

MEDICINAL PLANTS USED BY KADAZANDUSUN COMMUNITIES AROUND CROCKER RANGE

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ABSTRACT

A brief account of 50 plant species used by the Kadazandusun communities living around the Crocker Range Sabah, Malaysia is presented here. It is interesting to note the commonality between plants used to treat specific ailments by the Kadazandusun communities here and other indigenous communities of Borneo as previously documented by our own studies. The plants include those used for treating common afflictions such as minor wounds, skin diseases, diarrhea, fever, coughs and malaria. Among the plant species that seem to appear repeatedly in our documentation of medicinal plants in Borneo are Blumea balsamifera for fever, Cassia alata for skin diseases, Centella asiatica for stomachache, Gendarusa vulgaris for general malaise, Nicotiana tabacum as insect repellent, Psidium guajava for diarrhoea, Phyllanthus niruri for malaria, Tinospora crispa for hypertension and Zingiber officinale for rheumatism.

INTRODUCTION

Indigenous peoples of Borneo have utilised the whole gamut of plant parts, animal products and minerals as medicines for millennia. Today the important contribution this traditional knowledge and practices had given to our modern medicine can be attested from the fact that more than 40% of commonly prescribed medicines throughout the world found their origins directly or indirectly in plants or animals. These include several major life-saving drugs such as reserpine, atropine, quabain, vinblastine, vincristine and taxol. According to the estimate of the World Health Organisation, approximately 80% of the people in developing countries rely chiefly on traditional medicines for the primary health care, of which a major portion involves the use of plants extracts or active principles originating from parts of plants (Farnsworth et al. 1985). In most parts of Borneo, plant extracts are still used in their crude forms to treat diseases; for instance *Atropa belladonna* tincture as an antispasmodic, *Rauwolfia serpentina* roots for hypertension and also as a tranquiliser and *Papaver somniferum* extract or tincture as an analgesic (Farnsworth et al. 1985). In most cases, the therapeutic effects and other purported benefits derived from the use of these extracts are yet to be scientifically validated. There is an urgent need to document the valuable knowledge on medicinal plants because of the rapid disappearance of forest habitats. Furthermore, the native healers who possess the traditional knowledge of medicinal plants often fail to transfer their knowledge to younger generations who appears to have access to all the benefit and conveniences of the modern medicine and thus least interested to inherit the traditional knowledge of their forefathers.

This report is the result of an ethnomedical survey carried out in Tambunan and Keningau areas of Sabah. Interviews were done involving individuals belonging to the Kadazandusun people, the

largest ethnic group representing half of the indigenous population of Sabah.

MATERIALS AND METHODS

The field collection trips concentrated on the villages located in the vicinities of the Crocker Range National Park (CRNP). Information on the plants and their medicinal uses was obtained from village headmen, traditional healers and other knowledgeable informants living in these villages. Plants specimens were collected in the company of local informants to ensure that correct specimens were obtained for taxonomic identification and future scientific investigations. Plants were identified by taxonomists at the UNIMAS Herbarium.

Enumeration of Medicinal Plants

Medicinal plants are arranged alphabetically according to their genus, species and family. Vernacular names used by the local community are included; followed by the uses of the plants and their purported efficacies. Information on their chemical constituents and pharmacological reports are also given when available from published sources.

Acorus calamus L.

(Araceae)

Vernacular name: Kamburongoh

A root decoction is taken as a tonic. Fresh rhizomes are taken to cure diarrhoea, relieve gastritis and as a poison antidote. The plant contains a number of chemically interesting compounds including terpenes, flavone diglucoside, sterol and vitamin C (Santos 1981). Traces of the alkaloid gramine have been detected in the leaves (Van Dong 1993).

Aloe vera L.

(Liliaceae)

Vernacular name: Dihabuazo (Kadazan)

The sticky sap from the succulent leaves is applied to skin itches, cuts and burns. The sap is also used to relieve stomach-aches and as hair shampoo. The sap contains several compounds including hydroxyanthraquinones barbaloin and aloe emodin; and also the hydroxychromones aloesin and aloesone

Alstonia scholaris Bl.

(Apocynaceae)

Vernacular name: Tomboilik

Root decoction is used for hypertension, diabetes and malaria.

Amaranthus spinosus L.

(Amaranthaceae)

Vernacular name: Samsam lodut, samsai namatai

A tea of the whole plant or roots is taken for dysentery. It is also used for treatment of urinary tract disorders and as a diuretic. The plants is however known to contain hydrogen cyanide and

care must be taken not to exceed the recommended dose (Santos 1981).

***Annona muncata* L.**

(Annonaceae)

Vernacular name: Hampun kapal

Roots, together with those of *Blumea balsamifera*, *Cymbopogon citratus* and *Imperata cylindrica* are boiled and the aromatic steam is used to warm the body of a person suffering from high fever. A root poultice is used to cure coughs. The plant has been reported to contain alkaloids, sterols and terpenes (Santos,1981).

***Areca catechu* L.**

(Palmae)

Vernacular name: Lugas

Unripe seeds are pounded and the juice applied to cuts and scabies. The seeds are chewed with leaves of *Piper betle* as a relaxant. In Chinese medicine, it is used to kill intestinal parasites, decrease heart rate and lower the blood pressure (Huang 1993). It is known to contain methyl and ethyl esters of two reduced pyridine carboxylic acids as well as the methyl and ethyl esters of pyridine-3-carboxylic acid and piperidine-3-carboxylic acid (Holdsworth et al. 1998). Nicotine is also present in trace quantities (Holdsworth et al. 1998).

***Artocarpus heterophyllus* Lamk.**

(Moraceae)

Vernacular name: Nanko

Shredded leaves are steeped in water, cooled and taken to relieve sore throat. Dusuns treat skin infections daily with the heated leaves. Vitamin C, terpenes, flavones and pectic acid are known to occur in the plant (Santos, 1981).

***Asclepias curassavica* L.**

(Asclepiadaceae)

Vernacular name: Piak-piak

Root decoction is taken as tea to treat fever and bronchitis.

***Biden pilose* L.**

(Compositae)

Vernacular name: Tondiokot

A decoction of roots boiled in water and taken orally to relieve pain during teething.

***Blechnum orientale* L.**

(Blechnaceae)

Vernacular name: Tungau/dungau

Pounded leaves are applied as a paste to boils. Shoots are used in a similar way for sores.

***Blumea balsamifera* (L.) DC**

(Compositae)

Vernacular name: Tawawoh

An infusion of leaves is used in herbal baths by mothers after childbirth. Leaf tea is taken for fevers and leaf paste is applied to cuts and wounds. The plants contain many essential oils.

***Brucea javanica* Merr.**

(Simaroubaceae)

Vernacular name: Gompoit/garakat

Used to treat stomach ache, malaria, dandruff and infestations by lice, tape-worms or thread-worms. Roots, leaves or fruits pounded and diluted with a little water and applied as paste or steeped in water for drinking.

***Capsicum frutescens* L**

(Solanaceae)

Vernacular name: Ladoh/lusung

Pounded leaves are poulticed on skin itches. The fruit is used to treat discomforts and common ailments associated with pregnancy. Leaves contain alkaloids and the fruits contain various essential oils (Santos 1981).

***Carica papaya* L.**

(Caricaceae)

Vernacular name: Tepayas

A root decoction is taken as a means of birth control and for uterine contractions after childbirth. Similar decoction is used to prevent menstruation. The fruits contain ascorbic acid, papain, pectin, carotene, xanthine, carpine, mallic acid, essential oils and 5-hydroxytryptamine alkaloid (Santos 1981).

***Cassia alata* L.**

(Leguminosae)

Vernacular name: Hihinggos, gombiring

Pounded leaves are used externally for stomach-aches. Young leaves are crushed and applied as a paste for skin infections such as ringworm and scabies.

***Centella asiatica* (L). Urb.**

(Umbelliferae)

Vernacular name: Pegagoh

Teas of the plants are taken for hypertension and diarrhoea, as well as for urinary tract infections. The dried herb is used as a detoxicant, diuretic and to lower blood pressure and decrease heart rate. The plant contains fatty acids, sterols and alkaloids (Santos,1981).

***Cocos nucifera* L.**

(Palmae)

Vernacular name: Piasau

Root decoction is taken for diarrhoea, fever and headaches. Coconut oil is used for massage to reduce muscular aches and discomfort as well as reducing fever.

***Codiaeum variegatum* (L.) B1. (Euphorbiaceae)**

Vernacular name: Bunga mas

Root decoction is taken to treat gastric ulcers. Leaves contain antibacterial substances.

***Coix lachryma Jobi* Linn (Graminae)**

Vernacular name: Dalai

Leaf decoction is taken to treat cough and fever.

***Commelina nudiflora* L. (Commelinaceae)**

Vernacular name: Soriau ngadau

Crushed leaves applied on forehead to treat fever.

***Costus speciosus* (Koenig) SM. (Zingiberaceae)**

Vernacular name: Sibhu-sibhu

Peeled stems are steeped in hot water and taken by patient with asthma or influenza.

***Curcuma longa* L. (Zingiberaceae)**

Vernacular name: Kunyit

Pounded rhizomes are applied as a paste on sprained joints and the rhizome is rubbed onto insect bites to reduce itchings. Chemical constituents of the rhizome include camphor, curcumin and zingiberene.

***Cymbopogon citratus* (DC) Stapf. (Graminae)**

Vernacular name: Sagumau

Stem decoction is taken as a tonic. Lemon grass is known to contain a variety of essential oils including citral, limonene, linelool, myrecene, geraniol, decanal and furfural.

***Durio zibethinus* Murr. (Bombaceae)**

Vernacular name: Hampun

Roots, together with those of the coconut are boiled to make a drink to relieve stomach ache. The bark sap is used to treat mouth ulcers.

***Euphorbia hirta* L. (Euphorbiaceae)**

Vernacular name: Kohonsizud

The whole plant is boiled to give a bath for relieving skin itches. A leaf poultice is used to reduce swellings and rid of boils.

Gendarusa vulgaris* Nees.*(Acanthaceae)**

Vernacular name: Tambiau

Leaves are pounded into a paste and applied to muscle pains, and added to coconut oils to boil. Young leaves are boiled for drinks and bath for treatment of lumbago and purported to possess aphrodisiac value. Mothers use a decoction of twigs in a herbal bath after child birth. Leaves are used as a poultice to treat rheumatism and arthritis.

Hibiscus rosa-sinensis* L.*(Malvaceae)**

Vernacular name: Tongkuango

Pounded leaves, with a little salt, are applied as a paste to cuts, swollen fingers, boils and sprains. Sap from shoots is taken for asthma. Crushed flowers are squeezed onto boils and as poultice for wounds and swelling.

Hypericum japonicum* Thunb. Ex Murray.*(Hypericaceae)**

Vernacular name: Tungkedem

Young leaves are used to treat skin diseases such as ringworm and shingles. The leaves are pounded and applied on affected parts.

Hyptis capitata* Jack. Poit.*(Lamiaceae)**

Vernacular name: Bala

The roots are boiled and taken as tea for treating fevers and colds. The chemical constituents include ursolic acid and hyptatic acid.

Imperata cylindrica* (L.) Beauv.*(Graminae)**

Vernacular name: Paka

Root decoction are taken for fevers and chickenpox. Root decoction is also used to treat acute toxic hepatitis, measles and urinary complaints.

Leucosyke capitellata* (Poiret) Wed.*(Urticaceae)**

Vernacular name: Mandahasi

Leaf decoction is given to treat hypertension and diabetes.

Melastoma malabathricum* L.*(Melastomaceae)**

Vernacular name: Gosing/hosing

A paste of pounded leaves is applied to cuts and wounds as a styptic. A tea of flowers is used to ease stomachache and root decoction is taken for measles. Scars left by small cuts are rubbed on with the plant's purple flowers and also used in a face wash.

Mimosa pudica* L.*(Leguminosae)**

Vernacular name: Togop-togop

A root decoction is taken to ease headache or dizzy spells. A paste of the whole plants is applied to cuts and wounds. A root decoction is taken to relieve asthma and diarrhoea. It is also used to treat neurosis and has a tranquilising effect. A decoction is used externally on wounds and haemoptysis and used as a sedative. The roots contain the alkaloid mimosine as well as sitisine and related alkaloids (Santos 1981; Huang 1993).

Morinda citrifolia* L.*(Rubiaceae)**

Vernacular name: Bingkudu

Decoctions of roots or barks are taken to treat hypertension or gastric ulcer. Root decoctions are drunk to regulate menstruation and the fruits are chewed to prevent tooth decay. The plant is also used to treat hypertension. The root contains a trihydroxyanthraquinone methyl ether (Van Dong 1993).

Nicotiana tabacum* L.*(Solanaceae)**

Vernacular name: Sigup

Pounded leaves are applied as a paste to cuts, wounds and animal or insect bites. Chemical constituents include several pyrrolidine alkaloids, including nicotine.

Phyllanthus niruri* L.*(Euphorbiaceae)**

Vernacular name: Nipon-nipon

Plants are pounded into a paste, squeezed and the juice taken to treat malaria and hypertension.

Physalis minima* L.*(Solanaceae)**

Vernacular name: Tulapak

Plant decoction (root, leaf or fruit) taken as tea for treating hypertension, diabetes and malaria.

Piper betle* L.*(Piperaceae)**

Vernacular name: Daing

Leaf tea is taken for coughs. Pounded leaves are turned into a paste and applied to cuts, boils and scabies. The warmed leaves are used to stop nosebleed. Leaves contain antibacterial substances and many types of essential oils.

Plantago major* L.*(Plantaginaceae)**

Vernacular name: Kulung

Roots boiled and taken as tea for treating diabetes and urinary infection. Chemical compounds

isolated include ascorbic acid, ferulic acid, niacin, gentisic acid, plantagonine, planteose, salicylic acid, ursolic acid and vanillic acid.

***Polygala paniculata* L.**

(Polygalaceae)

Vernacular name: Gosok

Decoction of roots boiled in water is taken as tea to cure cough and fever. The plants contain a variety of essential oils.

***Psidium guajava* L.**

(Myrtaceae)

Vernacular name: Liabas/siabas

Young leaves are steeped in hot water and drunk to relieve stomach ache and diarrhoea. Similarly it is used to treat dysentery and acute gastroenteritis. The fruit contains glucosides of the flavones avicularin and guajaverin, as well as crataegolic, luteioic and argamolic acids (Huang 1993).

***Scoparia dulcis* L.**

(Scophulariaceae)

Vernacular name: Kolimpang

A tea of the plant is taken for reducing fever and treatment of arthritis, malaise and gastric pains. The plant is also used to treat gastralgia. Leaves contain a variety of essential oils and antibacterial substances (Santos 1981).

***Sida rhombifolia* L.**

(Malvaceae)

Vernacular name: Tatak-tatak, lingkabau

Pounded leaves are applied as a paste to reduce swelling and rid of boils and headaches. Roots decoction is taken as tea to treat diarrhoea. The plant contains the alkaloid ephedrine, as well as antibacterial substances (Santos 1981).

***Stachytarpheta indica* (L.) Vahl.**

(Verbenaceae)

Vernacular name: Tali-tali

Roots boiled with water and taken as tea as an antidote for snake or scorpion bites. Leaf paste is applied topically for skin diseases.

***Syzygium malaccense* (L.) Merr.**

(Myrtaceae)

Vernacular name: Jambu yagang

A bark decoction is drunk to ease stomach ache and diarrhoea.

***Tinospora crispa* L.**

(Menispermaceae)

Vernacular name: Sapai

Whole plant is boiled for drinking to treat hypertension and malaria.

***Urena lobata* L.**

(Malvaceae)

Vernacular name: Tangirupang

Crushed flowers, with salt, are applied to boils. Decoction of roots are taken by children with fevers. A decoction of roots, with those of *Sida rhombifolia*, is taken for stomachache and coughs. Leaves are used in aromatic steam bath for fevers and decoction of leaves is applied to skin rashes. The root is also used as a poultice to reduce swellings.

***Uvaria grandiflora* Roth**

(Annonaceae)

Vernacular name: Potudung

Leaves pounded into paste and used as poultice wrapped around abdomen and lower back to treat colds and shivers in children.

***Vitex pubescens* Vahl.**

(Verbenaceae)

Vernacular name: Kuhimpapo

A paste of pounded leaves, with salt, is applied to cuts and wounds. Young shoots are eaten to counteract hypertension.

***Zingiber officinale* Rosc.**

(Zingiberaceae)

Vernacular name: Hazo/layo

Powdered rhizomes with a little alcohol are used to massage sprains, muscle pains or rheumatism. Rhizomes contain a variety of essential oils including borneol, camphene, chavicol, cineol, citral, geraniol, gingerin, gingerol, linalool, vinillyl alcohol, zingerone and zingiberene.

Discussion

A total of fifty plant species that are commonly used by the Kadazandusun communities living in the vicinities of the Crocker Range have been identified and their uses recorded. Some of the plants commonly used include *Blumea balsamifera* for fever, *Cassia alata* for skin diseases, *Centella asiatica* for stomachache *Gendarusa vulgaris* for general malaise, *Nicotiana tabacum* as insect repellent, *Psidium guajava* for diarrhoea *Phyllanthus niruri* for malaria, *Tinospora crispa* for hypertension and *Zingiber officinale* for rheumatism.

The Kadazandusun communities have evolved a system of categorising their traditional medicines obtained from nature according to the complexity through which the various concoctions are prepared before use. Thus *rusap tribau* are concoctions used for less critical ailments and are typically prepared from a single ingredient of the plant parts. *Rusap tribau* for instance are used for treatment of influenza, coughs, diarrhea, minor cuts and wounds or skin diseases. *Rusap taralom* on the other hand are medicines made from more complex ingredients and meant for use in the treatment of more life-threatening diseases that normally remain

undiagnosed even by the village shamans.

Although traditional medicines are still in common use by the local communities here in the vicinities of the Crocker Range, accurate knowledge of the plants and their medicinal properties are held by only a few individuals in each community. These traditional healers are, almost without exception, community elders of 50 years or older. Unfortunately these invaluable knowledge and art of healing that have been religiously preserved for generations are not being passed on to the younger generation of today. Much of this traditional knowledge on medicinal plants will likely be lost with the current elderly generation of healers. Documentation and preservation of this indigenous knowledge must therefore be accorded high priority if the future generation intends to benefit from it in overcoming some of the new emerging problems in health, agriculture and pharmaceutical industry.

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