

The Use of Medicinal Plant Species by the Temuan Tribe of Ayer Hitam Forest, Selangor, Peninsular Malaysia

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ABSTRAK

Hasil awal kajian ke atas kegunaan spesies tumbuhan ubatan oleh masyarakat Temuan di Ayer Hitam dipersembahkan. Walaupun hutan ini dikelilingi oleh kegiatan pembangunan sosio-ekonomi yang pesat, ia merupakan gedung ubat yang agak mencukupi untuk masyarakat Temuan ini. 98 spesies tumbuhan yang mempunyai nilai perubatan serta 140 kegunaan telah direkodkan. Kegunaan telah dikumpulkan dalam tujuh cara penggunaan iaitu minum, makan, kunyah, tampal, sapu, mandi dan syampu.

ABSTRACT

Preliminary results of a study on the use of medicinal plant species by the indigenous people from the Temuan tribe at Ayer Hitam Forest are presented. Although this forest is surrounded by rapid socio-economic development, it is ironically a substantial pharmacopoeia for the Temuans. A total of 98 plant species with 140 different uses were recorded and they were grouped into seven methods of application namely drink, eat, chew, poultice, rub, bath and shampoo.

INTRODUCTION

Plants have been used for many thousands of years to treat human disorders and pains. To the aborigines, plants which are found in their surroundings are not only important sources of food and materials for shelter but also valuable sources of medicines. In many developing countries of the world, pharmacognosy owes its development to a certain extent to the aborigines and native medicine men, who through history have used the therapeutic qualities of herbs with special skills (Gimlett 1939). It has been indicated that of the 7000 species of angiosperms and 600 species of ferns in Malaysia, about 1150 species are reported to have medicinal properties (Latiff 1985). While many species are more popularly known and used than others, many species form the minor ingredients of a decoction or components of a wider curative concept.

SITE DESCRIPTION AND METHODS

This study was conducted in Compartments 12, 14 and 15 of the Ayer Hitam Forest, Selangor,

Peninsular Malaysia. The details of the site have been presented in a companion paper (Faridah Hanum 1999). This forest is inhabited by about 150 aborigines or "orang asli" from the Temuan tribe who still rely on the forest resources for their living.

Data were gathered following a method modified from Martin (1995). In this study, four permanent 1-ha plots (100m x 100m) that have been established for other studies in the forest were used. The informants were two elderly medicine men from the Temuan tribe and they were walked into the plots and asked to identify all plant species that were used as medicines in their community. Information on the plant parts used, uses and method of use were recorded only when there was mutual agreement between the two medicine men. Discussion on the administration and method of application of the medicinal plant species was conducted in the Malay language, which is fairly understood by both parties. When a misunderstanding of terms cropped up, another Temuan who worked in

the Universiti Putra Malaysia and well-versed in both the Malay and Temuan languages clarified. The data collected were supported by herbarium voucher specimens which are deposited at the Herbarium, Faculty of Forestry, Universiti Putra Malaysia. Turner (1995) was used as the main reference with regards to the name of plants in this study.

RESULTS AND DISCUSSION

The total number of medicinal plant species collected during this study was 98, representing 83 genera and 53 families (Table 1). Among the plant families present, Zingiberaceae, Euphorbiaceae, Lauraceae, Leguminosae, Melastomataceae and Piperaceae comprise many species with purported medicinal values from this

TABLE 1
Enumeration of medicinal plant taxa in 4-ha plot at Ayer Hitam Forest, Selangor

Family	Species	Vernacular names
Acanthaceae	<i>Asystasia gangetica</i> (L.) T. Anderson <i>Justicia gendarussa</i> Burm. f.	Ara songsang Gandarusa
Adiantaceae	<i>Taenitis blechnoides</i> (Willd.) Sw. <i>Cheilanthes tenuifolia</i> (Burm.f.) Sw.	Paku balu Telur belangkas
Anisophylleaceae	<i>Anisophyllea disticha</i> (Jack) Baill.	Kalis utan
Annonaceae	<i>Goniothalamus macrophyllus</i> (Blume) Hook.f. and Thomson	Gajah beranak
Apocynaceae	<i>Alstonia angustifolia</i> Wall. <i>Catharanthus roseus</i> (L.) G. Don	Pulai Kemunting cina
Araceae	<i>Homalomena sagittifolia</i> Jungh. ex Schott.	Keladi kemoyang
Aristolochiaceae	<i>Thottea dependens</i> (Planch.) Klotzsch	Telinga beruang
Asclepiadiaceae	<i>Toxocarpus griffithii</i> Decne.	Melati hutan
Aspleniaceae	<i>Asplenium nidus</i> L.	Daun semum
Blechnaceae	<i>Blechnum orientale</i> L.	Paku ikan
Compositae	<i>Blumea balsamifera</i> (L.) D.C. <i>Elephantopus scaber</i> L. <i>Eupatorium odoratum</i> L.	Sembung Tapak sulaiman Busuk-busuk
Costaceae	<i>Costus speciosus</i> (J. König) Sm.	Setawar hutan
Cyperaceae	<i>Mapania cuspidata</i> (Miq.) Uittien <i>Kyllinga brevifolia</i> Rottb.	Pandan tikus Rumput teki
Dilleniaceae	<i>Dillenia suffruticosa</i> (Griff.) Martelli <i>Tetracera indica</i> (Christm. & Panz.) Merr.	Setawan Mempelas
Dioscoreaceae	<i>Dioscorea glabra</i> Roxb. <i>Dioscorea hispida</i> Dennst.	Ubi torak Ubi gadong
Dryopteridaceae	<i>Tectaria crenata</i> Cav.	Paku kikir
Elaeocarpaceae	<i>Elaeocarpus stipularis</i> Blume.	Mendong
Euphorbiaceae	<i>Acalypha indica</i> L. <i>Mallotus leucodermis</i> Hook. f. <i>Mallotus paniculatus</i> (Lam.) Mull. Arg. <i>Phyllanthus amarus</i> Schumach. & Thonn.	Galak kucing Balik angin bopeng Balit gajah Dukung anak
Flacourtiaceae	<i>Hydnocarpus kunstleri</i> (King) Warb.	Setumpul
Gleicheniaceae	<i>Dicranopteris linearis</i> (Burm. f.) Underw.	Resam
Gnetaceae	<i>Gnetum gnemon</i> L.	Melintajau / melinjau
Gramineae	<i>Lophantherum gracile</i> Brongn. <i>Themeda arguens</i> (L.) Hack.	Rumput kelulut Misai adam
Guttiferae	<i>Mesua ferrea</i> L.	Penaga lilin
Hypoxidaceae	<i>Molineria latifolia</i> (Dryand.) Herb. ex Kurz	Lemba
Ixonanthaceae	<i>Ixonanthes icosandra</i> Jack	Pagar anak
Lauraceae	<i>Cinnamomum iners</i> Reinw. <i>Alseodaphne intermedia</i> Kosterm. <i>Litsea grandis</i> (Wall. ex Nees) Hook.f. <i>Cinnamomum porrectum</i> (Roxb.) Kosterm.	Kayu manis hutan Keledang utan Medang daun lebar Kayu manis
Lecythidaceae	<i>Barringtonia racemosa</i> (L.) Spreng.	Putat kedul
Leguminosae	<i>Mimosa pudica</i> L.	Semalu

TABLE 1 (Continued)

	<i>Adenanthera malayana</i> Kosterm.	Saga
	<i>Derris microphylla</i> (Miq.) B.D. Jacks	Tuba
	<i>Flemingia macrophylla</i> (Willd.) Merr.	Seringin
Lycopodiaceae	<i>Lycopodium cernuum</i> L.	Kenarus
Marantaceae	<i>Donax grandis</i> (Miq.) Ridl.	Bemban
Melastomataceae	<i>Oxyphora bullata</i> (Griff.) J.F. Maxwell	Senduduk gajah
	<i>Dissochaeta gracilis</i> (Jack) Blume	Akar senduduk
	<i>Melastoma malabathricum</i> L.	Senduduk
	<i>Phyllagathis griffithii</i> (Hook. f. ex Triana) King	Tutup bumi hutan
Menispermaceae	<i>Coscinium fenestratum</i> (Gaertn.) Colebr.	Akar mengkunyit
	<i>Tinospora macrocarpa</i> Diels	Seruntum
Moraceae	<i>Ficus lepicarpa</i> Blume	Ara kayan
	<i>Ficus grossularioides</i> Burm. f.	Ara derek
	<i>Ficus aurantiacea</i> Griff.	Akar tengkuk biawak
Myrsinaceae	<i>Labisia pumila</i> (Blume) Fern.-Vill.	Kacip Fatimah
Ophioglossaceae	<i>Helminthostachys zeylanica</i> (L.) Hook.	Tunjuk langit/ Jelai
	<i>Ophioglossum pendulum</i> L.	Langsiur
Orchidaceae	<i>Plocoglotthis lowii</i> Rchb.f.	Sepulih
Palmae	<i>Iguanura wallichiana</i> (Wall. ex Martelli) Hook.f.	Palas tikus
Piperaceae	<i>Piper betle</i> L.	Sirih
	<i>Piper caninum</i> Blume	Sirih hutan
	<i>Piper lanatum</i> Roxb.	Kaduk
	<i>Piper umbellatum</i> L.	Sirih
	<i>Peperomia pellucida</i> (L.) Kunth	Ketumpang air
Polypodiaceae	<i>Pyrosia piloselloides</i> (L.) M.G. Price	Sakat ribu-ribu
	<i>Platynerium coronarium</i> D. Koenig ex O.F. Mull.	Pakis tanduk rusa
	<i>Pyrosia nummularifolia</i> (Sw.) Ching	Berunas jantan
Rubiaceae	<i>Ixora concinna</i> Hook. f.	Siantan hutan
	<i>Pavetta wallichiana</i> Streud.	Jejarum
	<i>Psychotria sarmentosa</i> Blume	Salang-salang
Schizaeaceae	<i>Lygodium microphyllum</i> (Cav.) R. Br.	Duit-duit
	<i>Lygodium circinnatum</i> (Burm. f.) Sw.	Ribu-ribu duduk
	<i>Schizaea dichotoma</i> (L.) J.Sm	Paku tombak
Scrophulariaceae	<i>Scoparia dulcis</i> L.	Rempah padang
Selaginellaceae	<i>Selaginella ciliaris</i> (Retz.) Spring	Semerak-merak
	<i>Selaginella willdenowii</i> (Desv.) Baker	Paku merak
Simaroubaceae	<i>Eurycoma longifolia</i> Jack	Tongkat Ali
Solanaceae	<i>Physalis minima</i> L.	Pokok leletup
Sterculiaceae	<i>Scaphium macropodum</i> (Miq.) Beunee ex Heyne	Kembang semangkuk sejantung
Taccaceae	<i>Tacca leontopetaloides</i> (L.) Kuntze	Janggut adam
Thymelaeaceae	<i>Aquilaria malaccensis</i> Lamk.	Gaharu/ karas
	<i>Gonystylus affinis</i> Radlk.	Ramin dara elok
Ulmaceae	<i>Gironniera nervosa</i> Planch.	Hampas tebu
Verbenaceae	<i>Vitex pinnata</i> L.	Halban
	<i>Vitex trifolia</i> L.	Lemuni hitam
Vitaceae	<i>Pterisanthes</i> sp.	Akar kalis
Woodsiaceae	<i>Diplazium allantoideum</i> M.G. Price	Paku kijang
Zingiberaceae	<i>Alpinia conchigera</i> Griff.	Lengkuas kecil/padi
	<i>Curcuma aeruginosa</i> Roxb.	Temu hitam
	<i>Curcuma zedoaria</i> (Christm.) Roscoe	Temu kuning
	<i>Etlingera elatior</i> (Jack) R.M. Sm.	Kantan
	<i>Zingiber griffithii</i> Baker	Tepus kecil/huma
	<i>Zingiber puberulum</i> Ridl.	Tepus
	<i>Zingiber officinale</i> Roscoe	Halia bara
	<i>Zingiber spectabile</i> Griff.	Tepus tanah/ Langkinang

forest (Table 1). There are 140 different uses recorded from the medicinal plants listed and grouped into seven methods of application viz., drink, eat, chew, rub, poultice, bath and shampoo (Table 2). Majority of the medicinal plant species were decoctions of different plant parts mainly taken as a drink. The rest of the medicinal plant parts were either used as a rub, bath or poultice. To a small extent, some plant parts were chewed such as the stem of *Costus speciosus* with betel nut to relieve coughs, and sometimes eaten raw such as the ripe fruits of *Gnetum gnemon* for a laxative. A medicinal plant species may be

multipurpose in use such as the leaves of *Asystasia gangetica* which can be used as a bath, poultice or rub for different treatment of diseases. The same plant parts when prepared in different ways will also treat different health problems as shown by *Alpinia conchigera* (Table 2). Occasionally, there is a mixture of plant parts from different species for the treatment of certain diseases. An example includes decocting together leaves of *Piper caninum* with roots of *Labisia pumila* for the relief of throat ache.

When compared with some relevant ethnobotanical literatures mainly of Burkill

TABLE 2
Temuan administration and application of medicinal plant species

Scientific names	Uses and parts used	Method of application
<i>Acalypha indica</i>	Root and leaf decoction for skin complaints, ulcer, constipation and brochitis; whole plant decoction for stomach cleansing and aphrodisiac	Drink
<i>Adenanthera malayana</i>	Leaf and bark decoction as antiseptic	Rub
<i>Alpinia conchigera</i>	Root decoction to clean hair from fleas Pounded leaves to treat boils and swelling on stomach after childbirth. Pounded rhizome for pain inside bone Powdered rhizomes with water for stomach ache	Shampoo Poultice Rub Poultice
<i>Alseodaphne intermedia</i>	Juice from leaves to prevent insect bites Pounded bark with water to protect from shingles	Rub Drink
<i>Alstonia angustifolia</i>	Pounded leaves applied on head to treat high fever	Poultice
<i>Anisophyllea disticha</i>	Leaves pounded to treat pain inside bones	Rub
<i>Aquilaria malaccensis</i>	Bark and root decoction as tonic preparation during pregnancy, after childbirth and various other diseases of women	Drink
<i>Asystasia gangetica</i>	Juice from leaves for eye treatment Leaves chewed raw and applied externally to wound Leaves mixed with 'paku merah' to relieve pain inside bone	Bath Poultice Rub
<i>Barringtonia racemosa</i>	Leaves of roots and bark for itch and chicken pox	Rub
<i>Blechnum orientale</i>	Pounded roots and leaves to treat skin complaints Decoction of plant for dropsy	Rub Drink
<i>Blumea balsamifera</i>	Leaf decoction for cough and distended stomach, high blood and insomnia As lotion after childbirth to whole body and on head for headache	Drink Rub

THE USE OF MEDICINAL PLANT SPECIES BY THE TEMUAN TRIBE

TABLE 2 (Continued)

<i>Catharanthus roseus</i>	Decoction of stem, leaves and root to treat diabetes, insect bites, period pains and high blood pressure	Drink
<i>Cheilanthes tenuifolia</i>	Decoction of leaves and stems for healthy hair	Drink
<i>Cinnamomun iners</i>	Juice of leaf for food poisoning and root decoction given after childbirth Poultice of leaves squeezed into wound, pounded leaves for rheumatism	Drink Poultice
<i>Cinnamomun porrectum</i>	Juice of leaf for food poisoning and root decoction given after childbirth and given to girls attaining maturity	Drink
<i>Coscinium fenestratum</i>	Stem and root decoction as aphrodisiac and given after childbirth Ash of roots or stems to treat nose ulcer	Drink Rub
<i>Costus speciosus</i>	Root decoction given after childbirth and high fever Scrape of stem applied to leprous skin Pounded stems rubbed for skin complaints Stem eaten with betel nut to treat cough. Decoction of leaves to treat stomach ache and stomach ulcers in children Decoction of rhizome as tonic	Drink Poultice Rub Chew Drink Drink
<i>Curcuma aeruginosa</i>	Rhizome decoction for treatment after childbirth	Bath
<i>Curcuma zedoaria</i>	Rhizome as universal tonic to regain strength for women and constipation Pounded rhizomes for wound Pounded rhizomes as medicine for after childbirth	Drink Poultice Eat
<i>Derris microphylla</i>	Decoction of pounded leaves for skin complaints	Rub
<i>Dillenia suffruticosa</i>	Pounded leaves for rheumatism	Poultice
<i>Dicranopteris linearis</i>	Juice of leaves to treat high fever	Bath
<i>Dioscorea glabra</i>	Pounded leaves to cure sores	Poultice
<i>Dioscorea hispida</i>	Leaves pounded for sores of yaw	Rub
<i>Diplazium allantoideum</i>	Pounded leaves rubbed at armpits to prevent body odour	Rub
<i>Dissocheata gracilis</i>	Leaves decoction as an antidote for "Ipoh" poison	Drink
<i>Donax grandis</i>	Decoction of leaves and roots for cooling body during fever Juice of stems applied for snake bites Poultice of leaf or stem for eye refreshment	Bath Rub Poultice
<i>Elaeocarpus stipularis</i>	Pulped leaves to cure sores	Poultice
<i>Elephantopus scaber</i>	Leaf and root decoction as supplement after childbirth, tonic, deworming, venereal disease and cough Pounded leaves for distended stomach and wound	Drink Poultice
<i>Ellingera elatior</i>	Rhizome mixed with <i>Piper betle</i> to eliminate excessive gas after childbirth	Chew

TABLE 2 (Continued)

<i>Eupatorium odoratum</i>	Leaves pounded for wound and stop bleeding	Poultice
<i>Eurycoma longifolia</i>	Decoction of roots as aphrodisiac for men and used as tonic	Drink
<i>Ficus aurantiacea</i>	Root decoction as aphrodisiac Leaves pounded for toothache	Drink Rub
<i>Ficus grossularioides</i>	Crushed bark to treat ring worms and shingles	Poultice
<i>Ficus lepicarpa</i>	Pounded leaves to treat ring worms	Rub
<i>Flemingia macrophylla</i>	Pounded leaves for stomach ache	Rub
<i>Girardinia nervosa</i>	Root decoction to prevent skin diseases	Bath
<i>Gnetum gnemon</i>	Ripe fruits for stomach cleansing and prevent constipation	Eat
<i>Goniothalamus macrophyllus</i>	Decoction of root to eliminate excessive gas in body Decoction used as lotion to treat body pains and rheumatism Pounded leaves and bark for skin complaints	Drink Rub Bath
<i>Gonystylus affinis</i>	Oil from wood to treat asthma	Rub
<i>Helminthostachys zeylanica</i>	Decoction of leaves as tonic after childbirth Rhizome mixed with <i>Piper betle</i> for cough and venereal diseases	Drink Eat
<i>Homalomena sagittifolia</i>	Decoction of root and leaves for fever Pounded roots applied on distended stomach	Drink Poultice
<i>Hydnocarpus kunstleri</i>	Decoction of bark for internal disorders and skin disease	Drink
<i>Iguanura wallichiana</i>	Roots and leaves for birth control for woman	Eat
<i>Ixonanthes icosandra</i>	Decoction of root for whooping cough Juice of leaves rubbed for chest pains	Drink Rub
<i>Ixora concinna</i>	Flowers decoction to treat dysentery and stimulate gastric secretions	Drink
<i>Justicia gendarusa</i>	Leaves pounded with lemon for deworming and stomach ache Pounded roots for mouth during fits	Poultice Rub
<i>Kyllinga brevifolia</i>	Pounded roots applied externally for skin complaints	Poultice
<i>Labisia pumila</i>	Roots decoction to treat haemorrhoids and rheumatism. Roots mixed with decoction of other herbs given after childbirth.	Drink
<i>Litsea grandis</i>	Bark decoction as tonic to treat pain inside sores and headache Leaf poultice to treat insect bites and snake bites	Drink Poultice

TABLE 2 (Continued)

<i>Lophantherum gracile</i>	Decoction of root for childbirth treatment, mixed with tea as carminative and stomach ache treatment Roots decoction to treat swelling on body	Drink Rub
<i>Lycopodium cernuum</i>	Decoction of plants for cough and asthma	Drink
<i>Lygodium microphyllum</i>	Leaf decoction to treat fever and high temperature Leaves chewed to prevent fits	Bath Chew
<i>Lygodium circinnatum</i>	Exudate from rhizome as insect repellent and to treat aquatic animal bites and snake bites	Rub
<i>Mallotus leucodermis</i>	Decoction of roots to treat skin complaints	Bath
<i>Mallotus paniculatus</i>	Decoction of roots to treat after childbirth	Bath
<i>Mapania cuspidata</i>	Root decoction for treatment after childbirth and leaves to treat diarrhoea	Drink
<i>Melastoma malabathricum</i>	Decoction with other plants given after childbirth, pounded leaves for tooth ache and eliminate excessive gas inside body. For leukorea, mix with sugar and ginger Fruits pounded to treat small wound Pounded roots and leaves for skin complaints	Drink Poultice Rub
<i>Mesua ferrea</i>	Decoction of seed oil, root and flowers taken after childbirth Decoction of dried flowers for external skin complaints	Drink Rub
<i>Mimosa pudica</i>	Root decoction as tonic Pounded leaves for swelling on body	Drink Poultice
<i>Molineria latifolia</i>	Decoction of rhizome with <i>Areca</i> for menorrhagia	Drink
<i>Ophioglossum pendulum</i>	Juice of leaves to cleanse and treat hair	Shampoo
<i>Oxympora bullata</i>	Roots and leaves decoction given after childbirth	Drink
<i>Pavetta wallichiana</i>	Flowers decoction to prevent from cough, roots decoction given after childbirth Lotion from bark to treat nose ulcers	Drink Rub
<i>Peperomia pellucida</i>	Decoction of plants to treat rheumatism	Drink
<i>Phyllanthus amarus</i>	Decoction of plant for diarrhoea, high blood pressure Decoction of plant with goat milk for diabetes Decoction of plants for cleansing wound and skin complaints	Drink Drink Rub
<i>Phyllagathis griffithii</i>	Decoction of root mixed with other plants given after childbirth and to treat irregular menses	Drink
<i>Physalis minima</i>	Decoction of plants to treat high fever Ripe fruits to avoid stomach ulcer and stomach ache	Drink Eat
<i>Piper betle</i>	Leaves to cure disease of mucous membrane of the mouth	Chew

TABLE 2 (Continued)

<i>Piper caninum</i>	Decoction with <i>Labisia pumila</i> (Kacip Fatimah) roots to cure throat-ache	Drink
<i>Piper lanatum</i>	Decoction of plants for malaria, toothache, rheumatism, deworming, fever and influenza Eaten raw to cure stomach ulcer	Drink Eat
<i>Piper umbellatum</i>	Decoction of plant to prevent malaria, treat cough, influenza, kidney ache, rheumatism and tooth ache	Drink
<i>Plocoglottis lowii</i>	Juice of pounded leaves to treat skin complaint	Rub
<i>Psychotria sarmentosa</i>	Roots and leaves decoction given after childbirth Decoction of plants to cure fever	Drink Bath
<i>Pterisanthes sp.</i>	Pounded roots rubbed for relieving swellings	Rub
<i>Pyrrosia piloselloides</i>	Decoction of plant to treat cough, diarrhoea and gonorrhoea Decoction of plants to treat shingles and ring worms	Drink Bath
<i>Pyrrosia nummularifolia</i>	Decoction from leaves to cure cough and fits	Drink
<i>Scaphium macropodum</i>	Decoction of plants to treat high fever, and cooling down for refreshing body Ripe fruits to treat high body temperature	Drink Eat
<i>Schizaea dichotoma</i>	Decoction of roots to treat cough and throat ache	Drink
<i>Scoparia dulcis</i>	Decoction of plant to eliminate excessive gas in the body after childbirth	Drink
<i>Selaginella ciliaris</i>	Lotion from leaves for skin complaints	Rub
<i>Selaginella wildenowii</i>	Decoction of leaves to cleanse wound	Bath
<i>Tacca leontopetaloides</i>	Decoction of roots with "selayar hitam" for good kidney function Decoction of roots to eliminatate excessive gas after childbirth	Drink Drink
<i>Taenitis blechnoides</i>	Decoction of plant to treat ring worm and shingles	Drink
<i>Tectaria crenata</i>	Decoction of plants to treat venereal disease like gonorrhoea	Drink
<i>Tetracera indica</i>	Root decoction to treat high blood pressure and high fever Leaves and roots pounded together for skin itch	Drink Poultice
<i>Themeda arguens</i>	Decoction of root as aphrodisiac, blood cleansing and body refreshing Plant poultice to treat lumbago	Drink Poultice
<i>Thottea dependens</i>	Leaves pounded for skin complaints; rubbed behind ear for fever	Rub
<i>Tinospora macrocarpa</i>	Decoction of leaves for vermifuge and cholera Juice of leaves to treat wound Decoction of rhizome to eliminate excessive gas after childbirth	Drink Rub Drink

TABLE 2 (Continued)

<i>Toxocarpus griffithii</i>	Fruits eaten raw for general well-being	Eat
<i>Vitex pinnata</i>	Decoction of bark and leaf for stomach-ache and given after childbirth	Drink
	Bark and leaves pounded with other plants to treat fever and wounds	Poultice
<i>Vitex trifolia</i>	Decoction of stem as diuretic, roots decoction to reduce high fever and after childbirth	Drink
<i>Zingiber aromatica</i>	Decoction for cough and one of ingredients for traditional tonic	Drink
<i>Zingiber cassumunar</i>	Decoction of leaves with black pepper for stomach ache	Drink
<i>Zingiber griffithii</i>	Decoction of root to eliminate excessive gas in the body	Bath
	Pounded flowers to avoid fainting	Rub
	Lotion from leaves to treat rheumatism	Rub
<i>Zingiber officinale</i>	Pounded plants to treat toothache	Poultice
	Rhizome pound with flowers of <i>Ixora</i> sp. to treat stomach-ache, rheumatism and headache	Eat
<i>Zingiber puberulum</i>	Decoction of leaf to treat fever	Drink
<i>Zingiber spectabile</i>	Juice from leaves to treat eye-ache and swelling	Bath

(1966), a substantial amount of overlap in the use of medicinal plant species by the Temuans with other people elsewhere occurs, suggesting that these species are indeed effective in the treatment of certain diseases. Thus, these species should be taken as clues for the development of new drugs. Medicinal plant resources can be used directly as pharmaceuticals (plant extracts and products), serve as templates for chemical synthesis of related medicinal compounds and used as investigative or evaluative tools in the drug development and testing process of chemical compounds.

CONCLUSION

The Temuans have not lost their traditional knowledge in the use of medicinal plants as a panacea for various health problems and diseases despite their exposure to the socio-economic transformation and improved communications surrounding the forest. It is however feared that when the Temuan elderlys have gone and development further seeps into this forest, both knowledge and medicinal plant resources will

also perish. It is not unlikely that knowledge and resources will remain with habitat loss or conversion for other land uses.

The conservation of the medicinal plant species in this forest can be done in two ways: conservation in natural areas and cultivation. In the former, which is more desirable as plant species grow naturally and cheaper in management, there is a risk of encroachment. Encroachment in the Ayer Hitam Forest is rather rampant especially in the northern part. Being the only larger forest left in the midst of development in the Klang Valley (the other being Bukit Nenas Forest Reserve), it is inevitable that species of economic value especially those with medicinal properties will be over-exploited by local vendors. So as to safeguard the medicinal plant resources of this forest, the author would like to suggest an arboretum i.e. an area devoted to the cultivation of a wide selection of woody plants (trees, shrubs, vines, etc.) to be set up as a back-up. Although the main objective of an arboretum is not for the conservation of medicinal plants, allocations

can be given for this noble purpose in the fenced part of the forest. An arboretum can simultaneously be maintained as both centres of research, education and recreational areas.

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