicine by the Malay villagers. Table 1 records the binomial name, common name, family name, habit, part used, disease for which the herbal medicine is administered and the mode of administration. The 56 plant species of medicinal plants correspond to 49 genera and 34 families. Of the total, 54 species were angio-spermae, while 2 species were pteridophytes. In terms of habit, there are 31 species of herbs (55.4%), 10

species of trees (17.9%), 9 species of shrubs (16.1%), 5 species of climbers (8.9%) and 1 species of epiphyte (1.8%). The most common plant parts used in the preparation of herbal medicine in this study are leaves (43.4%), roots (15.1%) and whole plant (10.4%). Other plant parts used in herbal medicine recorded here are fruits, flowers, seeds, rhizomes, tubers, bulbs, sap and stems. The villagers use a good number of plant species to treat dermatological complaints (34), reproductive system (19), and abdominal problems (17). More herbal medicine were used topically (51.1%) compared to taken orally (48.9%). The most common method of preparation is poultice (49.4%), followed by decoction (39.2%) and infusion (11.4%). The families with high number of medicinal plant species were Zingiberaceae (5 species), followed by Euphorbiaceae (4 species) and then Acanthaceae, Lamiaceae, Piperaceae, Poaceae (each family has 3 species).

## DISCUSSION

Records of folk medicinal plants represent a useful starting point for further research on novel chemical compounds and potentially useful drugs. Recording of traditional knowledge of medicinal plants is important as modernization will eventually bring about changes or even loss of traditional knowledge. This study recorded 56 species of medicinal plants used in one village. This number corresponds well with two other studies in other Malay villages (Ong and Norzalina 1999; Ong et al. 2010) which recorded totals of 54 and 52 species of medicinal plants but is much lower than a study conducted in yet another Malay village (Ong and Nordiana 1999) which recorded a total of 146 medicinal plants. This shows that the total number of medicinal plants known to and used by any particular Malay village can vary substantially. Knowledge of medicinal plants is seldom recorded in a written form by the villagers but is still mainly based on oral history and cultural traditions passed down through the generations or from master to student. There are variations among Malay villages in terms of the total number of species used, medicinal uses of each plant, and methods of preparation and application of the plants. Villages which are not very far apart can show differences in the species of plants used. In some cases, similar species have different medicinal uses in different villages (Ong and Norzalina 1999; Ong et al. 2011).

**Table 1: Medicinal plants of Kampung Mak Kemas, Terengganu, Malaysia**

<i>S. No.</i>	<i>Species name</i>	<i>Local name</i>	<i>Family name</i>	<i>Habit</i>	<i>Part used</i>	<i>Disease treated</i>	<i>Mode of administration</i>
1	<i>Allium cepa</i> L.	Bawang merah	Alliaceae	Herb	Bulb	Fever, flatulence Cuts, sores, pimples, abscess Diarrhea, coughs, influenza, aches, pains	Paste mixed with oil applied topically Poultice applied topically Blended and taken orally
2	<i>Allium sativum</i> L.	Bawang putih	Alliaceae	Herb	Bulb	Flatulence Stings, bites, cuts Coughs, asthma abdominal pain	Paste mixed with oil applied on abdomen Poultice or juice applied topically Juice mixed with honey taken orally
3	<i>Aloe barbadensis</i> Mill.	Lidah buaya	Liliaceae	Herb	Leaves, sap	Burns, fever, pimples, dandruff	Sap and jelly applied topically
4	<i>Alpinia galanga</i> (L.) Willd.	Lengkuas	Zingiberaceae	Herb	Rhizome Leaves Plant	Skin diseases Flatulence Fever Aches, pains Post-partum	Juice with garlic juice applied topically Juice taken orally Infusion of crushed leaves and rice applied topically Poultice applied topically Poultice applied on abdomen
5	<i>Ampelocissus gracilis</i> Planch.	Kertas api	Vitaceae	Climber	Leaves	Large sores	Poultice applied topically
6	<i>Andrographis paniculata</i> (Burm.f.) Wall.ex Nees	Hempedu bumi	Acanthaceae	Herb	Whole plant	Hypertension, fever Diabetes Influenza, chest pain, tonsillitis Bites, stings	Infusion taken orally Decoction with <i>Orthosiphon aristatus</i> taken orally Decoction taken orally Poultice applied topically and taken orally
7	<i>Annona muricata</i> L.	Durian belanda	Annonaceae	Tree	Leaves Bark Fruits Seeds	Head lice Nightmares Sore throat Back pain, joint aches Infertility, male, female Post-partum, diabetes, hypertension Intestinal parasites	Pounded leaves with water applied topically Leaves placed under pillows Infusion of dry leaves taken orally Decoction taken orally Decoction taken orally Fruit juice taken orally Decoction or infusion of powdered seeds taken orally

**Table 1: Contd.....**

<i>S. No.</i>	<i>Species name</i>	<i>Local name</i>	<i>Family name</i>	<i>Habit</i>	<i>Part used</i>	<i>Disease treated</i>	<i>Mode of administration</i>
8	<i>Aystasia coromandeliana</i> Nees	Rumput Israel	Acanthaceae	Herb	Leaves	Constipation Swellings, cuts, wounds Muscle cramps	Leaf decoction taken orally Poultice applied topically Poultice with garlic applied topically
9	<i>Averrhoabilimbi</i> L.	Belimbing buluh	Oxalidaceae	Tree	Leaves Flowers Fruits Bark	Stomach ache Skin cracks Coughs Diabetes, hypertension Pimples, skin diseases Goitre	Young leaves eaten Poultice with pepper corn and vinegar applied topically Decoction taken orally Juice taken orally Poultice with salt and applied topically Decoction with onions taken orally
10	<i>Borreria articularis</i> (L.f.)Will.	Susu kambing	Rubiaceae	Herb	Whole plant Roots	Joint aches and pains Muscle pain	Decoction taken orally Decoction taken orally
11	<i>Cananga odorata</i> (Lamk.)Hk.f. & Thom.	Kenanga	Annonaceae	Tree	Leaves Flowers Bark	Body odor Scalp odor Skin itch	Blend with lime, sugar and salt. Juice taken orally Infusion in coconut oil applied topically Grated and applied topically
12	<i>Carica papaya</i> L.	Betik	Caricaceae	Herb	Leaves Young leaf Shoot and flowers Sap of fruit Ripe fruit	Amenorrhoea Fever Hypertension Pimples, skin blemish, cracks Constipation	Blended with water, juice taken orally Infusion in brine taken orally Scalded and eaten Latex applied topically Fruit eaten
13	<i>Cassia tora</i> L.	Gelenggang seni	Caesalpiniaceae	Herb	Shoots Leaves Plant	Constipation Skin diseases Heartburn, postpartum Aging	Eaten raw Poultice applied Decoction taken orally Juice taken orally
14	<i>Centella asiatica</i> (L.) Urban	Pegaga	Apiaceae	Herb	Leaves Whole plant	Cuts, sores, skin diseases Leucorrhoea Post-partum, headache, hypertension, lip cracks	Poultice applied topically Decoction with salt added applied topically Decoction taken orally

**Table 1: Contd.....**

<i>S. No.</i>	<i>Species name</i>	<i>Local name</i>	<i>Family name</i>	<i>Habit</i>	<i>Part used</i>	<i>Disease treated</i>	<i>Mode of administration</i>
15	<i>Coleus atropurpureus</i> Benth.	Ati-ati	Lamiaceae	Herb	Leaves	Stomach ache Flatulence Cuts, sores, bites, stings Expel placenta post-partum Stop lactation	2 or 3 leaves mixed with CaCO <sub>3</sub> taken orally Poultice mixed with CaCO <sub>3</sub> applied topically Poultice applied topically Decoction with salt taken orally Pounded with CaCO <sub>3</sub> and water, juice applied on breasts, but not on the nipples
16	<i>Curculigo latifolia</i> Dryand.	Nyior lembe	Hypoxida- ceae	Herb	Leaves	Cuts, swellings	Poultice applied topically Eaten raw
17	<i>Curcuma longa</i> L.	Kunyit	Zingibera- ceae	Herb	Rhizo- me Rhizo- me	Coughs, no appetite Post-partum Pimples Sores, athlete's foot Abrasions Facial dermatitis	Blended with water, added salt, taken orally Pounded, mixed with face powder and applied topically Poulticed with coconut oil, applied topically Slices applied topically Eaten raw
18	<i>Curcuma viridiflora</i> Roxb.	Kunyit emas	Zingibera- ceae	Herb	Rhizo- me	Hemafecia, water in lungs	Juice taken orally
19	<i>Cymbopogon citratus</i> (DC) Stapf	Serai	Poaceae	Herb	Leaves	Aches and pains Hair loss, mosquito repellent Difficult urination	Pounded and juice applied topically Decoction applied topically Decoction taken orally
20	<i>Cymbopogon winterianus</i> Jow.	Serai wangi	Poaceae	Herb	Whole plant Leaves	Fever Stomachache Swellings	Decoction used as bath Decoction taken orally Poultice applied topically
21	<i>Drymoglossum pilloseloides</i> (L.) Presl.	Duit-duit	Polypodi- aceae	Epi- phyte	Whole plant Leaves	Painful menstruation Headache Skin itch	Decoction taken orally Pounded and applied topically Pounded with salt and rice, added warm water, applied topically

**Table 1: Contd.....**

S. No.	Species name	Local name	Family name	Habit	Part used	Disease treated	Mode of administration
22	<i>Etingera elatior</i> (Jack) Sm.	Kantan	Zingiberaceae	Herb	Leaves	Cuts, wounds	Decoction used to wash and apply topically
					Fruits	Earache	Decoction used as ear drops
23	<i>Eurycoma longifolia</i> Jack	TongkatAli	Simarou-baceae	Trees	Root	Aches, pain, low sexual energy	Decoction taken orally
24	<i>Ficus deltoidea</i> Jack	Secotek mas	Moraceae	Shrub	Leaves	Water in lungs, hypertension, post-partum	Decoction taken orally
25	<i>Gynura procumbens</i> (Lour.) Merr.	Bayam cina	Asteraceae	Herb	Leaves	Diabetes, hypertension	Leaves eaten
26	<i>Hibiscus rosa-sinensis</i> L.	Bunga raya putih	Malvaceae	Shrub	Leaves	Fever, dry hair	Crushed in water and applied topically
					Roots	Cuts, sores	Grated and applied topically
27	<i>Hyptis brevipes</i> Poit.	Setulang	Lamiaceae	Herb	Leaves	Swollen joints	Poultice mixed with CaCO <sub>3</sub> applied topically
28	<i>Impatiens balsamina</i> L.	Keembung	Balsaminaceae	Herb	Leaves	Split nails	Pounded and applied topically
					Plant	Hypertension	Decoction taken orally
29	<i>Imperata cylindrica</i> (L.) Raeu.	Lalang	Poaceae	Herb	Rhizome	Fever	Infusion taken orally
						Asthma, short of breath, difficult urination, urinary stones	Decoction taken orally
30	<i>Ipomoea aquatica</i> Fors.	Kangkung	Convolvulaceae	Herb	Leaves	Abscess	Pounded with salt and applied topically
						Rough hair	Mashed in water and liquid used topically
					Plant	Food poisoning	Juice taken orally
31	<i>Jasminum sambac</i> (L.) Ait.	Melor	Rubiaceae	Shrub	Leaves	Fever	Mixed with leaves of <i>Canthium chartacea</i> and <i>Gardenia jasminoides</i> , crushed in water, liquid applied topically and taken orally
						Measles	Mixed with leaves of <i>Psidium guajava</i> , <i>Punica granatum</i> , <i>Tamarindus indica</i> , rhizome of <i>Curcuma longa</i> and rice, pounded and applied topically
					Flower bud	Pimples, skin infections	Pounded and applied topically
					Roots	Leucorrhoea, painful menstruation	Decoction taken orally
32	<i>Justicia gendarussa</i> Burm.f.	Gandarusa hitam	Acanthaceae	Shrub	Leaves	Flatulence	Pounded with lime fruit, applied topically

**Table 1: Contd.....**

<i>S. No.</i>	<i>Species name</i>	<i>Local name</i>	<i>Family name</i>	<i>Habit</i>	<i>Part used</i>	<i>Disease treated</i>	<i>Mode of administration</i>
						Post-partum	Heated and applied on abdomen
					Roots	Coughs	Decoction taken orally
						Thrush	Decoction applied topically
33	<i>Kalanchoe pinnata</i> (Lamk.) Pers.	Setawar	Crassulaceae	Herb	Leaves	Headache, abscess	Pounded and applied topically
						Pus in ear	Juice used as ear-drops
					Leaf and root	Skin itch	Pounded and applied topically
34	<i>Lawsonia inermis</i> (L.) Pers.	Inai	Lythraceae	Shrub	Leaves	Dandruff, athlete's foot, weak nails	Pounded and applied topically
						Scar	Pounded with rice and applied topically
					Roots	Post-partum	Decoction taken orally
					Leaf and root	Facial condition	Decoction taken orally
35	<i>Manihot esculenta</i> Crantz.	Ubi kayu	Euphorbiaceae	Shrub	Leaves	Cuts, bites, stings, abscess	Pounded and applied topically
					Tuber	Fever, headache, influenza	Pounded and applied topically
36	<i>Melastoma malabathricum</i> L.	Senduduk	Melastomataceae	Shrub	Leaves	Cuts	Pounded and applied topically
						Diarrhea, leucorrhea	Leaf decoction with ginger and sugar taken orally
					Fruit	Tongue pain	Placed on tongue pain
					Root	Travel sickness	Root placed in mouth
					Leaf and root	Post-partum	Decoction taken orally
37	<i>Mimosa pudica</i> L.	Semalu	Mimosaceae	Herb	Whole	Post-partum	Decoction taken orally
						Athlete's foot	Pounded and applied topically
					Root	Swelling	Pounded and applied topically
38	<i>Morinda corneri</i> Wong	Mengkudu hutan	Rubiaceae	Tree	Leaf and fruit	Post-partum	Decoction taken orally
					Fruit	Hypertension	Flesh eaten
					Roots	Difficult urination	Decoction taken orally
39	<i>Murraya koenigii</i> (L.) Spre.	Pokok kari	Rutaceae	Tree	Roots	Hemafecia	Decoction taken orally
40	<i>Orthosiphon aristatus</i> (Bl.) Miq.	Misai kucing	Lamiaceae	Herb	Leaves	Sore throat, difficulturination	Decoction taken orally
						Diabetes	Decoction with <i>Andrographis paniculatus</i> taken orally
					Leaf and flower	Headache	Decoction taken orally



**Table 1: Contd.....**

S. No.	Species name	Local name	Family name	Habit	Part used	Disease treated	Mode of administration
41	<i>Pandanus amaryllifolius</i> Roxb.	Pandan	Pandana- ceae	Herb	Leaf and Root Leaves	Hypertension Vaginal itch Post-partum	Decoction taken orally Infusion applied topically Infusion with leaves of <i>Alpinia galanga</i> , <i>Curcuma longa</i> and <i>Cymbopogon nardus</i> used as bath
42	<i>Parkia speciosa</i> Hassk.	Petai	Mimosa- ceae	Tree	Leaves Fruit Roots	Cough Diabetes Hypertension	Pounded with rice and applied on neck Eaten with the skin intact Decoction taken orally
43	<i>Phyllanthus acidus</i> (L.) Ske.	Cermai	Euphorb- iaceae	Tree	Leaves	Diabetes, hyper- tension Pimples	Decoction taken orally Pounded and applied topically
44	<i>Phyllanthus niruri</i> L.	Dukung anak	Euphorb- iaceae	Herb	Plant Leaves	Diabetes, hyper- tension, pain during menses Jaundice Coughs Sores	Decoction taken orally Decoction used as bath and also taken orally Juice taken orally Juice applied topically
45	<i>Piper betle</i> L.	Sireh	Piperaceae	Clim- ber	Leaves	Nosebleed Toothache, sores, abscess, pain, ache Fever Vaginal itch Flatulence Poor eyesight Bad breath	Decoction taken orally Rolled leaf inserted Betel quid applied topically Infusion applied topically Decoction used as wash Heated and applied topically Decoction taken orally Infusion used as gargle
46	<i>Piper nigrum</i> L.	Lada hitam	Piperaceae	Clim- ber	Leaves Young fruits	Fever Diarrhea, head- ache, difficult urination Post-partum, ap- petite loss	Pounded and applied topically Decoction taken orally Pounded with anchovies and eaten with rice
47	<i>Piper sarmentosum</i> Roxb. ex Hunt.	Kadok	Piperaceae	Herb	Leaves Roots	Malarial fever Diabetes, difficult urination	Decoction taken orally Decoction taken orally
48	<i>Psidium guajava</i> L.	Jambu batu	Myrtaceae	Tree	Leaves	Body odor Pimples	Leaves rubbed on body Infusion with <i>Piper betle</i> leaves applied topically

**Table 1: Contd.....**

<i>S. No.</i>	<i>Species name</i>	<i>Local name</i>	<i>Family name</i>	<i>Habit</i>	<i>Part used</i>	<i>Disease treated</i>	<i>Mode of administration</i>
49	<i>Solanum torvum</i> Swar.	Terung pipit	Solanaceae	Shrub	Leaf, bark Leaves	Diarrhea Cuts	Young leaves eaten or bark decoction taken orally Pounded and applied topically
					Fruits	Hypertension Toothache	Eaten raw Pounded and applied topically
					Roots	Hypertension, headache, urinary stones Toothache Skin cracks	Decoction taken orally Decoction used as gargle Pounded and applied topically
50	<i>Sauropus androgynus</i> (L.) Merr.	Cekok manis	Euphorbiaceae	Shrub	Leaves	Hair growth Hypertension	Pounded with milk applied topically Decoction taken orally
51	<i>Stenochlaena palustris</i> (Burm.) Bedd.	Pucuk miding	Blechnaceae	Climber	Young Leaves Stem	Fever Shingles	Juice applied topically Chewed and applied topically
52	<i>Talinum triangulare</i> (Jacq.) Willd.	Pokok duit RM5	Portulacaceae	Herb	Leaves	Abscess, sores	Pounded with <i>Curcuma longa</i> and rice, applied topically
53	<i>Tamarindus indica</i> L.	Asam jawa	Caesalpiniaceae	Tree	Fruits	Fever, rough palm, swellings Bites, stings	Mixed in water and applied topically Split fruit applied topically
					Bark	Sore throat Asthma, short of breath	Juice taken orally Decoction taken orally
54	<i>Tetracera indica</i> (Hout. ex Chris. & Panz.) Merr.	Mempelas	Dilleniaceae	Climber	Leaves	Skin itch	Pounded and applied topically
					Roots	Hypertension, fever	Decoction taken orally
55	<i>Urena lobata</i> L.	Pulut pulut	Malvaceae	Herb	Roots	Post-partum	Decoction taken orally
56	<i>Zingiber officinale</i> Rosc.	Halia	Zingiberaceae	Herb	Leaves	Sprain	Pounded and applied topically
					Rhizome	Flatulence Pain during menses Bites, stings, headache Leucorrhea	Decoction taken orally Juice taken orally Pounded and applied topically
						Post-partum	Compound decoction with roots of <i>Capsicum frutescens</i> , <i>Ricinus communis</i> and cumin seeds taken orally Pounded with pepper, turmeric, eaten with rice
						Weak teeth	Pounded with salt, juice used as gargle

Among the recent works on traditional knowledge on medicinal plants in Malaysia, the present study records among the highest number of medicinal plant species encountered for a locality studied. This study also indicates large variations in medicinal plants usage among and between ethnic groups of different villages. There is a need for more studies on traditional knowledge on medicinal plants in villages of both similar and different ethnic groups so that accurate scenarios and trends in medicinal plants usage can be obtained.

Preparation, application, and parts used of medicinal plants in the present study are very similar to those in other communities in Malaysia and other regions in the world. Most of species of medicinal plants that were used in the present study and other previous studies are angiosperms. Nevertheless, findings in this study will contribute to an efficient exploitation and conservation of medicinal plants especially in Malaysia.

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