ASEAN HERBAL & MEDICINAL PLANTS

VOLUME 3

Editors:

Mastura Mohtar, Chee Beng Jin & Firdaus Kamarulzaman





Morinda citrifolia

ASEAN HERBAL & MEDICINAL PLANTS VOLUME 3



The Association of Southeast Asian Nations (ASEAN) was established on 8 August 1967. The Member States are Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand and Viet Nam. The ASEAN Secretariat is based in Jakarta, Indonesia.

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1. Herbal – Therapeutic & Other Uses



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ASEAN HERBAL & MEDICINAL PLANTS VOLUME 3

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Our old tropical forest is home to an enormous variety of flora, and this diversity generates a vast array of natural resources that help to sustain the livelihood, economy, and socio-cultural life of many local communities. Forest plants too have been discovered to contain potential therapeutic values for meeting the medicinal needs of rural communities. Given the importance of recent plantderived products in human health, these resources have become the focal point of a new approach for more effective flora resources conservation.

It is undeniable that there has been a lack of communication on the existence of medicinal plant species, particularly among younger generations in our societies. As time passed, many became forgotten and ran the risk of going extinct. In order to raise public awareness of the value of the natural resources and the traditional knowledge involved, this third volume of the ASEAN Herbal and Medicinal Plants has been prepared with an easy-to-read presentation of the plants and their related local products that are currently on the market.

This publication is an admirable attempt to compile data on plant utility, raising awareness of the medicinal benefits of local tropical plants, both common and rare species, and produce necessary data related to the use of plants for food and healthcare needs.

On behalf of Malaysia I firmly believe that this publication will, inadvertently, support the better management and conservation of plants with medicinal properties as well as the preservation of local communities' traditional knowledge. I am proud to extend my heartiest congratulations to the researchers and personnel involved in the production of such important documents and to see the close collaborations showed among all fellow ASEAN member countries.

Norsham Abd. Latip ASOF Leader (Malaysia)



Acknowledgement

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We are most grateful for all relevant information shared by members of ASEAN Forest Product Development Working Group (formerly the ASEAN Herbal Expert Working Group) over the years as per realize by the three volumes of ASEAN Herbal and Medicinal Plants publications.

Natural products related industries in most ASEAN countries are very much at its infancy despite our mega diverse bio-resources and wide spectra of traditional knowledge. Photos of economic entities vis a vis biomaterial or products commercialized from each species are also featured incognizance to their respective economic potential. In the interest of time, information on herbal species from Brunei Darussalam, Cambodia, Lao PDR and Viet Nam were cited from the previous volumes and complemented with photos of products (manufactured and or locally available) as per acquired from the public domain duly acknowledged at bibliography and photo credit sections.

Last but not least, we would like to extend our sincere appreciation to all who had directly or indirectly contributed to the publication of ASEAN Herbal Medicinal Plants Vol. 1-3. May these publications symbolize our common appreciation to the mega biodiversity and the potpourri of traditional knowledge blessed upon ASIAN region.



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BRUNEI DARUSSALAM



Aloe vera (L.) Burm.f



Vernacular name/s	Lidah buaya (Brunei, Indonesia, Malaysia).
Family	Asphodelaceae
Plant description	A rosette, perennial herb with several short branches forming a dense crown. Leaves: narrow-lanceolate, up to 40 cm long, fleshly with toothed margins. Inflorescence an elongated raceme, arises from the stem terminal. Flowers: yellow-coloured drooping tubular, up to 2.6 cm long.
Propagation	Seedling
Distribution/ Ecology	Commonly planted as an ornamental plant all over the world.
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2



Uses Supported by Experimental and or Clinical Data

• Juice: antibacterial (Pseudomonas aeruginosa, Proteus vulgaris, Escherichia coli, Streptococcus faecalis and Bacillus subtilis) and antifungal activity.

Uses in Local Traditional Medicine

- Inner fleshy part of the leaves blended in water for healthy and beautiful hair.
- For burns or sunburn, the mucilage of the leaves is applied directly to the affected skin.
- The fresh mucilage is a skin conditioner and is applied to wounds in poultice form.

Other Local Usage (if any):

- Incorporated into cosmetic products (lotions, conditioners and sunscreens).
- A polysaccharide from the juice has been used for treating skin wounds, ulcers, insect bites and arthritis. An extract of the leaves is used as a cosmetic base for decreasing wrinkles and smoothing skin.



Chemical Constituents:

• Leaf contains barbaloin, with aperient activity. A polysaccharide obtained from the juice has been used for treating skin wounds, ulcers, insect bites and arthritis.

Contra Indications (If any):

• No available information.



Economic Potential/ Commercial Products



* Imported products available at local market



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Alpinia galanga (L.)Willd.



Vernacular name/s	 Languas, lengkuas (Brunei, Indonesia, Malaysia). Galangal (English).
Family	Zingiberaceae
Plant description	A perennial herb with pseudo-stem, up to 2.2 m high, and thick underground rhizomes. Leaves : alternately arranged in two rows, oblong- elliptic, up to 45 cm x 12 cm with short petioles; margins ciliated with a thin light green marking all around; stipule brownish green marking all around; stipule brownish green with patches of vicious hairs. Inflorescences: in terminal panicles, corolla tube, up to 10 cm long and divides into 3 petals, each 1.9 cm x 1.6 cm; lip, up to 2 cm, with 2 deep limbs, white with red streaks. Fruits: round, up to 1.4 cm and orange-red when ripen.
Propagation	Rhizome
Geographical Distribution / Ecology	Commonly planted in open areas in backyards. Widely distributed in all over Southeast Asian region.
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Usage

Uses Supported by Experimental and or Clinical Data

• No available information

Uses in Local Traditional Medicine

- *Rhizome and pseudostem base decoction to cure stomach-ache, vomiting, diarrhea and indigestion. The rhizome decoction is warm and hot-tasting.*
- Pseudostem: aphrodisiac.

Other Local Usage (if any):

• Spice used in many local dishes.



Scientific Data

Chemical Constituents:

• Rhizome: Essential oil (0.04%). Galangol, cineol, pinene and eugenol.

Contra Indications (If any):

• No available information.



Economic Potential/ Commercial Products

6



Fresh galangal



Paste



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Curcuma longa L.



Vernacular name/s	Kunyit biasa, tamu kunyit (Brunei, Indonesia, Malaysia).
Family	Zingiberaceae
Plant description	A clumped herb with ellipsoidal, 6 cm x 2.7 cm primary tubers and many, 4-7 cm long, 1.5 cm thick rhizomes. Rhizome: brownish and scaly outside and bright orange inside. Shoots erect, up to 90 cm tall with 6-8 leaves and their sheaths from the pseudo stem; Leaf -lamina lanceolate, acuminate, up to 28 cm x 7 cm. Inflorescences: cylindrical spikes, up to 13 cm x 5 cm; bracts elliptic-lanceolate, up to 5 cm x 2.3 cm, upper bracts white-coloured and lower bracts light green; calyx toothed unequally and divided; corolla tube whitish, divides into 3 petals with dorsal lobe hooded; staminodes 2; labellum obovate with a yellow band long the centre, side lobes white-coloured; ovary inferior.
Propagation	Rhizome
Geographical Distribution / Ecology	Commonly cultivated for spice and usually harvested annually. It grows well on rich moist sandy loam or alluvial soils. Flowers in March, without setting fruit.



Uses Supported by Experimental and or Clinical Data

• No available information

Uses in Local Traditional Medicine

• Rhizome: remedy to relieve uncontrolled and frequent urination (probably due to infection of the urinary system). Rhizome peel used for massaging the lower abdomen using upward motion. A small portion of the rhizome peel can be chewed and swallowed after each session.

Other Local Usage (if any):

• Flavouring / colouring agent for food



Chemical Constituents:

• Rhizome: curcumin (yellow-orange colour), essential oil, fixed oil, bitter principles, resin, protein, cellulose, pentosans, starch, minerals, cyclo-isopropen mycren, P-tocylmethyl carbinol, demethoxy curcumin and bisdemethoxycurcumin.

Contra Indications (If any):

• No available information.

Economic Potential/ Commercial Products





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Cymbopogon nardus (L.) Rendle



Vernacular name/s	Serai wangi
Family	Graminae
Plant description	Perennial . Tufted with fibrous roots from a thickened base. Culms erect up to 2.5 m high, the tops drooping; Leaf : sheaths glabrous; blades, the lower up to 1 m long by 2 cm wide, the upper smaller, edges and surfaces rough, glabrous except near the base; ligule up to 5 mm deep, glabrous. Inflorescence: ultimate branches slender; zig-zag internodes about 1.5–2.5 cm long with reduced leaf at each node and at its axil one or more short branches each bearing a pair of racemes.
Propagation	Stem cutting
Geographical Distribution / Ecology	Thrives on sandy loam in full sun and establishes quickly into a bush.
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Usage

Uses Supported by Experimental and or Clinical Data

• No available information

Uses in Local Traditional Medicine

- Leaves infusion: herbal bath for a mother after childbirth in order to regain health.
- Stem decoction: treatment for stomach pains (especially in children).
- Poultice of pounded sheaths applied at the abdominal region or intake of food strongly flavoured by the sheaths to relieve indigestion and other stomach complaints.

Other Local Usage (if any):

• No available information

Scientific Data

Chemical Constituents:

• Java accession yielded 26.6-45 % geraniol and 25-54 % citronellal whereas Malaysia accession recorded 88.9% citronellal and geraniol.

Contra Indications (If any):

• No available information.



Economic Potential/ Commercial Products



massage oil

An ingredient for intimate herbal wash



Bibliography & Photo Credit

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Zingiber aromaticum Valeton



Vernacular name/s	Temu lawak
Family	Zingiberaceae
Plant description	A shrub , up to 2 m tall with squarish and often reddish stems; young bark rough with small bristly scales; old bark dark brown-coloured with netlike markings. Leaves: opposite, narrowly elliptic, up to 9 cm x 2 cm, surface scurfy with 3 distinct ribs and 2 less prominent outer ribs. Flowers: at stem terminals on short stalks; bracts 3, red with a green tinge, up to 1.5 cm x 1.0 cm; calyx reddish green, hairy with 5 sepals; petals 5, maroon- coloured, up to 2.5 cm x 1.5 cm; stamens 10; style protruding and pink- coloured. Fruits: with numerous small seeds embedded in purplish pulp.
Propagation	Rhizome
Geographical Distribution / Ecology	Often grown in gardens and house compounds. It thrives on sandy loam and alluvial soils in full sunlight and flowers in September. Widely planted in house gardens in Southeast Asia.

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Uses Supported by Experimental and or Clinical Data

• No available information

Uses in Local Traditional Medicine

- The rhizomes are boiled and the resultant decoction is used as a herbal bath after childbirth.
- The leaves are warmed over a fire and wrapped around the joints of the limbs to relieve pain due to arthritis.

Other Local Usage (if any):

No available information



Scientific Data

Chemical Constituents:

• Other related species contain camphene, zingiberene, essential oils and many volatile oils in their rhizomes. It is likely that Z. aromaticum has similar constituents.

Contra Indications (If any):

• No available information.

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Economic Potential/ Commercial Products







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CAMBODIA



Aloe vera (L.) Burm.f



Vernacular name/s	Prateal kantuy krapeu
Family	Asphodelaceae
Plant description	A succulent herb. Leaves: lanceolate, large, thick, fleshy, sessile, apex sharp and spiny margin. Inflorescences: raceme, scape longer than the leaves. Flowers: dense, yellow or orange cylindrical.
Propagation	Leaves
Geographical distribution / Ecology	Herb with succulent leaves found in China and other countries, introduced to Indochina and cultivated in gardens as ornamental. Widely cultivated in middle parts of Cambodia.





Uses Supported by Experimental and or Clinical Data

• Anti-hyper lipo-proteinaemic agent indigestion.

Uses in Local Traditional Medicine

Usage

- Hypertension, menstrual disorders, eye and ear diseases, constipation, numbness, paresis, paralysis, skin diseases and disorders, menorrhagia and as tonic agent.
- Leaves have the reputation to be laxative, a stimulating to milk secretion or as antidote against poison.

Other Local Uses (if any)

- Fresh leaves are used in the preparation of medicated paste by the ratio of circa 30 %. Such paste is orally taken in dose of 0.5 g .
- Thick mucus / gel extracted from fresh leaf is externally used as skin lotion cream.

👔 Scientific Data

Chemical Constituents:

No available information.

Contra Indications (if any)

• No available information.





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Alpinia galanga (L.) Willd.



Vernacular name/s	Rum deng
Family	Zingiberaceae
Plant description	Perennial herb . Leaves: alternate oblong lanceolate, upper surface glabrous and shining, greenish. Fruits: globose or ovoid. Rhizomes: cylindrical, stout, aromatic and covered with scales.
Propagation	Rhizome
Geographical Distribution / Ecology	Herb cultivated in Southeast Asia



Usage

Uses Supported by Experimental and or Clinical Data

• No available information.

Uses in Local / Traditional Medicine

- Indigestion, flatulence, dyspepsia, colic, nausea, vomiting, diarrhoea, cough, haemoptysis, fever, allergic reaction, laxation and as blood purifying agent.
- Stem or flower powder: 1 to 2 g taken orally for indigestion, flatulence, vomiting and colic.
- 15-30 ml decoction of rhizome-sugar mixture or 1-2 g of dried powder for cough, fever and menstrual disorders.

Other Local Usage (if any):

• Flavour / spice for cooking.



Chemical Constituents:

• No available information.

Contra Indications (if any)

• No available information.





Economic Potential/ Commercial Products





Bibliography & Photo Credit

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- Bodia[®] turmeric and galangal hand cream. Personal collection :Mastura Mohtar
- Galangal Powder | Product Marketplace (specialtyfood.com).



Mentha cordifolia Opiz



Vernacular name/s	Chii angkaam
Family	Labiatae
Plant description	Herb with ascending or lying stalk, aromatic creeping quadrangular stem, 10-30 cm long, brownish purple and branchy. Leaves are simple, opposite, broadly elliptic, 1.5-2.5 cm wide and 2-3 cm long with many sunken nerves on the upper surface, serrate-dentate and aromatic. Flowers are small and violets. Fruits ellipsoid nutlets and often used as condiments.
Propagation	Seed and stem cutting.
Geographical distribution / Ecology	Grows domestically.

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Uses Supported by Experimental and or Clinical Data

No available information

Usage

Uses in Local Traditional Medicine

- Indigestion, flatulence, dyspepsia, colic, nausea, vomiting, diarrhoea, cough, haemoptysis, fever, allergic reaction, laxation, as blood purifying agent.
- The whole plant is reportedly used as a carminative, anti flatulent and often applied to relieve headaches.

Other Uses (if any)

• No available information



Chemical Constituents:

• Essential oil, menthol and menthone.

Contra Indications (If any):

• No available information



Economic Potential / Commercial Products



Mosquito repellent



Essential oil





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Moringa oleifera Lam.



Vernacular name/s	Mrum
Family	Moringaceae
Plant description	Tree with 3 to 10 m tall, a small middle side tree, bark corky. Leaves tripinate, leaflets opposite, deciduous, elliptic or obovate. Flowers while in large puberulous panicles. Fruits long pods with ribs. Seeds tri-angled, the angles winged.
Propagation	Seeds, stem cutting
Geographical distribution/ Ecology	Originated from India and Pakistan, introduced into Southeast Asia where it is especially planted as ornamental plant. Cultivated throughout Cambodia.





Uses Supported by Experimental and or Clinical Data

• No available information

Usage

Uses in Local Traditional Medicine

- Menstrual disorder (menorrhagia), tingling and numbness, oedema, dry cough, hypertension.
- Agent to increase spermatogenesis and to improve memory.
- Bark: Post partum tonic drink.
- Decoction of root and bark together with jaggery (coarse dark brown sugar) in a dose of 100-200 ml for menstrual disorders.
- Slurry of root or bark is externally used for oedema tingling and numbness.

Other Uses (if any)

• Leaves, flowers and fruits are commonly used as vegetable and salad for tonic drinks.

Scientific Data

Chemical Constituents:

• No available information

Contra Indications (If any):

• No available information





Economic Potential/ Commercial Products





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INDONESIA



Aleurites moluccanus (L.) Wild.



Vernacular name/s	 Kemiri (Indonesian); kemling (Lampung); muncang (Sundanese); kereh (Aceh); hambiri (Batak); buah koreh (Minangkabau); kameri (Bali); kawilu (Sumba); sapiri (Makasar); sakete (Ternate); engas (Ambon); hagi (Buru); Candlenut, candleberry (English).
Family	Euphorbiaceae
Plant description	A large tree 25 to 40 meters in height. Trunk: thick, up to 90 cm diameter with gray and brown skin. Bark: smooth texture with vertical lines. Leaves: approximately 30 cm long with 3 to 7 indentations The color is white and turns green when the hazelnut is old. F ruit: slightly flattened egg shape, 5-6 cm x 5.7 cm, olive green in color and covered with velvety hair. The flesh contains 1 or 2 seeds. Seeds: whitish, slightly flattened, thick and hard, 3 cm x 3 cm. Contain oil.
Propagation	Seed
Geographical Distribution/ Ecology	A native plant of Indonesia, widespread from India and China, through Southeast Asia and the Archipelago, to Polynesia and New Zealand.
Conservation / Other relevant information	 Planting activity in Kerumutan Wildlife Reserve, Pelalawan. Establishing partnership with the local community (KTH Inget Temurun and KTH Gawah Gantar) in Rinjani National Park to manage candlenut and other NTFP in about 19.000 ha land.





Usage

Uses Supported by Experimental and or Clinical Data

- Tannin (cortex): anticancer via immuno-stimulant activity (increasing the secretion of tumor necrosis factor (TNF)) and antiproliferative agent (induces apoptosis).
- Oil: Nano emulsion hair tonic to accelerate hair growth.

Uses in Local Traditional Medicine

- In Ambon, the cortex is used as an anti-tumor.
- Java it is used as a medicine for diarrhoea, thrush and dysentery.
- in Sumatra the leaves are used to treat headaches and gonorrhea.

Other Local Usage/ Relevant (if any):

• No available information.



Scientific Data

Chemical Constituents:

• Saponins, flavonoids and polyphenols, fatty oils (seeds), tannins (cortex).

Contra Indications (If any):

• No available information.



Economic Potential/ Commercial Products



Hair care products

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Allium sativum L.



Vernacular name/s	Bawang putih (Indonesia); brambang (Java); bawang bodas (Sundanese); bawang handak (Lampung); kasuna (Bali); lasuna pute (Bugis); bhabang pote (Madura); bawa bodudo (Ternate); kalfeo foleu (Timor).
Family	Liliaceae
Plant description	Grows in clumps to a height of 30-75 cm, with pseudo-stems formed from leaf midribs. Leaves: Ribbon-like flat and elongated. Roots: thread like fibers. Each bulb consists of cloves wrapped in a thin white skin.
Propagation	Easily grown year-round in mild climates. Often propagated asexually by planting individual cloves.
Geographical Distribution	Karo (North Sumatra); Solok (West Sumatra); Bandung West Java); Tegal, Pekalongan, Wonosobo, Temanggung, Magelang, Karanganyar (Central Java); Magetan, Batu City, Malang (East Java); East Lombok, Bima (West Nusa Tenggara); Belu, North Central Timor, South Central Timor (Nusa Tenggara Timor); lanny Jaya (Papua); Poso (Central Sulawesi).
Ecology	Optimal growth at an altitude of > 900 m above sea level (asl), < 25°C in certain months (low temperature required for the formation and enlargement of plant tubers). Annual rainfall is 800 – 2000 mm/year with 5-7 wet months and high humidity. Grows well on grumusol soil with a sandy loam (loose) texture or pH 5.6-6.8 good drainage medium textured soil.





Usage

Uses Supported by Experimental and or Clinical Data

• Antitumor, antibacterial, antifungal, antiviral, antidiabetic, hepatoprotective, antiinflammatory, anti cholesterol & antimicrobial.

Uses in Local Traditional Medicine

- Hypertension: Consume boiled mixture of garlic and celery bulbs.
- Early stage cancer: Consume boiled mixture of garlic bulbs, Curcuma zedoaria, Andrographis paniculata, Artemisia vulgaris and Hedyotis corymbosa.
- Cough: Drink prepared from garlic-infused milk.
- Canker sores: Consume boiled mixture of garlic, Pangium edule, Alium cepa and ground salt.
- Haemorrhoids: Cloves to be use as suppository.
- Help relieve stress, anxiety, depression and insomnia.
- Treatment for headaches, jaundice, shortness of breath and oedema, bruises due to stabs or blows.
- Accelerate the maturation of swollen abscess.
- Facilitate removal of shards of glass, wood or thorns.
- Deworming agent.
- Appetiser (eaten raw) and to increase endurance (stamina).

Other Local Usage (if any):

• Incorporated into cosmetic products (lotions, conditioners and sunscreens).



Scientific Data

Chemical Constituents:

 Protein, fat, carbohydrate, vitamins (B₁, C), phosphorus, calories, calcium, iron, water, thio acremonone, allicin, ajoene and quercetin.

Contra Indications (If any):

- Raw garlic can stimulate the trigeminal nerve and trigger headaches.
- Excessive consumption may produce bad breath and digestive problems (vomiting and heartburn).





Garlic drinks



Garlic drinks



Garlic powder Garlic powder



Garlic oils



Garlic oils



Garlic capsules



Garlic capsules

36



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Aloe vera (L.) Burm. f

Vernacular name/s	 Lidah buaya (Indonesia, Malaysia); ilat baya (Java); letah buaya (Sundanese); Waan famai (Thailand); Zabila, salvila (Spanish); laloi (French); aloe vera, aloe, burn plant, lily of the desert, elephant's gall, English); lu hui (China).
Family	Asphodelaceae
Plant description	An annual shrub , growing upright, 30-50 cm tall with round non woody white stem. Leaves : single leaf, pointed tip, blunt base, serrated edge, 30- 50 cm long, 3-5 cm wide, thick fleshy, gummy yellow to green. Flowers : compound flowers, panicles form at the end of the stem, protective leaves 8-15 mm long, six stamens, thread like pistil protruding or attached to the base of the anther. Fruit : Square, 14-22 cm long, polar, whitish green colour. Small black seed. Root : Shallow and fibrous.
Propagation	(1) vegetative: saplings attached to the parent plant or shoot cuttings(2) seeds.
Geographical Distribution/ Ecology	 Scattered as at Pontianak and Kubu Raya (West Kalimantan). 200 to 700 m above sea level, 16-30°C, full sun and high humidity with rainfall ranging from 2500 to 4000 mm/year. Thrive well in organic rich soil with a loose structure.





Usage

Uses Supported by Experimental and or Clinical Data

 Antihypertensive, hypoglycemic, immunomodulatory, lowering blood sugar levels, anti-inflammatory, antibacterial, antiseptic, antipruritic, anesthetic, aphrodisiac and antipyretic

Uses in Local Traditional Medicine

- Hypertension: Consume boiled mixture of garlic and celery bulbs.
- Leaves: cough medicine, nourish hair, burns and scalding (mild) and boils.
- Leaves, flowers, roots: (10-15 g) or 1.5-3 g (capsule)
- Headache, dizziness, constipation, seizures in children, malnutrition, whooping cough, vomiting blood, diabetes, haemorrhoids, menstruation.
- Leaves, flowers, roots: powder form for topical application
- Sores, eczema, boils, burns, scalded, headaches as `pilis' (leave-on paste applied on the forehead) and carries (cavities).

Other Local Usage (if any):

• Incorporated into cosmetic products (lotions, facial conditioners and sunscreens)

📙 Scientific Data

Chemical Constituents:

• Protein, fat, carbohydrate, vitamins (B₁, C), phosphorus, calories, calcium, iron, water, thioacremonone, allicin, ajoene and quercetin.

Contra Indications (If any):

- Increases the risk of miscarriage.
- Excessive intake may cause cramping and abdominal pain, diarrhoea, kidney disorders, electrolyte disturbances, impaired liver function.



Economic Potential/ Commercial Products







Aloe vera drinks

Borneo





Aloe vera drinks



Aloe vera crackers



Aloe vera chips



Aloe vera cheese sticks



Aloe vera dodol









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Andrographis paniculata (Burm.f.) Nees.



Vernacular name/s	 Sambiloto (Indonesia), ki oray, ki peurat, takilo (Sundanese), bidara, sadilata, sambilata, takila (Java), Pepaitan (Sumatera). Hempedu bumi (Malaysia), xuyen tam lien, cong cong (Viet Nam). Chuan xin lian, yi jian xi, lan he lian (China); kirata, mahatitka (India/Pakistan); creat, green chiretta, halviva, kariyat (English).
Family	Acanthaceae
Plant description	An annual herb, 50 - 90 cm of height, stems with many branches in the form of quadrangularis with enlarged nodes. Leaf : single leaf, short stalk, lanceolate shape, pointed base, pointed tip, flat edge, opposite position crossed. Flower : tubular-lipped flowers, small, white stained with purple. Fruit : oval-shaped capsules
Propagation	Seed or stem cuttings
Geographical Distribution/ Ecology	 Scattered mostly at Ciamis, Subang, Garut, Sumedang, Tasikmalaya (West Java); Attack (Banten); Sleman (Yogyakarta); Pasuruan, Malang, Sumenep (East Java) Habitat: altitude 1 - 700 m above sea level, annual rainfall 2000-3000 mm / year with 5-7 months of wet months, air temperature 25-32°C with moderate humidity and moderate irradiation. Soil: optimal for growing on sandy soil with good drainage and moderate to high soil fertility.





Uses Supported by Experimental and or Clinical Data

• Andrographolide: hepatoprotective, cardiovascular, hypoglycemic, psychopharmacological, anti-fertility, antibacterial, immunostimulant, anti-pyretic, antidiarrhoeal, anti-inflammatory, anti-malarial, anti-venom, anti-hepatotoxic activities.

Uses in Local Traditional Medicine

• Fever (due to insect bites), diabetes, appendicitis, typhus, swollen feet, scabies

Other Local Usage (if any):

• No available information



Scientific Data

Chemical Constituents:

 Diterpene lactones (andrographolide, neo-andrographolide, deoxyandrographolide, deoxyandrographolide-19-8-D-glucose and dehydroandrographolide; saponins, flavonoids, alkaloids and tannins. Lactones, paniculin, kalmegin and bitter taste yellow crystal (leaves and stem).

Contra Indications (If any):

- Diarrhoea, vomiting, headache, fatigue, loss of appetite, and allergic reactions.
- Possible liver damage with long term uses or excessive doses.
- Not recommended for pregnant women, nursing mothers and patients with low blood pressure, autoimmune diseases, or blood disorders. May cause drug interaction and increases the risk of miscarriage.



Economic Potential/ Commercial Products



Теа



Dried leaves



Powder



Capsule





Capsule



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Bixa orellana L.



Vernacular name/s	 Kesumba keling (Indonesia); kasumba, kasumba keling (Sundanese); kasumbo (Java); kasombha, kasupa; taluka (Ambon). Lipstik tree, bixa (English); annato (America); Colorados (Spain); changuarica, k'u-zub and pumacua (Mexico); annato, urucu (Brazil); urucum (Germany); roucou (Dominica); achiote (Colombia); arnotto (South America).
Family	Bixaceae
Plant description	A small evergreen shrub or small tree 2-8 m high with a trunk diameter that can reach 10-30 cm. Leaves: Oval in shape, pointed tip, with flat base. Edges evenly distributed, with pinnate leaf veins, speckled green 8-20 cm length and 5-12 cm width. Fruits: Brush-like hairs that are green when young and turn red and dark red when ripe.
Propagation	Seed and cuttings. Cutting-grown plants flower at a younger age than seedlings.
Geographical Distribution	Java, Madura, South Sulawesi, and Ambon
Ecology	Grows in areas with rainfall of 1000 - 3000 mm / year. Optimal grows in areas with a soil texture consisting of sand and clay. This plant is sensitive to cold temperatures.





Usage

Uses Supported by Experimental and or Clinical Data

• Antipyretic, diuretic, anti-periodic, anti-inflammatory, digestive, antifungal and antidote.

Uses in Local Traditional Medicine

- Leaves and flowers: fever, tonsillitis, sunburn, headaches, colds and irregular menstruation.
- Leaves and stems: fever, diarrhoea, lack of appetite, colds, and flatulence.
- Sap: Antiviral and diabetes drug.
- Unspecified part: Skin diseases, asthma, gonorrhoea, dysentery, kidney disorders, snake bites, indigestion, intestinal worms and sore throat.

Other Local Usage (if any):

• Dye (seeds), rope (bark).



Chemical Constituents:

• Stems and leaves: tannins, calcium oxalate, saponins, fats. In the leaves, roots, and seeds have dyes, bixine, orelline, glucoside, tanning substances, resin.

Contra Indications (If any):

- Constipation: circa 3% of 68 subjects treated with 250 mg of kesumba rivet leaf powder thrice daily for 6 months.
- Increase in total red blood cell count and packed cell volume but no change in leukocyte count or haemoglobin at doses of 80 mg/kg and 120 mg/kg.
- Allergic reaction (anaphylaxis shock) to crimson rivets amongst hypersensitive individuals.





Economic Potential/ Commercial Products





Batik dye from bixa

Herbal from bixa



- Anonymous. 2008. Herbal Indonesia Berkhasiat. Bukti ilmiah dan cara racik. Trubus Info Kit Vol. 8
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Blumea balsamifera (L.) DC.



Vernacular name/s	 Sembung (Indonesia, Melayu); sembung, capa, capo (Sumatera); sembung utan (Sundanese); kemandin (Madura); sembung gontung, sembung mingsa, sembung gula, sembung kuwuk, sembung lelet, sembung legi (Java); mandikapu (Ternate); sembung (Bali). Bai mat (Cambodia); sembong, sembing, telinga kerbau, capu (Malaysia); poung-ma-theing (Myanmar); sambong, lakadbulan, subsub (Philippines); kamphong, nat-yai (Thailand) Ai na xiang (China); camphier (France)
Family	Asteraceae
Plant description	Plant : Shrub up to 4 m tall with fine hairs. Leaves : Oval in shape, growing alternately. Sharp leaf base and tips, serrated edges with 2-3 additional leaves on the petiole. Hairy upper leaf surfaces with velvet smooth lower surface. Flowers : Yellow coloured panicles in clusters at the ends of the branches. Fruit : 1 mm long slightly curved.
Propagation	Seeds or basal cutting (root cutting).
Geographical Distribution/ Ecology	 Native to tropical Asia. In Indonesia, sembung are found throughout the archipelago (Sumatera, Java, Madura, Bali, Ternate). Prefers humid areas, grow wild on roadsides and fields, land full of grass or shrubs, riverbanks, secondary forests, lowlands and mountainous areas to high altitudes 2200 - 3000 m above sea level. It is fire tolerant and germinate easily from the soil.

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Uses Supported by Experimental and or Clinical Data

• Anticancer, hepatoprotective, antityrosine, antidiabetic, antiobesity, antiatherogenic, wound healing, antioxidant, antibleeding, antiarthritis, anti-inflammatory, antibacterial & antiplasmodial.

Uses in Local Traditional Medicine

- Leaves decoction: Rheumatism, menstrual pain, influenza, bloating, bone pain, diarrhoea, thrush, asthma, angina pectoris, cholera, stomach pain, appetite loss, pain chest, heart disease, fever, bronchitis & epistaxis.
- Leaves decoction (external / topical application): haemorrhoids, bruises, ulcers, skin inflammation, and itching.

Other Local Usage (if any):

• No available information.



Scientific Data

Chemical Constituents:

- Essential oils, flavonoids, alcohol, dihydroflavones, sterols, organic acids, monoterpenes, sesquiterpenes, triterpenes.
- Stems and leaves contain tannins, calcium oxalate, saponins, fats. In the leaves, roots, and seeds have dyes, bixine, orelline, glucoside, tanning substances, resin

Contra Indications (If any):

• Excessive consumption may cause interference in pregnancy, allergies, nausea and vomiting, headaches, ulcers and aggravate pre-existing diseases.



Economic Potential/ Commercial Products





RAMUAN TEH SEMBUNG

Теа





Dried leaves



51

Теа

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Caesalpinia sappan L.



Vernacular name/s	 Secang (Indonesia); seupeng (Aceh); sepang (Gayo); sopang (Batak); cacang (Minangkabau); secang (Sundanese); kayu secang, soga Java (Java); kaju secang (Madura); cang (Bali); sepang (Sasak); supa, suang (Bima); sepel (Timor); hong (Alor); kayu sema (Manado); dolo; sapang (Makassar); seppang (Bugis); sefen (Halmahera Selatan); sawala, hiniaga, sinyiang, singiang (Halmahera Utara); sunyiha (Ternate); dan roro (Tidore). Sbaeng (Cambodia); fang deeng (Lao PDR); tein nyet (Myanmar); sibukao (Philippines); faang (Thailand) Sappanwood, indian redwood, sappan wood tree (English); brezel wood (Europe)
Family	Caesalpiniaceae
Plant description	A shrub , 5 - 10 m high. Stem woody, round and green-brown in colour. Bent sticky thorns scattered on the stem and branching. Branches with lenticels. Brown coloured taproot. Double pinnate compound leaves 25 - 40 cm length, each with 10 - 20 pairs of leaflets. Leaflets oval in shape, 10 - 25 mm long, and 3 - 11 mm wide Flowers : panicle shape 10-40 cm length at the end of the stalk, peduncle 15 - 20 cm long, petal edge hairy, yellow spreading crown. Fruit : pods, oval and flat, with a beak-like tip containing 3 - 4 seeds each. Seeds: Elongated round brownish yellow seed that turns black when ripened.

Propagation	Seeds and vegetative (stem cuttings or grafts).
Geographical Distribution / Ecology	 Aceh, North Sumatra, West Sumatra, West Java, Central Java, Yogyakarta, Lombok and Bima (West Nusa Tenggara), Timor and Alor (East Nusa Tenggara), Manado (North Sulawesi), Makassar, Bugis (South Sulawesi), Halmahera, North Halmahera, Ternate, Tidore (Maluku). Often found in the lowlands to hilly places with clay and rocky soil types up to 1700 m above sea level. Grows very well on Peninsular Malaysia sandy river banks. Tolerant to dry soils, grows well in areas with an annual rainfall range of 700-4300 mm, average annual air temperature of 24-27.5°C, and a soil pH range of 5 -7.5



Uses Supported by Experimental and or Clinical Data

- Antioxidant, antibacterial, antiviral, anti-inflammatory, anticancer and antitumor
- The antimicrobial activity of 5-hydroxy-1,4-naphthoquinone isolated from secang against intestinal bacteria. The group functional hydroxyl naphthoquinone can be used as an agent that selectively prevent disease caused by Clostridium perfringens) (Lim, 2007).

Uses in Local Traditional Medicine

• Wood decoction: Laxative, regulate menstruation, astringent or chelating, tuberculosis, anti diarrhoea, dysentery, inflammation of the mucous membranes, cough, soreness and syphilis (Ahmad, et al., 2007).

Other Local Usage (if any):

• Therapeutic agent for bovine mastitis (Hur, 2006).





Scientific Data

Chemical Constituents:

• Phenolic, flavonoid, polyphenolic tannin, cardenolin, anthraquinone, sappanchalcone, caesalpin P, resin, resorcin, brazilin, d-alpha, phallandren, oscimenen and essential oil.

Contra Indications (If any):

• Not to be consume by pregnant women, breast feeding mothers, ladies suffering from menorrhagia and anaemic patients.

Economic Potential/ Commercial Products







Dried woods







Drinks







Drink

Coffee





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Curcuma longa L.



Vernacular name/s	 Kunyit (Indonesia); Kunyit, kunir, koneng, koneng temen, temu kuning, konye (Java); koneng, kunyir (Sundanese); kunit, janar, henda, kunyit, cahang, dio, kalesiau (Kalimantan); kakunye, kunyet, kuning, hunik, odil, ondil, kondin, under, kunyit, kunir jiten (Sumatera); uinida, kuni, hamu, alawahu, kolalagu, pagidon, uni, kunyi, unyik, nuyik (Sulawesi); rame (Irian). Tumeric (English); Jiang huang (China)
Family	Zingiberaceae
Plant description	A pseudo-stem plant that can reach a height of 40-100 cm. Leaves : single, oval shape (lanceolate), pinnate bone with a pale green color. Pointed tip and base leaves and flat edges. Rhizome : brownish orange outer skin with red orange yellowish flesh.
Propagation	Rhizome
Geographical Distribution	Whole country: Sumatra, Java, Bali, Kalimantan, Sulawesi, Maluku, Irian and others
Ecology	All year round cultivation. Grows well in areas with full or moderate light intensity, temperature at $19 - 30^{\circ}$ C with annual rainfall of 1000-4000 mm. Optimal production ±12 tons/ha is achieved at an altitude of 45 m above sea level.



Usage

Uses Supported by Experimental and or Clinical Data

• Antioxidant, anti-inflammatory, antiseptic, anti-cancer, chemo-preventive and chemotherapy agent, free radicals antidote; immune modulators; diuretic and hepato protective

Uses in Local Traditional Medicine

• Rhizomes: Treatment for swollen gums, wounds, tightness breath, stomach ache, ulcers, spleen pain, appendicitis, gout, indigestion flatulence and lowers blood pressure, asthma medication, blood enhancer, treat stomach ache, liver disease, carminative, stimulants, itching, insect bites, diarrhoea and rheumatism

Other Local Usage (if any):

• Dye, a mixture of cosmetics, bactericide, fungicide and stimulant.



Scientific Data

Chemical Constituents:

- Essential oil, curcumin, resin, oleoresin, desmethoxycurcumin, bidesmethoxy curcumin, resin, gum, fat, protein, calcium, phosphorus, and iron.
- Essential oil: ar-tumerone, dan β-tumerone, tumerol, -atlanton, β-caryophyllene, linalool & 1,8 cineol

Contra Indications (If any):

- Skin stain / yellow residue. Irritation, redness, and swelling indicate allergic reaction
- Excessive consumption: adverse gastrointestinal effects (abdominal pain, gas, nausea and indigestion), adverse effect to gallbladder and kidneys.
- Contractions and miscarriage in pregnant women



• Risk of bruising / longer bleeding time amongst patients taking blood-thinning medications and or people with bleeding disorders.



Economic Potential/ Commercial Products



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Bibliography & Photo Credit

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Curcuma xanthorrhiza Roxb.



Vernacular name/s	 Temulawak, temu putih (Indonesia); temulawak (Java); koneng gede (Sundanese); temulabak (Madura). Temu lawak (Malaysia); wan chat mot luk (Thailand); Shu gu jiang huang (China); kurkum (Arab); Javanese tumeric (English)
Family	Zingiberaceae
Plant description	Pseudo-trunked plant up to 2 meters high. Leaves : 2-9 strands, green, elongated round. Flowers : compound type, grain shape, elliptical, inflorescence including exantha (flowers protruding from the rhizome) type, bloom in the morning and wither in the afternoon. Rhizome : Main rhizome (dark yellow to reddish brown skin with orange-brown coloured flesh). Smaller branch rhizomes and lighter colour.
Propagation	Main and branch rhizomes.
Geographical Distribution/ Ecology	 Native plant to Java, Madura and Maluku islands. Widely distributed in tropical and sub-tropical regions, especially in Indonesia, India, Thailand, Indochina, Northern Australia. Grows well on loose latosol, andosol, podsolik and regosol soil type of tropical forests, dry land, yards, fields, and fields reeds at The altitude 100-1,500 m above sea level, with rainfall 1,500 - 4,000 mm/year.





Uses Supported by Experimental and or Clinical Data

• Antioxidant, antibacterial (Helicobacter pylori) and antimicrobial, hepato-protective, antidyslipidemic, anti-inflammatory, antidepressants, stimulants, analgesics, activities on the digestive system, antiviral, antifungal, inhibit the formation of atherosclerotic plaque, bind mercury and cadmium, prevent cancer.

Uses in Local Traditional Medicine

- An ingredient for formulations prepared to increase appetite, treat constipation, haemorrhoids, acne, diarrhoea, aches, pains, rheumatism, arthritis, kidney and liver diseases, destroy gallstones and seizure medication.
- In fresh form, decoction, steeping or powder is used to treat canker sores and whiteness
- Temulawak-brotowali-sambiloto mixture: gastric medicine.

Other Local Usage (if any):

• Dye, post-partum care, (Enggano, Urug Traditional Village, Bogor), royal bride & groom pre-wedding beauty ritual.



Scientific Data

Chemical Constituents:

- Starch, water, protein, ash, fat, and curcumin.
- Curcuminoid compounds (eg. desmethoxycurcumin and bisdesmethoxycurcumin).

Contra Indications (If any):

• Excessive consumption may cause interference in pregnancy, allergies, nausea and vomiting, headaches, ulcers and aggravate pre-existing diseases.













Capsules



Drinks



Temu lawak drinks



Honey added drinks



Honey added formulation



Cosmetics



Cosmetics



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Eurycoma longifolia Jack

	<image/>
Vernacular name/s	 Pasak bumi or bedara pahit (Indonesia); penawar pahit, bedara pahit, bedara puteh, tongkat ali, lempung pahit, payung ali, tongkat baginda, muntah bumi, petala bumi, akar jangat seining, tungke ali, pasak bumi (Sumatera and Kalimantan). Tongkat ali, Malaysia ginseng (Malaysia); dantung saw, lan-don (Thailand); Cay ba benh (Viet Nam); tho nan (Lao PDR).
Family	Simaroubaceae
Plant description	A tall, slender, shrubby tree with compound leaves on up to 1 m long petiole. Leaves: Pinnate with opposite or sub-opposite leaflets (lanceolate to ovate-lanceolate 5–20 cm by 1.5–6 cm, with smooth margins). Flowers: Tiny, reddish, unisexual and are densely arranged. Fruits : drupes, ovoid with a distinct ridge, 1–2 cm by 0.5–1.2 cm turning dark reddish brown upon ripening
Propagation	Seeds, shoot and stem cuttings
Geographical Distribution/ Ecology	 Gunung Leuser (Aceh), Langkat and Padang Lawas (North Sumatra), Kampar (Riau), Bengkulu, Kubu Raya (West Kalimantan), East Kutai (East Kalimantan), South Barito (Central Kalimantan), Riam Kanan (South Kalimantan). Mountainous areas hills or embankments and slopes up to an altitude of 1000 m above sea level on acidic, sandy soils with good soil drainage of both primary and secondary forests near the coast. Grows on an average temperature of 25°C and 86% humidity. The young plant needs more sunlight to help its vegetative development and reproductive system.





Uses Supported by Experimental and or Clinical Data

• Aphrodisiac, antimalarial, cytotoxic and anti-proliferative, antimicrobial, anti-Inflammatory, anti-anxiolytic, antidiabetic, osteoporosis preventive.

Uses in Local Traditional Medicine

- Sexual dysfunction, aging, malaria, cancer, diabetes, anxiety, aches, constipation, exercise injury, fever, lack of energy, leukaemia, and osteoporosis.
- The bark and stems are used to treat fever, cancer sores, bone pain, worms in stomach, as well as a tonic for after childbirth.
- The leaves are used to treat itchiness while the flowers are used to treat headaches, abdominal pain and bone pain.

Other Local Usage (if any):

• No information available.

Scientific Data

Chemical Constituents:

- Quassinoids, β-carboline alkaloids, canthin-6-one alkaloids, triterpene-type tirucallane, squalene derivatives
- Eurycolactone, eurycomalactone, laurycolactone, biphenyl neolignan
- Bioactive steroids.

Contra Indications (If any):

• Excessive consumption may cause interference in pregnancy, allergies, nausea and vomiting, headaches, ulcers and aggravate pre-existing diseases.





















PASCEN

PASCENG

114

Honey added pasak bumi formulations



Pasak bumi teas

Pasak bumi chocolate

69



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Helicteres isora L.



Vernacular name/s	Ules, puteran (Indonesia); usakneo (Timorese).
Family	Malvaceae
Plant description	A shrub-shaped plant with a height of up to eight meters, trunk with fibrous bark and gray color. Flowers : brick-red and fruit are formed from five leaves that gather in a twisted manner, twist like a screw with a pointed tip and form a tube. In each tube there is one row of small dark brown seeds . The unripe fruit is greenish in color and turns gray or dark brown when it dries.
Propagation	Seeds
Geographical Distribution/ Ecology	 Native to Asia and Australia with a widespread distribution in Southeast Asia, India to southern China. Its natural distribution is found in Bosen Village, South Central Timor. It grows in decidious forests up to an altitude of 1,500 meters above sea level.
Conservation initiative	In order to preserve the plants, the Sido Muncul Agro-tourism Conservation Institute was established with collections and ex situ conservation effort.



Uses Supported by Experimental and or Clinical Data

- Fruit: cytoprotection and anticancer, antioxidant; reduce bloating, nausea, stomach cramp, fever, dry throat, and help strengthen immune system
- Bark: diabetes medication, anti-diarrhoea.
- Root: hypolipidemic drugs. Equivalent effect as diazepam (an anxiolytic drug).
- Methanol extract inhibited HIV-1 proliferation through protease inhibitor activity

Uses in Local Traditional Medicine

• Appetizer, deworming, anti-convulsants, stomach cramps, and as a tonic after childbirth.

Other Local Usage (if any):

- Prepared as souvenirs for the 2nd Health Minister Meeting (HMM), part of G20 Presidency Event. Utilization from Timor for industry was first carried out by PT. Sido Muncul with a trading volume of 60-80 tons per year (equivalent to Rp. 500-600 million/year). PT Sido Muncul, one of Indonesia's largest traditional medicine companies uses ules wood for Tolak Angin herbal products. Sido Muncul Agro-tourism Conservation Institute was built with collections and ex situ conservation effort.
- Indonesia's ministry of environment and forestry organised annual PROPER award to improve the related herbal industry players performance and compliance regarding environmental management.



Chemical Constituents:

• Alkaloid, saponin, fitosterol, flobatanin, hidroxycarboxilate acid and sugars

Contra Indications (If any):

• No available information





Herbal syrup and tablet







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Litsea cubeba (Lour.) Pers.



Vernacular name/s	Lemo, kilemo (Sundanese); krangean (Java); antarasa (Batak Toba); apokayan (Kalimantan Timur).
Family	Lauraceae
Plant description	A deciduous to evergreen shrub or a straight bole small tree growing from 4 – 15 m tall. Generally dioecious but there are also individual plants producing hermaphrodite flowers. All parts of the plant produce pleasant, lemon-like aroma.
Propagation	Seeds
Geographical Distribution/ Ecology	 Java island (Mount Tangkuban Perahu, Mount Patuha, Ciwidey, Bandung; Mount Papandayan, Garut; Mount Salak; Mount Ciremai National Park; Gede Pangrango National park; Petungkriyono, Pekalongan). Sumatra and Kalimantan islands. Endemic species, growing at mountainous regions (altitude of > 2000 m above sea level, 8–22°C and 70–95% humidity, mostly in open areas with plenty of sunlight. Mount Papandayan: mostly found in fire prone areas, encroachments and natural disasters site. Grows on very acidic soils (Ciwidey, Papandayan) to acid (Ciremai, Papandayan); very high organic matter content (Ciwidey, Ciremai) to high (Papandayan); while the carbon/nitrogen ratio in Ciwidey is high, low in Ciremai and moderate to high in Papandayan. Soil types: regosol, latosol and andosol and on volcanic sedimentary rock.



Uses Supported by Experimental and or Clinical Data

• Termicidal, anti-asthmatic and anti-anaphylactic activities, antifungal anti-parasitic, anti-cephalagic, anti-hysteric, carminative, spasmolytic and diuretic properties

Uses in Local Traditional Medicine

- Roots, branchlets, leaves, and fruits: Treatment for internal health problems, such as swelling and pain.
- Fruits and bark: Oral and topical medicine for fever, stomach ache, chest pain and tonic for babies and adult (Dayak Kenyah people of East Kalimantan)
- The fruit's decoction: treatment of vertigo, paralysis and in post-partum preparation.
- The leaves are used for treating skin diseases.
- In aromatherapy, the oil is applied as a cooling agent against acne and dermatitis, and to relieve anxiety and stress.
- Rhizomes: Treatment for swollen gums, wounds, tightness breath, stomach-ache, ulcers, spleen pain, appendicitis, gout, indigestion flatulence and lowers blood pressure, asthma medication, blood enhancer, treat stomach-ache, liver disease, carminative, stimulants, itching, insect bites, diarrhoea and rheumatism

Other Local Usage (if any):

- Shade tree and wind-breaker tree in plantations. Fast growing pioneer species for reforestation projects
- An antidote to treat drunkenness.
- The flowers, leaves, and fruit walls are all sources of essential oil (mainly citral) for their fragrance and medicinal properties.
- Perfumery: An alternative for verbena oil and lemongrass oil in colognes, household sprays, soaps and air-fresheners.



- The seed contains a fatty oil, from which lauric acid and capric acid are produced.
- The wood is used for general furniture-making and construction.



Chemical Constituents:

• Aurotetanine, O-methyloblongine, oblongine, xanthoplanine, magnocararineu, sineol, citronelal



Economic Potential/ Commercial Products



Wood



Wood



Wooden bracelet

APTCHANG

CITEMO



100% Pure Essential MAY CHANG OIL (Litsee cubeba)

Essential oils

MAY CHANG KILENO



Powder



Essential oils

MAY CHANG

KILEMO

100 % PURE





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Myristica fragrans L.







Uses Supported by Experimental and or Clinical Data

• As a constituent in preparations for dysentery, flatulence, stomachache, nausea, vomiting, rheumatism, sciatica, malaria and early stages of leprosy treatment.

Uses in Local Traditional Medicine

- Treatment of hemorrhoids, chronic vomiting, rheumatism, cholera, psychosis, stomach cramps, nausea, and anxiety.
- Seed oil: antiseptic, analgesic, and anti rheumatic properties.

Other Local Usage (if any):

• No available information



Chemical Constituents:

 Seeds: 5-15% essential oil, including monoterpene hydrocarbon compounds such as αpinene, β-Pinene, limonene and phenolic ether components (myristicin, safrole and methyl eugenol).

Contra Indications (If any):

• No available information





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Phyllanthus niruri L.



Vernacular name/s	 Meniran (Indonesia); meniran merah, meniran ijo, memeniran (Sundanese); gosau ma dungi (Maluku); gosau ma dungi roriha (Ternate); bolobungo, sidukung anak (Sulawesi). Dukung anak (Malaysia); sampasampalukan (Philippines); Zhen zhu cao, hsieh hsia chu (China); child pick a back (English); kilanelli (India);
Family	Euphorbiaceae
Plant description	An annual shrub , 30–100 cm tall. Stem : green, slippery, hairless ± 3 mm in diameter. Leaves : green, ± 1.5 cm long, ± 7 mm wide with flat-edged, each with 15–24 ovate leaflets with blunt leaf tips and rounded base. Flowers : single, white, located near the petiole. Stamens and pistils are not visible. Fruits: purplish green, small (± 2 mm in diameter) at the crown. Seeds : small, hard, kidney-shaped and brown in colour.
Propagation	Seed
Geographical Distribution	Wild plant originating from tropical Asia (spread throughout mainland Asia including Indonesia). In Indonesia, it is mainly found in West Java, Central Java-East Java, Sulawesi, Maluku and Ternate.
Ecology	Spread through out Indonesia at an altitude between 1 m to 1000 m above sea level. It grows wild in the open, on loose sandy soils in fields, on river banks and beaches.



Uses Supported by Experimental and or Clinical Data

 Antitumor; antioxidant and antimicrobial; antioxidants; hepatoprotective, antiviral, antibacterial, hypolipidemic, hypoglycemic, analgesic, anti-inflammatory, cardioprotective, anti-urolytic and anti-hyperuricemic; antivirus; antihepatitis; antihyperalgesia; antidiabetes; gastroprotective; antimalaria; immunomodulator; antifungal; analgesic.

Uses in Local Traditional Medicine

- Appetizer, acne, burns and scab treatments, overcome excessive menstruation.
- Treatment for jaundice, malaria, epilepsy, lowers high blood pressure, hepatitis B, cough, fever and dysentery.
- Regulates uric acid in blood preventing gout, antibacterial against cancer sores, inflammation and internal heat relief.
- Leaves: to treat itchiness, while the flowers are used to treat headaches, abdominal pain and bone pain.
- Bark and stems are used to treat fever, cancer sores, bone pain and deworming.

Other local usage (if any):

• Post partum (Tonic for mothers after childbirth).



Scientific Data

Chemical Constituents:

 Flavonoids, alkaloids, terpenoids, lignins, polyphenols, tannins, coumarins, and saponins, phyllanthin, hypophyllanthin, flavonoids, glycosides, ellagitannins, triterpenes, phenylpropanoid, steroids, ricinolic acid, niruricides, and filtetralin also philanthropic substances, potassium, minerals, resins, tanning agents.

Contra Indications (If any):

- Inhibit lithium removal from the body, hence increasing its level. •
- Lowering of blood sugar level that may lead to hypoglycemia amongst diabetics. •
- Consumption of fresh meniran with anticoagulant drugs can increase the risk of • bleeding.
- Raw meniran taken together with diuretic drugs or antihypertensive drugs can lower ٠ blood pressure causing hypotension





Powder

Tea

Capsule

MENIRAN

Powder



Scevent Indonesia

Tea





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Piper betle L.



Vernacular name/s	 Sirih (Indonesia, Malaysia); suruh, sedah (Java); seureuh (Sundanese) Betel (France); betel, betelhe, vitele (Spain); ju jiang (China)
Family	Piperaceae
Plant description	Vines , up to 5–15 m high. Leaves : Alternate, heart-like shape with pointed tip, 6–17.5 cm long and 3.5-10 cm width . Stems : Rough to the touch, emits a pleasant (aromatic) spicy smell.
Propagation	Cuttings
Geographical Distribution	 Tropical Asia to East Africa, spreading almost all over Indonesia, Malaysia, Thailand, Sri Lanka, India to Madagascar. In Indonesia, this plant can be found on the islands of Java, Sumatra, Kalimantan, Sulawesi, Maluku and Papua.
Ecology	300 meters above sea level. Grows wild in rainforests and teak forests. Prefers slightly acidic, loamy sand and slightly moist but not water- logged soil. Need structural support to grow.





Uses Supported by Experimental and or Clinical Data

• Anti-cancer, anti-cough, astringent, antiseptic, antimicrobial and antibacterial properties.

Uses in Local Traditional Medicine

- Eczema, asthma, skin diseases, acne, bleeding gums, toothache, nosebleeds, bronchitis, coughs, cancer sores, wounds, heart disease, allergies, diarrhoea, facilitate menstruation and vaginal discharge.
- Leaves infusion used as eye wash to alleviate eye pain and treat sore eyes.

Other Local Usage (if any):

- Leaves extract to overcome bad breath and eliminate body odour.
- Leaves to reduce excessive breast milk production.



Chemical Constituents:

- Saponins, flavonoids, polyphenols, essential oils, cavicol, hydroxyl cavicol, cineole, cavibetol, estragol, allyl pyrocatecol, phenyl propane, tannins, diastase, cadinene, terpenene, to sesquiterpenes.
- Leaf: A distinctive aroma due to 1-4.2% essential oil, water, protein, fat, carbohydrates, calcium, phosphorus, vitamins A, B, C, iodine, sugar and starch.

Contra Indications (If any):

- Addictive.
- Increase the risk of birth defects and miscarriage among pregnant women.
- Continuous consumption may trigger oral cancer.











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Pluchea indica L.



Vernacular	Beluntas (Melayu), baluntas, baruntas (Sunda), luntas (Jawa), baluntas
name/s	(Madura), lamutasa (Makasar), lenabou (Timor)
Family	Asteraceae
Plant	Small shrub , grows upright, can reach 2 m high. Smooth haired stems.
description	Leaves: ovate, light green, 2-9 cm long, sharp tip, alternating location, distinctive smell. Fruit: hard, brown in colour. Seeds: small, light brown.
Propagation	Seeds or cuttings
Geographical	Usually grows wild in dry areas on hard and rocky ground. It requires
Distribution/	enough sunlight or a little shade. it can be found in coastal areas near the
Ecology	sea to an altitude of 1,000 m above sea level.





Uses Supported by Experimental and or Clinical Data

- Leaf (tea): Antidiabetic effect (tested on 21 patients with diabetes mellitus) and antioxidant activity.
- Leaf (extract): Reduce bad breath by inhibiting Streptococcus sp. colonies on dental plaque.

Uses in Local Traditional Medicine

• Leaves: Antibacterial, anti-cancer, antifungal, treatment for rheumatism, sciatica, back pain, migraine, diarrhea, maintaining uterine health, prevent diabetes and osteoporosis.

Other Local Usage (if any):

• No available information .

🥖 Scientific Data

Chemical Constituents:

• Secondary metabolites of alkaloids, flavonoids, tannins, essential oils, chlorogenic acid, sodium, potassium, magnesium and phosphorus.

Contra Indications (If any):

• No available information.





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Psidium guajava Linn



Vernacular name/s	 Jambu biji (Indonesia); jambu kluthuk (Java); jambu klutuk or jambu batu (Sundanese); jambu bender (Madura); libu or nyibu (Dayak); goyamas (Manado); danbu (Gorontalo); jambu paratugala (Makasar); jambu paratukala (Bugis); sotong (Bali); guava, kejawas or kujawas (Ende); kujabas (Roti); kojabas (Tetun). Guava (English); Goyave, goyavier (French); guyaba, goeajaaba (Dutch); guave or goejaba (Surinamese); goiaba or goaibeira (Portuguese); guava or kuawa (Hawaiians); abas (Guam);
Family	Myrtaceae
Plant description	A small tree , 3–10 m high. Bark : smooth, copper coloured that flakes off exposing the greenish layer beneath. Leaves : oblong or elongated with short petioles. Flower : compound, white, umbrella-shaped wreath, stemmed, crown inverted ovoid shape. Fruit : berry type, round or inverted egg shape, with white, yellowish or red flesh.
Propagation	Seeds, stem cuttings, grafts
Geographical Distribution/ Ecology	 Tropical and subtropical climates regions. In Indonesia found at Java (West, East and Central Java); Madura; Kalimantan; Makasar, Manado, Bugis, Gorontalo (Sulawesi); Bali; Ende, Roti and Tetun (East Nusa Tenggara). Sub-tropical areas, 5–1200 m above sea level; rainfall 1000–2000 mm/year. Grows on all types of soil, loose and fertile texture including clay and slightly sandy soil. Fruiting at a temperature of 25–30 °C and humidity at 30–50%.



Uses Supported by Experimental and or Clinical Data

- Antibacterial and anti-diarrhoeal, anti-oxidant, anti-pyretic, anti-fungal, anti-microbial, hypotensive, analgesic anti-inflammatory, anti-spasmodic, hepatoprotective, anti-allergic, antiplasmodial, anti-cough, anti-diabetic and anti-genotoxic.
- Anti-tumour in benign human breast carcinoma cells and cytotoxic against T47D cells.
- Leaves inhibited dental caries and toot decay causing bacteria (Staphylococcus aureus and Staphylococcus mutans).
- Leaves extract (500 mg for 14 days) for significant changes in Hb and platelet levels in young women.

Uses in Local Traditional Medicine

- Douche : Steeping mixture of guava leaves and betel leaf.
- Diabetic medication: fruits
- Remedy for diarrhoea and gastroenteritis or mucous membranes inflammation of the stomach and intestines for children: roots and barks.
- Thrush: stem
- Ulcers, stomach pain (diarrhoea and loose stools) : leaves
- Stomach pain or diarrhoea in breastfeeding babies, colds, frequent urination, skin pain and fresh wound medicine: shoot / young leaves.
- Leaves' essential oil to prevent toxoplasmosis (parasitic infection).

Other Local Usage (if any):

• No available information.





Chemical Constituents:

- Tannins, phenols, triterpenes, flavonoids, essential oils, saponins, carotenoids, lectins, vitamins, fibre and fatty acids.
- Higher vitamin C content than citrus fruits (80 mg/100g fruit), appreciable amounts of Vitamin A and a good source of pectin.
- Leaves rich in flavonoids, particularly quercetin.
- The bark contains considerable amounts of tannins (11–27%), beside leucocyanidin, luectic acid, ellagic acid and amritoside, beta-sitosterol, uvaol, oleanolic acid and ursolic acid and a new pentacyclic triterpenoid: guajanoic acid.

Contra Indications (If any):

- Constipation
- Nausea and stomach pain
- Skin irritation to hypersensitive individual and people suffering eczema.
- Bleeding after surgery and disrupt the stability of blood sugar for approximately 2 weeks.



Economic Potential/ Commercial Products



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Rauvolfia serpentina (L.) Benth. ex Kurz

	<image/>
Vernacular name/s	 Pule pandak (Indonesia); pulai pandak (Java); akar tikus (Sumatera) Sarpagandha (India); yin tu lou fu mu (China); serpent wood, serpentine, snake root (English); chandrika cotta chand, sarpaganh (Pakistan).
Family	Apocynaceae
Plant description	A shrub , straight cylindrical trunk, 0.3-1 m high. brown to gray branches, exuding clear sap when broken. Stems: smooth to rough, cracked or scaly. Leaves: single, short-stemmed, in whorls or opposite crosswise, lanceolate or elongated oval, with a narrow base and a pointed tip. Flat leaf edges with pinnate leaf spines. Flower: inflorescence of small, red or white reddish, umbrella shape emerging from the tip of the stalk. Fruit: drupe, oval, young, green when ripe, black with one seed. Root: long and large
Propagation	Stem cuttings, tissue culture
Geographical Distribution	Naturally found in Sumatra, Java (Subah, Saradan, Pekalongan, Bojonegoro and Blora) and the Nusa Tenggara region.
Ecology	Grows well in a hot and dry environment, altitude of 0–500 meters above sea level on Regosol, Mediterranean and Litosol soil type, with textures in the form of clay and dusty clay and slightly acidic (pH 5–6.5).




Uses Supported by Experimental and or Clinical Data

• Anti-diabetic, antihypertensive, treatment of heart disease, anti-diarrhoea, antidysentery, anti-psychotic, treat insomnia and hysteria and mental disorders, autistic care, anti-microbial, anti-inflammatory, anti-cancer and wound healing activity

Uses in Local Traditional Medicine

- Sedative, induces sleep (hypnotic), lowers high blood pressure, improves blood flow, relieves pain, relieves fever, relieves internal heat, relieves heat in the liver and acts as an anti-inflammatory.
- Stem and leaves: Remedy for influenza, sore throat, malaria, high blood pressure, diarrhoea, hernia, boils and bruises, expel body air / wind and eliminating blood clots.

Other Local Usage (if any):

- Anthelmintic in horses and ointment to treat wounds caused by saddle pressure.
- Powder (concentration of 0.25%) protecting rice grains from pests attack.
- Leaf extract: fungi toxic against Sclerotium rolfsii
- Reduce local and systemic infections of necrotic kidney mosaic virus in aubergine (a type of vegetable such as purple or white eggplant).



Chemical Constituents:

 Calcium, starch, dietary fiber, reserpine, phosphorus, yohimbine, papaverine, saponins, alkaloids, flavonoids, phenols, tannins, riboflavin, niacin, terpenes, ajmaline, ajmalicine, ajmalinine.



Contra Indications (If any):

- Sedative side effect due to reserpine content.
- Nasal congestion and breathing difficulty (common), asthma (rare).
- Allergic reactions such as itching and rashes on the skin.
- Excessive intake may also trigger nausea, vomiting, stomach cramps and hallucinations.
- Subject to administration dose, may trigger depression. Reserpine at < 0.75 mg is quite safe for people with depression.



Economic Potential/ Commercial Products





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Tinospora crispa (L.) Hook. f. & Thomson



Vernacular name/s	 Brotawali, antawali, andawali (Indonesia); andawali (Sundanese); bratawali, putrawali, daun gadel (Java); antawali (Bali). Banndol Pech (Cambodia); Patawali, akar patawali, seruntum, akar seruntum (Malaysia); makabuhay (Philippines); boraphet (Thailand). Da ye ruanjinteng (China); guloncho-ban, golonchi (Bangladesh); lyann span zeb kayenn (Martinique island)
Family	Menispermaceae
Plant description	Vine with up to 2.5 m long stem, 7–12 cm heart-shaped leaves with smooth 5-15 cm long petiole and compound small greenish yellow coloured flowers . Green coloured fruit is 7–8 mm long. Old stems are brown and warty, as opposed to green and smooth young stem.
Propagation	Seeds, stem cuttings
Geographical Distribution/ Ecology	 Tropical and subtropical regions of Southeast Asia. West Java, Central Java, East Java and Bali of Indonesia Optimal growth on pH 5–7 clay soil, temperature of 25–37°C, moderate humidity, rainfall 1500–3000 mm/year with 70–100% solar intensity in areas up to an altitude of 1000 m above sea level





Uses Supported by Experimental and or Clinical Data

- Anti-inflammatory, immunomodulatory, cytotoxic, antioxidant, antinociceptive, antimalarial, hypoglycaemic, antifilarial, cardiovascular, antiarthritis, antibacterial, hypoallergenic, antiproliferative, anti-fever, antioxidant, antipyretic, antifungal, antinematicide and antimollusc.
- Alternative treatment for type II diabetes.

Uses in Local Traditional Medicine

- Remedy for cholera, rheumatism, jaundice, appetite stimulant and as an antiparasitic in both animals and humans.
- Lowering blood glucose levels and anti-fever (stem).

Other Local Usage (if any):

• Fresh stem extract: organic pesticide mix (insecticide, fungicides, nematicides and molluscicides).

Scientific Data

Chemical Constituents:

 >65 compounds isolated and identified: alkaloids, furanoditerpenes, lactones, steroids flavonoids, flavones, glycosides, triterpenes, diterpenes and diterpenes glycosides, cis clerodane-type furano diterpenoids*, lactones, sterols, lignans, and nucleosides. (* characteristic compounds)

Contra Indications (If any):

- Immune system related condition (eg. autoimmune disease, multiple sclerosis (MS), lupus, rheumatoid arthritis (RA): activate immune system and increase the symptoms of autoimmune diseases.
- Diabetes patients: Effect on blood sugar levels
- Patients due for surgery (at least two weeks before the scheduled surgery).





Economic Potential/ Commercial Products



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Vetiveria zizanioides L.

Vernacular name/s	 Akar wangi (Indonesia); larasetu (Java); usar (Sundanese); useur (Aceh); urek usa (Minang); hapias (Batak); karabistu (Madura). Khas-khas grass, vetiver, lacate violeta (English)
Family	Poaceae
Plant description	A grass -like plant that grows for years, the direction of growth is perpendicular to form large, compact, fragrant clumps, has rhizomes with deep fibrous roots. The height of the plant can reach 1-2.5 meters with a trunk diameter of 2-8 mm. Leaves: green, ribbon-shaped, stiff, with a smooth underside. Flower: grows at the end of the stem and has a grain shape. The roots of this fragrance ingredient are in the form of fibers and yellow.
Propagation	Seed
Geographical Distribution/ Ecology	Vetiver plants grow well at altitudes between 700-1600 meters above sea level with sandy soil, annual rainfall ranges from 1500–2500 mm, ambient temperatures from 17-27°C, pH 6-7.
Conservation / Other relevant information	Collaboration with local government and Perhutani (state-owned enterprise) to introduce vetiver to community in Madiun.





Uses Supported by Experimental and or Clinical Data

- Antibacterial and antioxidant
- Ethanol extract as an alternative to chemotherapy.

Uses in Local Traditional Medicine

• Essential oil: healing bruises, cuts, insect bites and stings, relaxing/better sleep, anti-itch, helps with menstrual problems, soothes muscle aches and pains, reduces the appearance of scars and skin problems.

Other Local Usage/ Relevant Information (if any):

• Dried roots: fragrances for wardrobes or collectible items, such as batik and keris. Indonesian vetiver essential oil produce has been exported to Singapore, India, Japan, Hong Kong, England, the Netherlands, Germany, Italy, Switzerland and the United States.



Scientific Data

Chemical Constituents:

• Root contains vetivone, khumisol, cadanena, cedrena dan 8-humulena

Contra Indications (If any):

• No available information



Economic Potential/ Commercial Products



Essential oil



Essential oil





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Morinda citrifolia L.



Vernacular name/s	 Mark nho ban (Lao PDR); Awltree, hag apple, ice leaf, India mulberry (English)
Family	Rubiaceae
Plant description	Medium to rather big-sized tree , 5-10 m high. Young twigs, quadrangular, slightly compressed and grooved. Leaves: opposite, stipuliferous, shining above and pale below, undulate at margins. Inflorescence: in dense ovoid head, white at the beginning of the flowering period and then yellow. Fruit: ovoid, drupelets, pink when ripe, seed numerous.
Propagation	Planted by the villagers for its edible fruit and grows sparsely in many localities of Lao PDR, but no information about the method of propagation was found.
Geographical distribution / Ecology	Abundant in secondary forest at the altitude of about 700 ft. it also grows in many other provinces throughout the countries.

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Uses Supported by Experimental and or Clinical Data

• Extracts: Antitumour, antitumour-promoting, hypotensive, antibacterial (Staphylococcus aureus, Bacillus subtilis (weak)), antiascariasis, antimutagenic (Salmonella), anti nematode (Bursaphelenchus xylophilus).

Uses in Local Traditional Medicine

Usage

- Dry fruits: arthritis, diabetes and breast cancer, abortifacient, cardio tonic and emmenagogue.
- Aqueous leaf or root extracts: treatment for acute malaria and cathartic, stomachache, sore gums, sore throat, chest cold in infants, pleurisy, dysentery, induced abortion, infected wound healing, inflammation, broken bones and leprosy sores.
- Dried bark: urinary disorders.
- Dried fruits and seed decoction for arthritis.
- Roots: (fresh) ichtheo-toxin /sting and external cancerous swelling; (decoction): coughs; (unspecified form/preparation): .lumbago and body pain relief.
- Dried roots and fruits (decoction or infusion) for hypertension.

Other Uses (if any)

• No available information.



Scientific Data

Chemical Constituents:

- The roots, stem and leaves: anthraquinone derivatives.
- Root bark: morindine, morindone, alizarine derivative (alizarine-a-ethylethr), and flavonoid, rutine;



- The hardwood: morindone, physcion-8-O-[{a-L.arabinosy1(13)} {b-D-galactopyrannsoy1(16)}{b-D-galactopyranoside}].
- The flower: anthraglycoside and flavonoside.

Contra Indications (If any):



morindin

• No available information



Economic Potential / Commercial Products





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Andrographis paniculata (Burm. f.) Nees



Vernacular name/s	Hempedu bumi (Semelai ¹ , Temuan ¹ , Mendriq, Mah Meri, Malay), hempedu ular (Semelai ²), akar cerita, pokok cerita, empedu tanah (Malay).
Family	Acanthaceae
Plant description	Herb , 30–100 cm tall. Often planted in the house yard. Stems quadrangular, much branching, glabrous except hairy at the nodes. Leaves oppositely arranged, ovate to lanceolate, apex acuminate, base attenuate, margin entire, glabrous and often with glandular dots. Petioles short, up to 6 mm long. Inflorescences panicle. Flowers white, funnel- shaped, corolla 2-lobed. Lower lip erects with purple dots. Stamens exerted from the corolla. Fruits capsular, ellipsoid, yellow to brownish.
Propagation	Seed / Stem.
Geographical Distribution / Ecology	Native to India and Sri Lanka, and widely distributed to different regions of South east Asia, China, America, West Indies and Christmas Island. Grows well in most soil types. It can be found in a variety of habitats such as hill sides, plains, roadsides and farms.





Uses Supported by Experimental and or Clinical Data

- Antimicrobial activity: Aqueous extract, and arabinogalactan proteins against Bacillus subtilis, Escherichia coli, Pseudomonas aeruginosa and Candida albicans.
- Anti-inflammatory/anti-allergic activity: Aqueous and methanol extracts (leaves) significant alleviation of lipopolysaccharide induced release of pro-inflammatory mediators (NO, IL-16 and 1L-6), inflammatory mediators (PGE2 and TXB2) and allergic mediators (LTB4).
- *Immunostimulant activity:* Ethanol extracts of the fresh plants and purified diterpenes —andrographolide and neoandrographolide induced significant (P < 0.001) stimulation of antibody and delayed hyper sensitivity response to sheep blood cells in mice.
- Anti-protozoan, anti-inflammatory, anti-oxidant, immuno-stimulant, antidiabetic, antiangiogenic, hepato-renal protective, sex hormone modulatory, liver enzymes modulatory and insecticidal and toxicity activities.

Uses in Local / Traditional Medicine

• Antipyretic, antiperiodic, anti-inflammatory, antibacterial, an anthelmintic, antiimmuno-suppressive as well as to improve blood circulation. Treatment for common cold, hypertension, diabetes, cancer, malaria, jaundice and chicken pox, pile, jaundice, incontinence and nerve pain.

Other Local Usage (if any):

• Postnatal care; ingredient for massage oil, antidote for snake bites and poisonous stings of some insects.



Scientific Data

Chemical Constituents:

• Andrographolide, deoxyandrographolide and neoandrographolyde, entalabdane diterpene lactones, flavones, noriridoides, xanthones, polyphenols, cinnamic acid, caffeic acid, chlorogenic acid and trace of macro elements.

Contra Indications (if any)

- High dose intake can cause side effects such as diarrhoea, vomiting, rash, headache, runny nose and fatigue.
- May adversely affect patients with auto-immune diseases (eg. Multiple sclerosis, lupus, rheumatoid arthritis) due to its immune activation activity.
- May interact with medications for high blood pressure, medications to decrease immune system and medications to slow blood clotting (anticoagulant/antiplatelet drugs).





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Centella asiatica (L.) Urb.



Vernacular name/s	 Pegaga (Malaysia, Brunei); trachiek kranh (Cambodia); daun kaki kuda, pegagan (Indonesia), antanan gede (Sundanese), phak nok (Lao PDR); min-kuabin (Myanmar); bua bok (central), pa-na-e khaa-doh (Karen, Mae Hong Son), takip-kohol, tapingan-daga (Tagalog), hahang-halo (Bisaya) (Philippines); phak waen (Thailand); rau má, tích tuyết thảo. (Viet Nam) English: Asiatic pennywort, Indian pennywort, gotu-cola.
Family	Apiaceae
Plant description	A small creeping perennial herb with long stolons up to 2.5 m long and rooting at the nodes. Leaves : Simple, arranged in rosettes, crenate margin with rounded teeth. Inflorescence : Axillary simple umbel, tiny greenish, pinkish or reddish bisexual flowers. Fruits : consisting of 2 one-seeded mericarps with laterally compressed seed.
Propagation	Runners which root on the nodes (vegetative), seeds (less favourable).
Geographical distribution / Ecology	 Pantropical, including South-East Asia spreading into some subtropical regions. It grows well under partial shade areas such as jungle fringes and in sunny areas with moist souls such as along canals and areas with shallow water.





Uses Supported by Experimental and or Clinical Data

• Antibacterial, antidepressant, antiemetic, antineoplastic, antioxidant, antithrombotic, anxiolytic, gastro-protective, immunomodulatory, antigenotoxic, nerve-regenerative, radio-protective, wound healing, antitumour, antifertility

Uses in Local Traditional Medicine

 Pegaga is used to warm the body, contract the uterus and improve blood circulation of mothers after childbirth; the juice from the leaves are used to treat skin diseases; mashed leaves are applied topically to heal sores, ulcers and wounds; fine paste of the plant is also used to treat fever, keloids, lupus, leprosy, cellulitis and epilepsy. It is also used as tonic for general health for men and women.

Other Local Uses (if any)

Snacks, salad

Contraindications (if any)

- Not to be taken during pregnancy or lactation.
- Not to be given to children



Scientific Data

Chemical Constituents:

• Asiaticoside, asiatic acid, brahmic acid, brahmocide, centellic acid, indocwntelloside, madecassic acid, madecassoside, thankunside, vellarin, bayogenin, centellin, asiaticin, centellicin





Economic Potential/ Commercial Products



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Clinacanthus nutans (Burm. f.) Lindau



Vernacular name/s	Belalai gajah (Malay, Mah Meri, Orang Kuala, Temuan), belai merat (Mah Meri), pokok kencer (Orang Seletar), kateh murai (Malay).
Family	Acanthaceae
Plant description	Herb up to 1 m tall. Stems: Stems terete, striate or longitudinal lines, sub- glabrous. Leaves: Leaves oppositely arranged, lanceolate–ovate, lanceolate or linear–lanceolate, apex acuminate, base cuneate to round, margin sub-entire to sinuate–crenate, adaxially glabrous, abaxially pilose along the veins; pubescent when young. Petioles pubescent, 0.3–2 cm long. Inflorescences: Inflorescences terminal racemes, one to several flowers. Flowers: Flowers funnel-shaped, outside puberulent; corollas dull red, green base; lower lobes ovate with yellow streaks, upper lobes triangular. Calyxes lobes linear to lanceolate, puberulent. Fruits: Fruits capsule, pilose.
Propagation	Stem cutting, seed, tissue culture
Geographical distribution/ Ecology	 Native to tropical regions of Southeast Asia particularly Thailand. Also grows in southern China and some temperate regions. Widely cultivated in Europe, Asia, North America, and the West Indies. Often cultivated in the house yards or grows wild.





Uses Supported by Experimental and or Clinical Data

- Antimicrobe (Bacillus cereus & Candida albicans),
- Anticancer against cancerous cell line HeLa (IC₅₀:18 μg/ml) and K-562 (IC₅₀: 20 μg/ml)
- Antiviral against Herpes simplex strain F (Ic50 1.96-3.11 nM) and Varicella zoster
- Antioxidant: Protection against oxidative haemolysis and free radical scavenging
- Immunomodulatory: promote the production of lymphocytes and interleukin-4 in healthy adult

Uses in Local Traditional Medicine

• As diuretic; to treat intestinal pain; complementary treatment for tumours and growth in the breast; to control the blood glucose level

Other Local Usage (if any):

• Post partum care (leaves decoction for bathing)

🚺 Scientific Data

Chemical Constituents:

 Phaeophytin (chlorophyl derivative), stigmasterol flaaavanoid, β sitosterol, lupeol, botulin, C-glycosyl flavon, vitexin, isovitexin, shaftoside, isomollupentin, 7glukopyranocide, orientin, iso-orientin, sulphurus glucoside.

Contra Indications (If any):

• Information and data have not been established.





Economic Potential/ Commercial Products





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Curcuma longa L.





Vernacular name/s	 Kunyit, temu kunyit (Malay), tius (Semang). Kunyit, temu kuning, temu kunyit (Brunei); rômiêt, lômiêt (Cambodia); khi min, 'kunyit (Indonesian), kunir (Javanese), koneng (Sundanese); khmin2'khun2 (Lao PDR); nanwin (Myanmar); Dilaw (Tagalog), duwaw (Cebuano), kalawag (Ilocano), kalabaga (Bisaya), kunik (Ibanag) (Philippines); khamin (general), khamin-kaeng (northern), khamin-chan (central) (Thailand); nghệ, nghệ vàng, uất kim (Viet Nam).
Family	Zingiberaceae
Plant description	Hardy, perennial up to 1.5 m tall. Rhizome: Fleshy, ellipsoidal primary tuber bearing numerous, cylindrical, lateral bright orange rhizomes with spicy smell. Leaf: Thin blade, dark green upper surfaces with midrib and lighter green below. Flower: Tubular, white to yellow-white, borne on erect spike-like inflorescences. Lower bracts are pale green with white longitudinal streaks or white margins, upper ones white and sometimes with pink-tipped. Does not bear fruit or seed.
Propagation	Rhizomes
Geographical distribution / Ecology	Widely cultivated throughout the tropics. Grows well at loamy soils 450 to 900 m above sea level with annual rainfall between 1000 to 2000 mm.





Uses Supported by Experimental and or Clinical Data

 Antioxidant, anti-inflammatory, antimicrobial, antitumor, hepatoprotective, neuroprotective, anticancer, antiallergic, antidermatophytic, antidepressant, antimicrobial, antibacterial, antifungal, antiviral, antiparasitic, antifertility, immunomodulatory.

Uses in Local Traditional Medicine

- Fresh rhizome is antispasmodic and carminative.
- Fresh juice is used as tonic after child birth and skin diseases.
- Common usage in treating yellow fever, fever, gastritis, asthma and gout. Also used in mixture or formulation as complementary treatment for stomach and breast tumours.

Other Local Uses (if any)

Food colouring and flavouring

Contra Indications (if any)

- Excessive consumption may trigger uterine contraction in pregnancy, and may hinder iron absorption especially in iron-deficient individuals.
- Delayed blood clotting thus usage to be stopped at least 2 weeks before any surgery.
- Not to be consumed by individual with gallbladder and or bleeding problems



Chemical Constituents:

• Rich in essential oil such as turmerone, zingiberene, arturmerone, turmerol, βcurcumene, β-sesquiphellandrene; oleoresin such as curcumin, demethoxycurcumin, bis- demethoxycurcumin.





Economic Potential/ Commercial Products





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Hibiscus sabdariffa L.







Uses Supported by Experimental and or Clinical Data

• Antihypertensive, antioxidant, antidiabetic, antihipercholestromic, antimicrobe and hepatoprotective

Uses in Local Traditional Medicine

• Cardiovascular related diseases, wound healing, stomach ulcer, constipation, bloating (gas in stomach), gall/kidney stone

Other Local Usage (if any):

Edible colouring, juice, jam, salad



Scientific Data

Chemical Constituents:

• Curcumin (diferulðylmethane)

Contra Indications (If any):

- Reduce effectiveness of chloroquine (medications for malaria)
- Affect /complicates anti-diabetes and antihypertensive related drugs usage.





Jam



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Labisia pumila (Blume) Fern.-Vill.







Uses Supported by Experimental and or Clinical Data

• Phytoestrogenic effect, antioxidant and antiaging, antibacterial and antifungal, anticarcinogenic.

Uses in Local Traditional Medicine

- Commonly use during childbirth. The plant decoction is consumed to aid in labour and used as tonic during confinement in post-partum care.
- Folk treatment for dysentery, flatulence, rheumatism, gonorrhoea, dysmenorrhoea.
- Folk treatment for gastric discomfort, internal injury, increase fertility and regulate blood sugar level and blood pressure.

Other Local Usage (if any):

• No available information

Contraindications (if any)

• No available information



Chemical Constituents:

- Phenolics such as gallic acid, caffeic acid, pyrogallol, benzoic acid, cinnamic acid and methyl gallate;
- Flavonoids such as quercetin, myricetin, kaempferol, catechin, epigallocatechin, naringin, rutin, apigenin, daidzein and genistein;
- Beta carotene and ascorbic acid.




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Moringa oleifera Lam.



Vernacular name/s	Merunggai, kacang kelo
Family	Moringaceae
Plant description	Trees up to 12 m tall, bark pale smooth to rugose but not fissured. Leaves: Petiolate, 3-pinnate, 25-60 cm, with stalk glands often exuding clear or amber liquid at base of petiole and leaflets. Flowers: White to cream, fragrant. Seeds: Sub-globose, 3-angled, 8-15 mm in diameter excluding wings; wings 0.5-1 cm wide, rarely absent.
Propagation	Seeds, stem cutting
Geographical distribution / Ecology	 Originated from India and Sri Lanka. Widely cultivated in tropical and subtropical region. Grows well under lowland tropical conditions. It is a drought tolerant plant and grows on a wide range of soils, and thrives on fertile, sandy loams





Uses Supported by Experimental and or Clinical Data

 Diuretics, anti-cholesterol, antihypertensive, antispasmodic, antiulcer, hepato protective, anti-tumour, anticancer, antibacterial, anti-fungus, antioxidant, antiinflammatory, antipyretic, antidiabetic, wound healing, analgesic, anti-asthmatic, antifertility, anti-urolithic, cardiovascular stimulant, improve eye sight (vision).

Uses in Local Traditional Medicine

- Postpartum care: Leaves eaten to stimulate lactation. Poulticed leaves applied over the breast to stop milk flow.
- Leaves and fruits eaten for its laxative property.
- Roots can aid in digestion.
- Bark extract for headache relief.
- Seed oil applied to the joint to treat rheumatism.

Other Local Usage (if any):

- Fresh foliage as fodder for livestock.
- Colourless seed oil used in art as a lubricant and additive for perfumes.
- Soft wood : blue dye.

Scientific Data

Chemical Constituents:

• Fruits: Rich in vitamin C. Seed: 4α-L-rhamnosyloxy-benzyl-isothiocyanate

Contra Indications (If any):

• No available information.



Economic Potential/ Commercial Products





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Piper nigrum L.





Geographical distribution / Ecology Native to the Western Ghats in Southwest India and is now extensively cultivated in various tropical regions around the world. It is an important crop in Viet Nam, India, Brazil, Indonesia, Malaysia, Sri Lanka, China and Thailand. The most suitable climate for its growth is per-humid tropical, with a well-distributed annual rainfall of 2000–4000 mm, temperatures around 25–30°C, and relative humidity above 65%.



Usage

Uses Supported by Experimental and or Clinical Data

Antimicrobial

- Fruit, seed (aqueous and methanol extracts) inhibited Bacillus subtilis, Escherichia coli, Pseudomonas aeruginosa, Salmonella typhi, Staphylococcus aureus, Aspergillus niger and Candida albicans.
- Leaf: Solvent extracts are generally more effective against bacteria and fungi than aqueous extract
- Essential oil (berries and leaves): Inhibited Bacillus subtilis and Pseudomonas aeruginosa.
- Fruit: Amide alkaloid constituents vis a vis N-isobutyl-(2E,4E,14Z)-eicosatrienamide, pellitorine, trachyone, pergumidiene and isopiperolein B.

Antioxidant

- Fruit, seed, essential oil, leaf: Potent inhibitory effects against DPPH radical, superoxide anion, hydrogen peroxide, and total antioxidant activity from in vitro assay.
- Compound: 3,4-dihydroxyphenyl, N-trans-feruloyltyramine, piperine and piperic acid were found to scavenge DPPH radicals.
- Extracts improved the level of antioxidant enzymes such as superoxide dismutase (SOD), catalase (CAT), glutathione peroxidase (GPx), glutathione-S- transferase (GST), and the reduced glutathione (GSH). Piperine (40 mg/kg body weight) supplementation reduced lipid peroxidation and improved the antioxidant profile.



Analgesic and Antiinflammatory

- Fruit: Hexane and ethanol extracts Pain relieving effect in mice using tail immersion, analgesy-meter, hot plate and writhing methods, as well as anti-inflammatory effect determined by carrageenan-induced paw oedema.
- Leaf: Methanolic extract (via oral administration): potent in vivo anti-inflammatory activity in contact hypersensitivity and ear swelling models.
- Essential oil ((500 mg/kg body weight) for five consecutive days via intraperitoneal administration: strong anti-inflammatory and anti-nociceptive properties in mice.
- In a randomised, double-blind, placebo-controlled study for nine weeks, inhalation of *P. nigrum EO for 15 min showed significant analgesic activities in 54 patients with different types of pain.*
- Piperine: analgesic and anti-inflammatory activity in rats in different acute and chronic experimental models.

Uses in Local Traditional Medicine

- Fruits (decoction for oral consumption): cough, diarrhoea, headache, muscle soreness, difficult urination through decoction preparation for oral consumption.
- Fruits (eaten with rice and sometimes combined with anchovies): appetite loss, bloating and post-partum recovery
- Leaves (pounded, topical application): fever, hair problems, and shingles.

Other Local Uses (if any)

• Spice and food ingredient due to its distinctive flavour and aroma. It is often combined with other spices and herbs to enhance and balance the flavour compositions in various dishes.



Scientific Data

Chemical Constituents:

- The alkaloid piperine, a pungent component is present in a concentration of about 5– 9%.
- Fruits: sesquiterpene hydrocarbon vis a vis δ and θ -elemene, α -copaene, monoterpene like linalool and α -phellandrene, as well as alkamides such as N-trans-feruloyltyramine and pellitorine.
- Fruits' essential oil: A complex mixture of monoterpenes (70–80%), sesquiterpenes (20–30%), and small amounts of oxygenated compounds, without pungent principles. The concentration and composition of this oil vary depending on sources, cultivars, and methods of extraction. Among the main compounds are α-pinene, β-caryophyllene, limonene and β-pinene. Leave oils are high in α-bisabolol and α-cubebene.

Contra Indications (if any)

• No available information



Economic Potential/ Commercial Products





Topical gel



Coffee

Dried fruit

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Plukenetia volubilis L.



Vernacular name/s	Sacha inchi, Inca peanut, wild peanut, Inca Inchi, mountain peanut
Family	Euphorbiaceae
Plant description	Semi-woody perennial liana up to 2 m high. Leaves : triangular to ovate with a truncate to cordate base with palmate. Fruit capsule : star-shaped, measuring 3–5 cm. Upon maturity, the fruits turn from green to blackish brown. Each fruit capsule contains 4–6 edible dark brown oval seeds (1.5 to 2 cm. The dried fruit capsule consists of 30–35% non-edible shell and 65–70% edible seed kernel. The average fruit yield varies between approximately 150–750 kg ha ⁻¹ .
Propagation	Seeds or cutting (graft). Cultivated with support such as on stakes or fences due to its climbing growth habit.
Geographical distribution/ Ecology	 Widely distributed in South America and the Lesser Antilles. Lately, its cultivation has also stretched to Asian countries such as Viet Nam, Cambodia, Thailand, Lao PDR and some regions of China. Most common at moist to wet lowland forest, grows well at 10-37 °C on a variety of soils, preferably sandy loam with good drainage.





Uses Supported by Experimental and or Clinical Data

Antioxidant

Usage

• Seed: Polyunsaturated fatty acids, tocopherols, phytosterols and phenolic compounds were linked to the hydrophilic and lipophilic antioxidant capabilities, respectively. The lipophilic extract showed higher antioxidant activity than the hydrophilic extract.

Antidyslipidaemic

- Roasted seed: In 28 volunteers from the Sacha Inchi treated group showed significant decrease in cholesterol, triglycerides and LDL-C, as well as an increase in HDL-C level.
- Seed oil: The consumption seed oil resulted in decreases in mean total cholesterol and non-esterified fatty acid readings, as well as an increase in HDL-C.

Antitumour and antiproliferative

- Leaf (methanol and hexane) extracts inhibited HeLa (cervix) cell proliferation by 54.3 and 48.5%, respectively.
- Seed oil: anticancer action in Walker 256 tumour-bearing rats. A seed oil-based diet (1kg BW/d for four weeks) managed to reduced tumour bulk and proliferation in Walker 256 tumour cells.

Uses in Local Traditional Medicine

- Ground seed and seed oil mixture: skin cream to rejuvenate and revitalize the skin (Peruvian ethnic).
- Seed oil : rubbed on the skin to relieve muscle pain and rheumatism (Peruvian ethnic).
- The oil and roasted seeds: consumed for cholesterol control, cardiovascular health and gastrointestinal health (Peruvian ethnic).

Other Local Uses (if any)

• No available information





Chemical Constituents:

- Large seeds: Lipid (45–50%); approximately 77.5–84.4% polyunsaturated fatty acids, 8.4–13.2% monounsaturated fatty acids and 6.8–9.1% saturated fatty acids.
- Raw seeds: Protein (22–30%).
- Defatted seeds oil: Protein (53–59%) rich in phenols, tocopherols, and carotenoids

Contra Indications (If any):

• No available information





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Psidium guajava L.



Vernacular name/s	 Jambu batu, jambu biji, jambu kampuchia, jambu berase, jambu burung, jambu padang, jambu berasu, jambu buyawas, jambu melukut Jambu batu, biyabas (Brunei), trapaek sruk (Cambodia), jambu klutuk (Javanese), si da (Lao PDR), malakapen (Myanmar), guava, bayabas, guyabas (Philippines), farang, ma-kuai, ma-man (Thailand), oi (Viet Nam). Guava (English), Goyavier (France)
Family	Myrtaceae
Plant description	A small tree up to 10 m in height. Low drooping branches. Slender trunk about 20 cm in diameter, covered with green to red brown bark that peels off in thin flakes. Pubescent young twigs. Leaves: In pairs, opposite each other. Elliptic to oblong in shape, glabrous upper surface, finely pubescent and veined on the lower surface. Flowers: White, 3 cm in diameter, solitary or in 2 to 3 flower clusters, borne at the axils of newly emerging lateral shoots. Fruit: Fleshy with large number of small hard seeds.
Propagation	Seed, cuttings or grafting.
Geographical distribution / Ecology	 Widely distributed and cultivated throughout the tropics and subtropics. Adapts well, from sea level to an altitude of about 1500 m in temperatures ranging from 15–45 °C.





Uses Supported by Experimental and or Clinical Data

• Diarrhoea, respiratory infections, skin related problems, cardiovascular and hypertensive disorder, antidiabetes, anticancer, immunomodulatory activity, hepato-protective, nephron-protective, oral/dental problems, gastrointestinal problems, laxatives, antacid and ulcer protectant activity, wound healing, anti allergy

Uses in Local Traditional Medicine

• Decoction from leaves and shoots are used to treat stomach ache, diarrhoea, wound , skin diseases

Other Local Uses (if any)

- Snacks dried fruit,
- The wood is moderately strong and durable hence find its used in carpentry works.



Chemical Constituents:

 Saponin, oleanolic acid, lyxopyranoside, arabopyranoside, guaijavarin, quercetin, citric acid, acetic acid, terpenes, caryophyllene oxide, p-selinene, guajadial, menthol, αpinene, terpenyl acetate, limonene, β-pinene, caryophyllene, longicyclene, βbisabolene, tannin, calcium oxalate, leukocyanidins, gallic acid

Contra Indications (if any)

• No available information.





Economic Potential/ Commercial Products



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Senna alata (L.) Roxb.



Vernacular name/s	Gelenggang, daun kurap .
Family	Fabaceae
Plant description	Shrub, 1-2 m tall, sometime up to 5m. Leaves: Pinnate with 30-60 cm long rachis, each pinna has about 8-20 pairs of leaflets; petiole and rachis of leaves without glands; with 2 longitudinal ribs; narrowly winged. Legume with a membranous wing at middle downward to base of each valve. Flowers: oblong sepals, 10-20 mm x 6-7 mm, orange yellow. Fruit: Tetragonal 10-15 cm x 1.5-8 cm, winged 4-8 mm, black glabrous, up to 50 seeded. Seeds: quadrangular, flattened, 7-8 x 5-8 mm, shiny valve.
Propagation	Seed
Geographical distribution / Ecology	 Originates from South America but has spread to pantropical countries. It grows wild in South East Asia and is also planted as ornamental and medicinal plant. Commonly found at river sides, forests fringes, edges of pools and drains; open areas, damp areas, orchards and villages





Usage

Uses Supported by Experimental and or Clinical Data

- Antibacterial (Propionibacterium acnes, Cryptococcus neoformans, Methiciliin resistant Staphylococcus aureus (MRSA), anticandidal, antidermatophytes, antiviral and antiparasitic (Plasmodium falciparum)
- Laxative due to anthraquinone content
- Antidiabetic : Leaves ethanolic extract
- Anti-inflammatory and analgesic

Uses in Local Traditional Medicine

- Ringworm, versicolor, sores, wound and shingles treatments; itchiness and nerve pain relief, ease high fever, kidney stone problem, constipation and pile.
- Assist in the control of high blood pressure, blood sugar level as well as reducing nerve pain.

Other Local Uses (if any)

• Postpartum care, massage oil and laxatives



Chemical Constituents:

• Anthraquinones, adenine, chrysoeriol derivative, kaempferol, naringenin, quercetin, rhamnetin derivatives

Contra Indications (If any):

- Sub-acute: Decrease in hemoglobin, red blood cells and body weigh 14 days post consumption of 150mg/kg extract.
- Heart lesion, kidney and intestine damage from daily consumption of 2% powdered leaves







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Tinospora crispa (L.) Hook.f. & Thomson



Vernacular name/s	 Patawali, akar putarwali, petawali, akar seruntun (Peninsular), daun akar wali (Sarawak) (Malaysia) Bandaul pech (Cambodia); andawali (Sundanese), brotowali, putrowali (Javanese) (Indonesia); khua kao ho (Lao PDR); makabuhay, meliburigan (Mindanao), paliaban (Bisaya), panyawan vine (Visayas) (Philippines); boraphet, central Thailand; dây thần thông, dây ký ninh, dây cóc. Viet Nam.
Family	Menispermaceae
Plant description	Woody vine or climber up to 15 m long. Leaves: large, broad heart- shaped. Stems: slightly fleshy and smooth (young), thick and fleshy with numerous warty protuberances or tubercles (mature) containing bitter milky sap. Inflorescences: appear when plant is leafless and contain small yellowish green flowers with 3 petals. Fruits : small, ellipsoidal in shape.
Propagation	Vegetative cuttings of the older stems
Geographical distribution / Ecology	 Common in India, Myanmar, Cambodia, Lao PDR, Viet Nam, Yunnan (southern China), Thailand, Peninsular Malaysia, Singapore, Indonesia in Java and Sumbawa and Philippines (Luzon, Mindoro and Mindanao). Grows well in the tropics under a wide range of soils in primary lowland forest to 1000 m above sea level but thrives better in secondary forests.





Uses Supported by Experimental and or Clinical Data

• Anti-inflammatory, antioxidant, antimalarial, antiprotozoal, hypoglycaemic

Uses in Local Traditional Medicine

- The infusion of the stem is consumed as vermifuge and of the whole plant to treat cholera as well as diabetes mellitus.
- Topically use is to treat scabies and to heal wounds.
- Orally taken to stimulate appetite, and to treat hypertension and hyperglycaemia.
- Also use to treat yellow fever, skin diseases, gastric, sores, muscle pain and strain, sinus and piles.

Other Local Uses (if any)

• No available information

Scientific Data

Chemical Constituents

• Boropetol B, borapetoside B, C & F, jatrorhizine, magnoflorine, palmatine, protoberberine, tembolarine, diosmetin, cycloeucalenol, cycloeucalenone.

Contraindications (if any)

• No available information



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Vitex negundo L.



Vernacular name/s	Legundi, lagundi, lemuni, lemuning, lenggundi
Family	Lamiaceae
Plant description	Multi-trunked tree up to 15' tall. Leaves: Grayish-green, compound palmate, with 3-5 lance-shaped leaflets (each leaflet up to 4" long). Flowers: Bluish-lavender coloured, tiny, fragrant appearing in loose, 5-8" long panicles.
Propagation	Seeds, stem cuttings.
Geographical distribution/ Ecology	 Eastern tropical Africa and Madagascar to Iran, Afghanistan, Pakistan, India, Sri Lanka, Myanmar, Thailand, Indochina, China, Japan, Taiwan and throughout the Malesian region. Widely distributed, has been introduced and easily naturalized, often found in humid places and mixed open forest, up to 1700 m altitude. Thrive well in loose, medium moisture, well-drained soils in full sun.





Usage

Uses Supported by Experimental and or Clinical Data

- Anti-inflammatory, analgesic, antioxidant activities
- Interference with male reproductive functions in rats. Estrogen like activity, and can be use as hormone replacement therapy
- Potential myocardial infarction treatment
- Toxic to selected human cancer cell lines
- Hepato-protective activity against d-galactose amine and carbon tetrachloride induced damages

Uses in Local Traditional Medicine

- Leaves: Aromatic bath, insectifuge, wound healing
- Leaves and root : Tonic, febrifuge (India)
- Bark & leaves decoction : anti-gastralgic (Philippines)
- Swelling, flatulence fevers, cough, snake bite / poison antidote (Sri Lanka)
- Cough and sore throats (Papua New Guinea)

Other Local Uses (if any)

• Colouring agent (purple pigment) for nasi kerabu (salad - rice (local dish)



Scientific Data

Chemical Constituents:

Leaves:

- Essential oils: viridiflorol, β-caryophyllene, sabinene, 4- terpineol, γ terpinene, carryophyllene oxide, 1-oceten-3-ol, globulol
- Flavonoids: 5 hydroxyl-3,6,7,3',4'-pentamethoxyflavone, 5,3'-dihydroxy-7,8,4'trimethoxyflavanone
- Triterpenoids: betulinic acid, ursolic acid, 6 sitosterol
- Others: 6'-p-hydroxybenzoyl mussaenosidic acid, 2'p-hydroxxybenzoyl mussaenosidic acid n-hentriacontanol, p-hydroxybenzoic acid

Seeds:

- Diterpenoids: negundoal
- Sesquiterpenoids: negunfurol, 3-formyl-4,5-dimethyl-8-oxo-5H-6,7-dihydronaphtho[2,3-bifuran
- Lignans: vitexdoins A-I, vitedoamine B, 6-hydroxy-4-(4 hydroxy-3 methoxy-phenyl)-3hydroxymethyl-t-methoxy-3.4-dihydro-2-naphtaldehyde
- Triterpenoids: 3β-acetoxyolean-12-en 27-oic acid, 2α,3β-diacetoxy -18-hydroxyoleana-5,12-dien-28-oic acid, negundonorins A & B

Roots:

- Sesquiterpenoids: 3-formyl-4,5-dimethyl-8-oxo-5H-6,7-dihydronaphtho[2,3-b] furan
- Triterpenoids: 28,3α-diacetoxyoleana-5,12-dien-28-oic acid, 2α,3α-dihidroxyoleana-5,12-dien-28 oic acid, 2α,36-diacetoxy -18-hdroxyoleana-5,12-dien-28-oic acid, acetyl oleonolic acid, sitosterol
- Flavanoids: vitexin, isovitexin
- Lignans: negundin-A, negundin-B, vitrofolal E, vitrofolal F

Extracts:

Bronchial asthma in adults.

Contra Indications (If any):

• Vomiting, desquamation of the skin over the palms and increased frequency of urination.

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Economic Potential/ Commercial Products



Instant Nasi Kerabu (Salad-rice)



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Zingiber zerumbet (L.) Roscoe ex Sm.



Vernacular name/s	 Lempoyang, lampoyang, lempoyang hijau. Khnhei phtu, prateal vong prenh atit (Cambodia); Lampuyang, lempuyang,, lampojang (Indonesia); Hva:nz ph'ai chai hlüang (Lao PDR); Barik, langkawas, lampuyang (Philippines); Kathue, kathue-pa, kawaen (Thailand); Gừng gió, ngải xanh (Viet Nam)
Family	Zingiberaceae
Plant description	Perennial herb with leafy stems. Rhizomes : Pale brown at ground level, where it produces blade-shaped leaves 15–20 cm long in an alternate arrangement on thin upright stem up to 1.2 m tall. Flower : Conical or club-shaped growing on separate and shorter stalks among the leafy stems. The flower heads are long with overlapping scales enclosing few small yellowish white flowers. Initially green in colour, they are gradually fill with an aromatic, slimy liquid and turn a brighter red colour upon maturity. The flower stalks usually remain hidden beneath the leaf stalks. Fruit : cylindrical red capsule.
Propagation	Division of rhizomes.
Geographical distribution / Ecology	 Indigenous to India, cultivated as a home-garden plant in India, Sri Lanka, China and throughout Southeast Asia including Malaysia. Cultivated or naturalized in forest margins, brushwood, mixed forests, teak forests and waste areas near villages at altitudes up to 1200 m





Usage

Uses Supported by Experimental and or Clinical Data

• Antiproliferative, anti-inflammatory, antioxidant, analgesic, antipyretic, antihelminthic, antiprotozoal, larvicidal and anti aggregant.

Uses in Local Traditional Medicine

- The rhizomes are used to relieve intestinal and digestive problems, to increase physical strength and vertigo.
- Decoction of rhizomes are used to treat worm infestation in children, dysmenorrhoea, asthma, cough, piles, diarrhoea, food poisoning, stomach ache, to increase appetite, malarial fever, postpartum care and a general tonic.

Other Local Uses (if any)

• Liquid extracted from the flower head `pockets': Shampoo (indigenous people)

Scientific Data

Chemical Constituents

 Flavonoids such as kaempferol; aromatics such as anisole, diferuloymethane, vanilin; monoterpenes such as α-pinene, β-pinene, limonene, linalool, borneol, champhor; sesquiterpenes such as zerumbone, zederone; sterols such as norethynodrel.

Contra Indications (if any)

• No available information





Cosmetics



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- Almas, Jus Nusantara Gold, 500 ml Al Barakah Health & Beauty Mart
- https://halea.com.my



MYANMAR



Alpinia intermedia Gagnep



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Vernacular name/s	Padegaw
Familiy	Zingiberaceae
Plant description	Pseudostems , ligule: dry membranous, margin ciliate, petiole present, Leaf: blade oblong or lanceolate, glabrous, base attenuate, apex acuminate. Panicles erect, glabrous; branches 0.81.3 cm, apically 35- flowered; bracteoles oblong, 710 mm, deciduous. Flowers: white, glabrous. Calyx: tubular, 3.54.5 mm, apex crenate. Corolla tube shorter than calyx; lobes narrow. Lateral staminodes horn-shaped. Labellum ovate.
Propagation	Rhizome
Geographical Distribution/ Ecology	Eastern Shan State, Nam Monn RF, Kachin State, moist and shady places, hill evergreen forest.





Usage

Uses Supported by Experimental and or Clinical Data

No available information

Uses in Local Traditional Medicine

• Fresh rhizome: indigestion, colic, dysentery and cancer of the stomach, food poisoning

Other Local Usage (if any):

• Food flavour / spice



Scientific Data

Chemical Constituents:

• 1,8-cineole, β -pinene, α -pinene, β -myrcene, camphor, γ -terpinene, p-cymene, geraniol, α -fenchyl acetate, ocimene, methyl cinnamate, and β -caryophyllene¹

Contra Indications (If any):

No available information



Economic Potential/ Commercial Products



Bibliography & Photo Credit

Thein Van H., Dinh Thang T., Nguyen Luu T., Dat Doan V. An overview of the chemical composition and biological activities of essential oils from Alpinia genus (Zingiberaceae) RSC Adv. 2021 Nov 23; 11(60): 37767-37783. Published online 2021 Nov 23. doi: 10.1039/d1ra07370b



Curcuma caesia Roxb.



Vernacular name/s	Nanwin-net, Sanwin-net, Black Turmeric
Familiy	Zingiberaceae
Plant description	Rhizome: tuberous with camphoraceous sweet odor, dark brown, bluish black, or buff in colour. Leaf: broad oblong lanceolate and glabrous. Inflorescence: dense spike, which arises much before the opening of leaf, the bracts are green, and the bracts of coma are deep red, which become crimson when old. Flower: Smaller than bracts, pale yellow with reddish border. Calyx: long, obtuse, 3 toothed. Corolla: Long tubular, pale yellow lip-3 lobed semi-elliptic.
Propagation	Rhizome
Geographical Distribution/ Ecology	Cultivated in Chin State, Kachin State, Shan State, Mandalay Region and Sagaing Region, secondary forest, disturbed areas





Usage

Uses Supported by Experimental and or Clinical Data

• No available information

Uses in Local Traditional Medicine

• Fresh rhizome: eye disease, fever, swelling of the body, hypertension

Other Local Usage (if any):

• Food and spice



Chemical Constituents:

 Zerumbone, furanodienone, curzerenone, curcumenol, zederone, curcumenone, dehydrocurdione from hexanes fraction and curcuminol G, curcuzederone, germacrone-1, 4-diepoxide, wenyujinin B, alismoxide, aerugidiol, zedoarolide B, zedoalactone B, zedoarondiol, isozedoarondiol from chloroform fraction¹

Contra Indications (If any):

No available information



Economic Potential/ Commercial Products





Bibliography & Photo Credit



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Curcuma longa L.



Vernacular name/s • Nanwin, sanwin, • Turmeric (English)

Familiy Zingiberaceae

Pseudostems, Rhizomes: many branched, orange or bright yellow, cylindric, aromatic; roots tuberous at tip. Petiole present; leaf blade green, oblong or elliptic,. glabrous, base attenuate, apex shortly acuminate. Inflorescences terminal on pseudostems; peduncle 12--20 cm; spike cylindric, fertile bracts pale green, ovate or oblong, apex obtuse; coma bracts spreading, white and green, sometimes tinged reddish purple, apex acute. Calyx white, puberulent, apex unequally 3-toothed. Corolla pale yellow; tube to 3 cm; lobes deltoid, central one larger, apex mucronate. Lateral staminodes shorter than labellum. Labellum yellowish with central, yellow band, obovate.

Propagation Rhizome

Geographical Distribution/ Ecology Cultivated in Chin State, Kachin State, Shan State, secondary forest, disturbed areas





Uses Supported by Experimental and or Clinical Data

• No available information

Uses in Local Traditional Medicine

• Fresh or dried rhizome stomachic, stimulant, carminative, diarrhea, rheumatism, relieve cough, tuberculosis, woman diseases

Other Local Usage (if any):

• Food and spice



Scientific Data

Chemical Constituents:

 Curcuminoids curcumin, dihydrocurcumin, cyclocurcumin, artumerone, βsesquiphellandrene, curcumenol¹

Contra Indications (If any):

• No available information



Economic Potential/ Commercial Products





Bibliography & Photo Credit

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Thein Van H., Dinh Thang T., Nguyen Luu T., Dat Doan V. An overview of the chemical composition and biological activities of essential oils from Alpinia genus (Zingiberaceae)⁻ RSC Adv. 2021 Nov 23; 11(60): 37767–37783. Published online 2021 Nov 23. doi: 10.1039/d1ra07370b

Kaempferia galanga L.



Vernacular name/s	Pan U, kunsa gamon
Familiy	Zingiberaceae
Plant description	Rhizomes: pale green or greenish white inside, tuberous, fragrant. Leaves: broadly elliptical to suborbicular leaves which occur in a rosette, spreading flat on ground, subsessile; leaf blade green, orbicular, glabrous on both surfaces or villous abaxially, margin usually white, apex mucronate or acute. Inflorescences: terminal on pseudostems, enclosed by imbricate leaf sheaths, sessile, few to many flowered; bracts lanceolate. Calyx: equaling bracts. Corolla tube 22.5 cm; lobes white, linear. Lateral staminodes obovate-cuneate. Labellum apex slightly 2- lobed or deeply 2-cleft; lobes white with purple markings at base.
Propagation	Rhizome
Geographical Distribution/ Ecology	Cultivated in the Chin, Kachin and Shan State, secondary forest, disturbed areas
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Uses Supported by Experimental and or Clinical Data

• No available information

Uses in Local Traditional Medicine

• Tuber and fresh rhizome, toothache, a wash for dandruff, scabs on the head, stomachic, carminative, abdominal pain, swelling and muscular rheumatism, diabetes, hypertension, cough, asthma, joint fractures, urticaria, vertigo, and intestinal injuries.

Other Local Usage (if any):

• Food and spice



Chemical Constituents:

• Ethyl-p-methoxycinnamate, methylcinnamate, carvone, eucalyptol and pentadecane¹

Contra Indications (If any):

• No available information



Economic Potential/ Commercial Products



Bibliography & Photo Credit

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Kaempferia parviflora Wall.



Vernacular name/s	Black ginger, gin net, Thai ginseng.
Familiy	Zingiberaceae
Plant description	Perennial rhizomatous herbs, foliage with red margins, understory plant. Rhizomes: short fleshy, dark purple in colour, tuberous roots. Leaves: simple, alternate, tuft base, petioles long, pale green, glabrous; leaf blade elliptic, acute at apex, green, glabrous on both surfaces; upper surface is green and lower surface is pale green. Inflorescence: tubular spike, axillary, substended by two bracts; lanceolate 3-4cm long. Flowers: inconspicuous usually white with violet labellum.
Propagation	Rhizome
Geographical Distribution/ Ecology	Cultivated in Kachin and Shan State. Grows on an open area and under the shade of in the sandy loam soil close to the water stream.





Uses Supported by Experimental and or Clinical Data

• No available information

Uses in Local Traditional Medicine

• Inflammation, hypertension, erectile dysfunction, abdominal ailments, increase vitality and improve blood flow.

Other Local Usage (if any):

• Flavour

Scientific Data

Chemical Constituents:

• Alkaloid, glycoside, flavonoid, phenol, polyphenol, lipo-phenol, saponin, tannin, terpene, steroid & reducing sugars

Contra Indications (If any):

• No available information

Economic Potential/ Commercial Products



Bibliography & Photo Credit

• Than Than Yee, Kyi War Yi Lwin, Study of Phytochemical Composition on Kaempferia parviflora Wall. ex Baker. IEEE-SEM, Volume 7, Issue 7, July-2019 ISSN 2320-9151.



Rhynchanthus longiflorus Hook. f.



Vernacular Kyauk Gyin name/s

Familiy Zingiberaceae

Epiphytic, perennial rhizomatous herb. Rhizome: ovate, faintly aromatic with membranous scale leaves, arranged in a single linear row on tree trunks. Roots mainly two types – clinging and absorbing. Leafy shoot 60-80 cm long, drooping; Leaves: 10-12 in number, sessile, ligulate; ligule long, entire; lamina glossy, dark green on the upper side, lower side pale green, midrib prominent. Inflorescence: a terminal, lax, unbranched description spike; peduncle short, bright red, axis slightly curved upwards. Bracts oblong-lanceolate, bright red, each bract subtends a single flower. Bracteoles long, tubular. Flowers: 5-6 in an inflorescence, arranged in two rows. Calyx tubular, translucent orange. Corolla tube long, shorter than the calyx, reddish, lobes unequal yellowish green.

Rhizome Propagation

Geographical Distribution/ Ecology

Plant

Chin State, Kachin State and Shan State, Hill evergreen forest, on rock, growing as epiphyte on large tree trunks wet hill evergreen forest.





Uses Supported by Experimental and or Clinical Data

• No available information

Uses in Local Traditional Medicine

• Fresh and dried rhizome: herbal medicine for cough, urine disease, hypertension, and stomach ache.

Other Local Usage (if any):

• Food / Flavour

Scientific Data

Chemical Constituents:

• Cineol, beta-pinene, alpha-pinene, sabinene¹

Contra Indications (If any):

• No available information

Economic Potential/ Commercial Products





Bibliography & Photo Credit

• Teerapattarakan N., Rujjanawate C., The Presence of Monoterpenes in Rhynchanthus longiflorus Hook.f. Confirms the Value of Its Use in Akha Folk Medicine. GMSMJ (Greater Mekong Subregion Medical Journal) Vol. 1 No. 2 May-August 2021.



Swertia angustifolia Buch.-Ham. ex D. Don



apex obtuse and apiculate. A nectary per corolla lobe, pocket-shaped, with an orbicular scale and many minutely hairy short fimbriae at apex of pocket. Filaments 3.5-4 mm; anthers ellipsoid, circa 1 mm. Style short, distinct; stigma lobes capitate. Capsules ovoid. **Seeds:** brown, ellipsoid.

Propagation Seeds

Geographical Distribution/ Ecology

Chin State and southern Shan State. It grows in open area in grassy fields above 1200 m altitude.





Uses Supported by Experimental and or Clinical Data

• No available information

Uses in Local Traditional Medicine

- Typhoid fever, pneumonia fever, throat problems and bronchitis
- Odema, stomach ulcers, leucorrhoea,

Other Local Usage (if any):

• No available information



Scientific Data

Chemical Constituents:

 1, 8-dihydroxy-3, 7-dimethoxyxanthone, 1, 8-dihydroxy-3, 5, 7-trimethoxyxanthone, 7hydroxy-3, 8-dimethoxyxanthone-1-O-6-D-glucopyranoside, 8-O-[6-D-xylopyranosyl-(1-6) -6-D-glucopyranosyl] -1, 7-dihydroxy-3-methoxyxanthone, (+) -syringaresinol, ferulic acid, trans-coniferyl aldehyde, sinapaldehyde, trans-coniferyl alcohol, 3, 4dihydroxybenzoic acid, 2-hydroxybenzoic acid, isophthalic acid, 2-furoic acid, and 2methyl-4(3H)-quinazolinone.

Contra Indications (If any):

• No available information





Economic Potential/ Commercial Products



Bibliography & Photo Credit

• He K., Cao T., Hong-Ling W., Chang-an G.,Xue-mei Z., Ji-jun C. Chemical constituents of Swertia angustifolia. Zhongguo Zhong Yao Za Zhi. 2015 Sep; 40(18):3603-7.



Zingiber officinale Roscoe



Vernacular name/s	 Gyin / Gyin sein Ginger (English)
Familiy	Zingiberaceae
Plant description	Rhizomes: branched, yellowish inside, thickened, fleshy, and strongly aromatic. Leaves: sessile; ligule slightly 2-lobed, leaf blade lanceolate or linear-lanceolate, Inflorescences: arising from rhizomes, ovoid, peduncle, bracts pale green, bracteoles equaling bracts. Corolla yellowish green; Central lobe of labellum with purple stripe and cream blotches, oblong- obovate, shorter than corolla lobes; lateral lobes ovate.
Propagation	Rhizome
Geographical Distribution/ Ecology	Cultivated in the Southern Shan State, secondary forest, disturbed areas and home garden





Uses Supported by Experimental and or Clinical Data

• Multiple biological activities, including antioxidant, anti-inflammatory, antimicrobial, anticancer, neuroprotective, cardiovascular protective, respiratory protective, antiobesity, antidiabetic, antinausea, and antiemetic activities.

Uses in Local Traditional Medicine

Usage

• Fresh or dried rhizome, various kinds of herbal medicine, diabetes, catarrh, asthma, rheumatism, stroke, gingivitis, toothache, constipation, and nervous system diseases

Other Local Usage (if any):

• Food and spice



Chemical Constituents:

• Phenolic compounds such as gingerols and shagaols, terpenes, polysaccharides, lipids, organic acids, and raw fibers.

Contra Indications (If any):

No available information



Economic Potential/ Commercial Products



Bibliography & Photo Credit

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Qian-Qian M., Xiao-Yu X., Shi-Yu C., Ren-You G., Harold C., Beta T., Hua-Bin L. Bioactive Compounds and Bioactivities of Ginger (Zingiber officinale Roscoe). Foods: 2019 Jun; 8(6): 185. Published online 2019 May 30. doi: 10.3390/foods8060185



PHILIPPINES



Abrus precatorius Linn.



Vernacular name/s	 Saga (Tagalog), matang pusa, berdegonis (Ilokano/Philippines); oyang-ya (Visayas), jequirity (English, Philippines); Saga (Indonesia, Malaysia); Weglis (Indonesia) Gumchi, chanothi (Gujarati); gunchi (Hindi, Pakistan, Persian, Urdu); gunja, gaunchi, rati (Hindi); guruginia (Telugu), kunch, koonch, chunhali, (Bengali), gurugunji (Kannada), shangir (Kashmir), kunni, gundumani (Malyalam); chashami-khurosa (Persian); rosary pea (Egypt); crab's eye (Nepal); precatory bean (USA).
Family	Leguminosae-Papilionoideae / Fabaceae
Plant description	Woody twiner plant. Leaf: 7-24 pairs of oblong leaflets (0.6-2.5 cm \times 0.4-1.2 cm) in size, pinnately compound arrangement. Flower: Small, pink to pinkish white blooms, clustered in auxillary racemes. Seeds: 3-5 red seeds (1.50-5.0 cm \times 0.8-1.5 cm) per pod, each with black markings at the base,
Propagation	Seeds, cuttings
Geographical Distribution / Ecology	 Native to India (altitudes up to 1200m on the outer Himalayas) and scattered in different tropical countries such as Brazil. It can also be found in China Southeast Asia's grasslands, rainforest borders, and gallery forests up to 1500 meters height





Uses Supported by Experimental and or Clinical Data

- Anti-diabetic, anti-oxidative, neuroprotective, anti-viral, neuromuscular, anticonvulsant, anti-epileptic, immuno-modulating, abortifacient, anti-implantation, anti-helmintic, anti-depression, memory enhancing, antiserotonin, diuretic, antimicrobial, anticandidal, anti-inflammatory, anti-arthritic and analgesic, anticancer, antifertility, antispermatogenic, anti-estrogenic, antimalarial, anti-allergic, anti-asthmatics, anticataract & insecticide
- Roots: Jaundice, haemoglobinuric bile and snake bites (chew). Abdominal discomfort, tumours, and abortion (root paste). Antimalarial and anticonvulsant (fresh root, hot water extract). Bronchitis and hepatitis: dried root decoction.
- Tetanus treatment and rabies prevention.
- Leaves: fevers, coughs, and colds.
- Seeds: worm infestations, tuberculosis and painful swellings.

Uses in Local / Traditional Medicine

- Leaves: Urticaria, eczema, stomatitis, conjunctivitis, areata alopecia, migraine, lymphomas/leukaemia, and dysmenorrhea.
- Leaf juices and roots: Cough, hoarseness
- Mixture of bland oils: Painful swellings
- Seeds: bone fracture, birth control by disrupting uterine function and prevent fertilization.
- Roots: demulcent and anti diarrhoea (Java).
- Plants: bronchitis, laryngitis and hepatitis (China).
- Leaves: diabetes, cough, fever and asthma (Himalayas).
- Seeds: urinary and venereal diseases (Africa).



Other Local Usage (If any):

Seeds: beverage sweetener, insecticides, necklaces, bracelets and other ornaments (amulet to protect them from bad spirits), counting material in schools and weighing unit



Chemical Constituents:

Alkaloids, steroids, and other triterpenoids, isoflavanoquinones, anthocyanins, starch, tannin, protein, flavanoids, phenolic compound, fixed oil, amino acid, and the flavones luteolin, abrectorin, orientin, isoorientin, and desmethoxycentaureidin 7-0-rutinoside.



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Economic Potential/ Commercial Products





*Imported Products





Bibliography & Photo Credit

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- Saga, Abrus precatorius, Prayer beads, rosary bead vine: Philippine Medicinal Herbs / Philippine Alternative Medicine (stuartxchange.com)



Acorus gramineus Aiton



Vernacular name/s	Japanese rush, Japanese sweet flag, grassy-leaved sweet flag, grass- leaf sweet flag.
Family	Acoraceae
Plant description	It is not a grass, grown for its foliage as an ornamental grass. Can be used as foundation plants, accent plants or as border front along streams, bogs, and ponds, in forests, along water banks and in rock gardens. An ideal groundcover for fringe area. If maintained in moist condition, it can be a good container plant.
Propagation	Matured seeds, rhizomes.
Geographical distribution / Ecology	 Native to Bangladesh, Cambodia, China north-central, China south-central, China southeast, east Himalaya, Hainan, inner Mongolia, Japan, Korea, Lao PDR, Myanmar, Philippines, Primorye, Qinghai, Taiwan, Thailand, Tibet, Viet Nam, Xinjiang. Introduced to Great Britain, Virginia. Thrives in a variety of environments including wet, bog areas and damp soil. It can withstand up to 4 inches of stagnant water, but not dry soil. Prefers full sun condition, cannot withstand the heat. Preferable cultivation site must be able to provide shade with ample sunlight during the hot afternoon. The planting distance between each plant is between 20–30 cm





Uses Supported by Experimental and or Clinical Data

• No clinical data found for the species.

Uses in Local / Traditional Medicine

- Root: Antifungal, antibacterial, antiperiodic, antirheumatic, antispasmodic, aromatic, cardiac, carminative, diaphoretic, emenagogue, febrifuge, sedative, stimulant, stomachic, tonic and vermifuge.
- Powdered: Bleeding gums. digestive problems particularly gastralgia and diarrhoea, cough, bronchial asthma, neurasthenia, depression, and epilepsy.
- Anti-parasite, dermatosis and haemorrhoids.

Other Local Usage (If any):

- The dried root repels insects. Insecticidal to kill lice, bugs and fleas
- Root raw or cooked. It should be peeled, finely chopped and soaked in several changes of water. It has a stronger and more pleasing taste than A. calamus.
- The root is also used as a ginger substitute. Some caution is advised because it belongs to a family where most of the species are poisonous in the fresh state.

Scientific Data

Chemical Constituents:

- 2,3-dihydro-4,5,7-trimethoxy-1-ethyl-2-methyl-3-(2,4,5-trimethoxyphenyl) indene.
- в-asarone

Contra Indications (If any):

• No available information



Economic Potential/ Commercial Products





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Aegle marmelos (L.) Corrēa



Vernacular name/s	 Bael (Tagalog) Bael fruit, Bengal quince, Bitter orange, Elephant's apple, Japanese bitter apple, Maredoo, Stone apple, Wood apple, Wood stone (English)
Family	Rutaceae
Plant description	A small, smooth, deciduous tree . Straight, strong, axillary spines about 2.5 cm in length. Leaflets : 3-5, ovate-lanceolate, shallowly toothed, sessile on the laterals and long-petioled on the terminals. The damaged branches ooze a sticky fluid that hangs down in long strands and hardens over time. Flowers: Greenish-white, 3 cm in diameter, with fragrant aroma. Fruit: Spherical with a grey or yellow rind, 10 to 14 cm diameter. Orange coloured pulp is sweet, thick, aromatic and gelatinous. Seeds: large, oblong and flat.
Propagation	Seeds
Geographical distribution / Ecology	 Recently introduced to Philippines Native to: Assam, Bangladesh, India, Nepal, Pakistan, West Himalaya Introduced to: Andaman Is., Cambodia, Caroline Is., China South- Central, East Himalaya, Laos, Lesser Sunda Island, Myanmar, Sri Lanka, Sulawesi, Trinidad-Tobago, Viet Nam

Uses Supported by Experimental and or Clinical Data

• No information available.

Uses in Local / Traditional Medicine

- Remedy for gastrointestinal problems such as constipation, stomach aches, stomach ulcers or excess acid.
- Inhibits bacteria adherence to the gut.
- Facilitate in healing mouth ulcers and infections.
- Diarrhoea and haemorrhoids.
- Controls cholesterol.
- Fruit oil extract: Relieve respiratory problems such as asthma.

Other Local Usage (If any):

• No available information.

Scientific Data

Chemical Constituents:

- Alkaloids, coumarins, and steroids have been isolated and identified from different parts of the plant
- Seed Oil: Composed of palmitic stearic oleic, linoleic and linolenic acid

Contra Indications (If any):

• No available information



Economic Potential/ Commercial Products



Drink



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Aloe vera (L.) Burm. f



Vernacular name/s	Barbados aloe, burn plant, lily of the desert, elephant's gall
Family	Asphodelaceae
Plant description	Perennial succulent 60-100 cm tall with stemless or very short stems. Leaves: lanceolate, spirally organized, rosette, thick and fleshy, green to grey-green with white flecks on the upper and lower stem surfaces. Serrated leaf border with little white teeth. Mature leaf 7-10 cm broad and weighs 1.5-2.0 kg. Meaty and fibrous roots. Flower: Pendulous, yellow tubular corolla 2–3 cm long, produced on a spike up to 90 cm tall (Yates 2002).
Propagation	Pups (aloe offsets or offshoots) with fully developed root system separated from the mother plant. Plant the pup in a dry cactus potting mix (one-part potting soil and one-part sand or perlite).
Geographical distribution/ Ecology	 Native in tropical and sub-tropical Africa. Cultivated in subtropical locations all over the world Thrives in hot, dry regions.



Uses Supported by Experimental and or Clinical Data

• Topical use for acne, oral sub mucous fibrosis, radiation-induced skin toxicity, lichen planus, psoriasis, burns, burning mouth syndrome, weight loss, hepatitis, inflammatory bowel disease & diabetes

Uses in Local / Traditional Medicine

- Used for skin conditions and improve baldness and to promote menstrual flow
- Fresh bruised leaves are placed as a poultice over affected regions for contusions or local oedema.
- Leaves mucilaginous pulp : purgative (Costa Rica).
- Bruises, contusions, and ecchymoses are treated with an alcoholic tincture of inspissed juice (India & Antilles)
- Haemorrhoid therapy in Ayurvedic medicine.
- Diabetes, herpes simplex sores, tendonitis, dandruff, menstrual cramps, acne, stomatitis, varicose veins, warts, and haemorrhoids (Arabian Peninsula)

Other Local Usage (If any):

- Juices are used in cosmetics and personal-care products such as moisturizer, soap, shaving cream, and suntan lotion
- Aloe vera juice and water / drinks
- Mouthwash





Chemical Constituents:

• Salicylic acid, monosaccharides and polysaccharides, anthraquinones, enzymes, minerals, folic acids, vitamins, glycoproteins, fatty acids, hormones (auxins and gibberellins)

Contra Indications (If any):

• Pregnant women , breastfeeding women



Economic Potential/ Commercial Products



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Alstonia scholaris (L.) R. Br.



Vernacular name/s	Batino.
Family	Apocynaceae
Plant description	Medium-sized tree up to 20 m high. Very smooth bark with four angled branches. Leaves: Oblong obovate, 10-30 cm long, 5-7 cm wide, shorts talked, in three whorls.
Propagation	Seeds, cuttings or macro-somatic cloning through stem cutting.
Geographical distribution	 Native to the Philippines: (Datakan, Kapangan, Benguet, San Fernando, Pampanga, PEF, Bagong Bayan, Puerto Princesa City (PPC), Palawan, Pinamalayan, Oriental Mindoro, San Teodoro, Sergio osmeña, ZDN, Sitio Dagook, Brgy, Tigbinan, Labo, Camarines Norte, Brgy. Damacan, Bacacay, Albay Lemery, Iloilo Brgy. Rizal, Barotac NIPSC-BVC, Brgy Puerto Princesa, Barotac, Viejo Iloilo, Taba-ao, Tabogon, Cebu, Camp 7, Minglanilla, Cebu. Andaman Island., Assam, Bangladesh, Bismarck Archipelago, Borneo, Cambodia, China South-Central, China Southeast, East Himalaya, India, Jawa, Laccadive Is., Laos, Lesser Sunda Is., Malaya, Maluku, Myanmar, Nepal, New Guinea, Nicobar Is., Northern Territory, Pakistan, Philippines, Queensland, Solomon Is., Sri Lanka, Sulawesi, Sumatera, Thailand, Vietnam, West Himalaya, Western Australia



Uses Supported by Experimental and or Clinical Data

• No available information

Uses in Local / Traditional Medicine

- Bark powder, decoction, infusion, tincture, or wine preparation, is used as febrifuge, tonic, antiperiodic, antidysenteric, emmenagogue, anticholeric, and vulnerary.
- Sprains, bruising, and dislocated joints are treated using a poultice made from the leaves that have been smeared with coconut oil and heated.
- Young leaves decoction: consume to treat lung and ear congestions.
- Leaves and stem barks : stomache, skin problems, and urinary infections. (India)

Other Local Usage (If any):

• Use as Wood: Railroad ties; posts above stumps; beams, joists, rafters; floors; cabinetwork.



Chemical Constituents:

- Echitovenidine, echitamine, venenatine (an indole alkaloid), and anti-inflammatory triterpenoids.
- *B* bark of the A. scholaris, the most intensively used organ of this species, was recently found to have strong antifungal activity.

Contra Indications (If any):

• No available information

Economic Potential/ Commercial Products





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Andrographis paniculata (Burm. f.) Nees



Vernacular name/s	 Serpentina (Tagalog); King of Bitters (English); Mahatikta (Sanskrit;, Kiryato (Gujarati), Mahatita (Hindi); Kalmegh (Bengali); Fah Talai Jone (Thai);
Family	Acanthaceae
Plant description	An annual, branching, tall, herbaceous plant that can grow from 30 to 110 cm., dark green stem of 30-100 cm in length and 2-6 mm in diameter. Leaves: glabrous, lanceolated 2-12 cm in length and 1-3cm in width pinnately arranged. Flowers : tiny and white, with rose-purple dots on the petals. With terminal racemes or panicles inflorescence, it spreads laxly. Seeds: linear oblong with sharp edges capsules 1.9cm x 0.3cm in size. Subquadrate form, yellowish brown in colour. Blooms and produces fruit from December to April.
Propagation	Seeds or stem cuttings
Geographical distribution/ Ecology	 Introduced to Philippines. Native to peninsular India and Sri Lanka. Distributed in different regions of Southeast Asia, West Indies, America, China, and Christmas Island. Hedgerows, hill slopes, waste ground, farms, damp environment, seashores, and roadsides.



Uses Supported by Experimental and or Clinical Data

• Antibacterial, antioxidant, anticancer, immunomodulatory, antihyperlipidemic, anthelmintic, anti-malarial, anti-diarrheal, analgesic, hepatoprotective, anti-ulcer, antiinflammatory, antihyperglycemic, antimicrobial and antiparasitic effect

Uses in Local / Traditional Medicine

- Burning sensation during post partum, dysmenorrhea intestinal worm infestation, eczema, abscesses, diabetes, common cold, malaria, osteoarthritis, osteoarthritis, fever, snake bite and bug bite, ulcerative colitis, dysentery, infection of the throat and tonsils infections (India). Liver disease (Ayurvedic, India)
- Fevers and body toxin removal (China)
- Prevention and treat common colds (Scandinavian nations)
- Sore throats, flu, and upper respiratory tract infections (China, India, Thailand, and Malaysia).

Other Local Usage (If any):

• No available information



Chemical Constituents:

• Diterpenes, flavonoids, xanthones, noriridoides, lactones, flavonoid glycosides, andrographolide

Contra Indications (If any):

- May cause infertility (both male and female).
- Not to be use pregnant and lactating women or patients suffering from bleeding disorders, low blood pressure, auto-immune diseases (such as lupus, rheumatoid arthritis, multiple sclerosis)





Economic Potential/ Commercial Products





Imported Products



Bibliography & Photo Credit

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Aquilaria crassna Pierre ex Lecomte



Vernacular name/s	Agarwood
Family	Thymelaeaceae
Plant description	An open-crowned evergreen tree , 15 to 20 m tall (exceptional individuals reaching 30 m). The bole is 40–60cm in diameter, with some exceeding 100 cm.
Propagation	Seeds
Geographical distribution / Ecology	 21 species of Aquilaria exist in the Philippines with 6 species endemic in the country. Status of A. crassna yet to be verified. Native to: Cambodia, Lao PDR, Thailand, Viet Nam





Uses Supported by Experimental and or Clinical Data

• No available information

Uses in Local / Traditional Medicine

- The root has medicinal uses
- Agarwood or the resin: stomachic and sedative properties. Used to treat a variety of mental ailments, as well as nerve disorders like neurosis, compulsive behaviour, and tiredness, and is thought to ward off bad spirits. Asthma, chest congestion, colic, diarrhoea, diuretics, renal difficulties, nausea, thyroid cancer, and lung tumours.

Other Local Usage (If any):

- It has a long history of use in religious rites and is in high demand as a perfumery ingredient.
- Agarwood oil is an essential oil obtained by water and steam distillation of the wood. It is used in luxury perfumery for application in e.g. oriental and woody-aldehydic bases of 'chypres' and 'fougères'. It produces interesting odour notes with clove oil, e.g. in carnation bases. The oil is so rare and expensive.



Chemical Constituents:

• Main elements: Sesquiterpenoids and chromones These are classified into two categories: (A) agarwood volatile compounds and (B) agarwood non-volatile chemicals.

Contra Indications (If any):

• No available information





Economic Potential/ Commercial Products







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Biancaea sappan (L.) Tod.



Vernacular name/s	 Sibukaw, Sappanwood, Indian redwood, Hapang (Sbl.), Sapang (Ilk., Bis., Tag.) Sappan (Ilk., Tag.) Sibukau (Tag., Sul., Bis.) Sibukaw (Bis.) Sappan wood, Brazil wood (English)
Family	Fabaceae
Plant description	Small tree, 3-5 m tall. Leaves: Complex, up to 50 cm long 20 opposite pinnae. Leaflets obliquely oblong to oblong-rhomboid in shape. Flowers : Yellow with thick woolly filaments that grow on terminal panicles. Fruit: Hard, indehiscent, shiny pod 7 cm long and 3.5 cm wide with a recurved hard beak at the upper angle. Wood: fine to moderately fine texture, rather hefty (600-780 kg/m3). White sapwood with yellow or deep orange (young) turns dark red (mature) heartwood.
Propagation	Seeds, cuttings or macro-somatic cloning through stem cutting.
Geographical distribution / Ecology	 Introduced to Philippines Native to Assam, Bangladesh, Cambodia, East Himalaya, Lao PDR, Myanmar, Nepal, Sri Lanka, Thailand and Viet Nam



Uses Supported by Experimental and or Clinical Data

• Brazilin as antioxidant, antibacterial, anti-inflammatory, anti-photoaging, hypoglycemic, vasorelaxant, hepatoprotective, and anti-acne.

Uses in Local / Traditional Medicine

- Wood and bark (decoction) for tuberculosis, atonic diarrhea, dysentery, postpartum tonic, skin infections, wounds, ulcers and anemia.
- Seeds for stomach aches and nervous disorders.
- Wood (decoction) as tonic after confinement; and internal bleeding
- Dried heartwood as anti-inflammatory, decoction is used as diuretic.
- Wood (decoction) is a potent emmenagogue and an astringent used in moderate instances of dysentery and diarrhea due to its tannic and gallic acids.
- Internally, it is used to treat a variety of skin conditions. It is one of the elements of a malaria treatment mix.
- The seeds are sedative.

Other Local Usage (If any):

- Wood is used for firewood (calorific value of roughly 25 000 kJ/kg).
- Wood for inlay work, cabinet construction, violin bows, and walking sticks, among others. Reasonably easy to work with, durable and shiny, takes high finish, strong and termite resistant. It requires a long time to dry and prone to warping and collapse.
- Tannin or dyestuff from bark and pods: Brazillin, a valuable red crystalline dye from the heartwood, is used on cotton, silk, and wool materials. Bakam produces vibrant red and violet hues, while garcine creates a chocolate hue. The roots produce a yellow dye. 40% tannin is employed for the creation of light coloured leather goods.

- Gum or resin: The stem produces gum.
- Sappan wood as traditional lithmus in rural Quezon to test for the purity of coconut liquor (lambanog). A strip of sappan wood swirled in unadulterated (1) coconut liquor impart a yellow colour (2) gin, bright pink (3) vodka, reddish-brown. (4) bating (the initial distillate in the lambanog process), a reddish-orange colour. (5) Nipa or sasa lambanog, lighter yellow.
- Leaves contain a pleasant smelling volatile oil. Also used to hasten ripening of fruits such as bananas and mangoes.



Chemical Constituents:

• Xanthone, coumarin, chalcones, flavones, homo isoflavonoids, brazilin [(6a S-cis)-7, 11bdihydrobenz[b]indeno[1,2-d]pyran-3,6a,9,10(6H)- tetrol], [(6a S-cis)-7, 11bdihydrobenz[b]indeno[1,2-d]pyran3,6a,9,10(6H)- tetrol

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Contra Indications (If any):

• No available information



Economic Potential/ Commercial Products







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Clinacanthus nutans (Burm. f.) Lindau



Vernacular name/s	Sabah snake grass
Family	Acanthaceae
Plant description	Herbaceous plant, up to 2.5 meters tall in low shrubs. Stems: Green, woody, erect, and cylindrical. Leaves: Green, simple, lanceolate with pointed tips and rounded bases, 8–12 cm long and 4–6 cm wide.
Propagation	Stem cuttings
Geographical distribution / Ecology	 Introduced to the Philippines Well distributed in Malaysia, Thailand, Indonesia, Viet Nam and China.



Uses Supported by Experimental and or Clinical Data

- Topical formulation: significant remission of clinical symptoms of genital herpes and herpes zoster (faster healing of infection-induced lesions)
- Synergistic combination (C. nutan and acyclovir): Adjuvant therapy in H. herpes for genital warts.
- Aphthous stomatitis (a benign mouth ulcer)

Uses in Local / Traditional Medicine

- Treatment for cancer, inflammatory disorders, diabetes, insect bites, and skin problems via various formulations.
- Concentrated liquid drink: Anticancer, detox, regulates period and kidney protective
- Soap: Skin problems treatment;
- Tea: Anticancer, diabetes, hypertension and detox
- Oil drop: Relieve aphtgous ulcers and oral herpes viral infection
- Massage ointment / oil: Muscular and joint pain cramps, insect bites, sprains, cold and flu
- Capsules: Detox, diabetes, hypertension and general health maintenance
- Cream: Treatment of herpes genitalis, H. zoster and skin problem
- Powder: Anticancer, hypertension and diabetes
- Lotion: Relieve rashes, urticarial and itching
- Balm: Relieve inflammation, insect bites, dizziness, rashes and muscle pain

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Other Local Usage (If any):

• No available information

Chemical Constituents:

• Arial parts: Sulfur, clinamides A, B and C and 2-cis-entadamide A,

Contra Indications (If any):

• No available information



Economic Potential/ Commercial Products





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Combretum quadrangulare Kurz



Vernacular name/s	White combretum
Family	Combretaceae
Plant description	Tree, 5-10m tall. Young branchlets are acutely quadrangular or very narrowly quadrialate. Petiole: Strongly ridged; Leaves: Simple, opposite, elliptic or obovate, 3–8 cm wide, 6–16 cm long. Flower: Tiny, yellowish white, inflorescence in terminal and axillary spikes. Fruit: Dry and thinly quadrialized. Seed: Brownish red, ellipsoid and 4-angled.
Propagation	Mature seeds
Geographical distribution / Ecology	Myanmar, Thailand and Indo-China; cultivated in Malesian gardens as ornamental plants.

Usage

Uses Supported by Experimental and or Clinical Data

No available information

Uses in Local / Traditional Medicine

- Herbal medicine for antipyretic, antidysenteric and anthelmintic agent in Vietnam, Cambodia, Laos, Myanmar and Thailand.
- Antibacterial activity, cytotoxic and anti-HIV activity.

Other Local Usage (If any):

• No available information

Scientific Data

Chemical Constituents:

• Combretol (O-methylated flavanol), 1-O-galloyl-6-O-(4-hydroxy-3,5dimethoxy)benzoylbeta-D-glucose (a gallic acid derivative).

Contra Indications (If any):

• No available information



Economic Potential/ Commercial Products

• No available information



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Curcuma longa L.



• Dilaw; duwaw; kalawag (Philippines).

Vernacular name/s Lômiêt; rômiêt (Cambodia), koneng; kunir; kunyit; tius (Indonesia), khminz khünz (Laos), kunyit; temu kunyit (Malaysia), nanwin (Myanmar), khamin; khamin-chan; khamin-kaeng (Thailand),

 Kawawara (Papua New Guinea), curcuma (Italy) gelbwurzel (Germany)

Family Zingiberaceae

Plant description Perennial **herbaceous** plant up to 1 m height. Leafy branches in clusters capable of forming large clumps. **Leaves**: Up to ten alternate distichous, dark green and extremely lighter on the upper and lower surface respectively. Pellucid dots thickly studded. Leaf blades, up to 70 cm long, slender, elliptic to oblong-lanceolate. Up to 10 cm long leaf petiole with broad furrows and narrow erect wings along the borders. **Rhizome:** Fleshy, with an ellipsoidal primary tuber at the base of each aerial stem producing fingers i.e a thick clump of straight or slightly curved cylindrical lateral rhizomes upon maturity. **Flowers:** Tubular, white to yellow-white, borne on erect spike-like inflorescences between leaf sheaths of the central leafy branch. Lower bracts are pale green with white longitudinal streaks or edges, whereas top bracts are white with pink tips. Numerous, spirally arranged, and densely hairy bracteoles (small bracts, especially on the pedicel of a flower) form pockets, each with blooms inside.

Propagation	Rhizomes
Geographical Distribution/ Ecology	 Native to India, South and Southeast Asia; widely distributed in the Philippines. Has grown naturalized in some areas, such as teak forests in East Java. Large-scale cultivation is primarily found in India and Southeast Asia, and it is commonly cultivated in the tropics. Grows best in well-drained fertile loamy soils with plenty of water, but it can't handle standing water. Full sun increases the plant's output, whereas light shadow is favourable but excessive shade decreases it. Droughty circumstances are also unfavourable to the plant.

Usage

Uses Supported by Experimental and or Clinical Data

 Curcumin (diferuloylmethane): a wide range of biological functions, including antiinflammatory, antioxidant, cancer-prevention, inflammation and muscle soreness" (Hewlings and Kalman 2017)

Uses in Local / Traditional Medicine

- Stomachic and purgative (rhizomes in coconut oil), anthelmentic (fresh rhizome juice), menstruation anomaly, contusions, and the uncomfortable swelling that comes with them, antiseptic, ringworm, bleeding (catarrhal and purulent ophthalmia).
- Remedies for leprosy, liver difficulties, oedema, whooping cough, acne, cold, treatment for wounds, bruises, leech and insect bites (India).
- Carminative and to get rid of flatulence (Malays).
- Remedies for colic, amenorrhea, and congestions (China).



Other Local Usage (If any):

- Cosmetics, drinks, food colorant and preservative agent, spices and culinary herb/vegetable
- Material used for dyeing/tanning
- Essential oils
- Ornamental foliage/ornamental flowers



Scientific Data

Chemical Constituents:

• Curcumin (diferuloylmethane)

Contra Indications (If any):

- Gallstones or bile duct obstruction, bleeding problem, diabetes, gastroesophageal reflux disease (GERD)
- Infertility in men
- May lead to iron deficiency, liver disorder
- No to be taken by patients suffering from hormonal related disorder (eg. ovarian cancer, uterine cancer, breast cancer, endometriosis or uterine fibroids), arrhythmia or pregnant women undergoing surgery

Economic Potential/ Commercial Products





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Curcuma zedoaria (Christm.) Roscoe



Vernacular name/s	Luya-luyahan, Alimpuyas (C. Bis.), Alimpuying (C. Bis.), Barak (Tag.), Konik (Ilk.), Koniko (Bon.), Lampoyang (P. Bis.), Langkauas (Ilk.), Langkuas (Ilk.), Tamahiba (Tag.(), Tamahilan (Bik.), Tamo (Pamp., Tag.), Tamokansi (Tag.)
Family	Zingiberaceae
Plant description	Perennial herb. Rhizome: Pale yellow, fleshy, aromatic with a ginger-like odour. Leaves: In pairs, erect, green petiole Elliptic-oblong to oblong- lanceolate, slenderly acuminate, 25-70 cm long, 8-15 cm wide. Scape grows from the rootstock, often emerges before the leaves. The peduncle is 10-20 cm long covered by few loose bracts. Spikes: Cylindrical, 10-15 cm long, 5-8 cm wide, and made up of many spreading rounded bracts. The lower ones green, tipped with pink, the upper ones purple, each containing several flowers. Calyx: two-fold and tiny. Corolla tube: 2 cm long, yellowish-white with a purple tinge. The lip is generally yellow and 2-lobed. Fruits: Globose 3-valved capsules.
Propagation	Rhizome
Geographical distribution / Ecology	Introduced. Grows abundantly throughout the Philippines in open waste places in and near towns.

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Usage

Uses Supported by Experimental and or Clinical Data

• No available information

Uses in Local / Traditional Medicine

- Fresh rhizome juice: remedy for a type of dermatitis (paño blanco).
- The rhizome is used as topical and applied to the stomach as stomachic.
- Fresh rhizomes are burned and the ash applied externally to wounds, ulcers and sprains (Bulacan Province).
- Decoction of dried materials used for abdominal cramps, amenorrhea, abdominal pain, and rheumatic pains.
- Used for liver obstruction and jaundice and has been applied externally for ulcers and inflammation.
- Roasted turmeric as an ingredient of a preparation used to treat dysentery.
- Turmeric has also been used in tooth powder or paste.

Other Local Usage (If any):

- Main ingredient of curry powder. The rhizomes are cooked, dried and then ground to produce the strongly coloured, aromatic powder.
- Ground rhizomes are used to make turmeric oil that is used in the industrial production of flavouring for curries.
- Turmeric rhizomes yield a bright yellow dye that is used as a colouring for foods, textiles, paints and even people! Its primary use is in crafts as a fabric dye.
- Cultural/ spiritual uses: Yellow and yellow-orange are colours that have sacred and auspicious connotations on the Indian subcontinent. Turmeric is important in Hindu and Buddhist ceremonies



Chemical Constituents:

 Curzerenone, 1,8 cineole, germacrone, cymene, α-phellndrene, β-eudesmol, monoterpene hydrocarbon, oxygenated hydrocarbon, sesquiterpene hydrocarbon, oxygenated sesquiterpene, α- terpinyl acetate, isoborneol, dehydrocurdione, epicurzerenone, curzerene

kunyit putih

Contra Indications (If any):

No available information

Economic Potential/ Commercial Products





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Eurycoma longifolia Jack



Vernacular name/s	 Pasak bumi, Bedara pahit, Bidara laut (Indonesia), Tho nan (Lao PDR), Akar pasak bumi, Batang pasak bumi, Kayu dali, Penawar pahit, Sengkayap, Tongkat ali (Malaysia), Tung saw, Ian-don, Hae phan chan, Phiak, Plaa lai phuenk. (Thai), Cay ba benh, Hau phat, Ba binh (Viet Nam)
Family	Simaroubaceae
Plant description	Dioecious tree up to 12 m tall. Leaves: Pinnately compound, 20 - 30 cm in long. Flowers: Bell-shaped, greenish white to greenish red in colour.
Propagation	Seeds, tissue culture (seeds, stem cuttings, root cuttings and leaf fragments).
Geographical distribution / Ecology	 Native to Southeast Asia countries such as Vietnam, Myanmar, Thailand, Lao PDR, Cambodia, Indonesia and Malaysia. A subspecies eglandulosa was found in the Philippines. Grows on a sandy soil, 700 m from the beach forest.





Uses Supported by Experimental and or Clinical Data

- Increase testosterone levels and improve male fertility.
- Lower stress hormones, reduce anxiety and mood enhancer.
- Improve body composition (boost athletic performance and increase muscle mass).
- Antimalarial, anxiolytic and antihyperglycemic activity (animal and in vitro trials only, no clinical evidence).
- Immunomodulatory effects.

Usage

• Treatment for testosterone deficiency / Androgen-deficient osteoporosis.

Uses in Local / Traditional Medicine

- Malaria, infections, fevers, male infertility and erectile dysfunction (Malaysia, Indonesia, Viet Nam and other Asian countries).
- Roots, root bark and bark decoction: diarrhoea, glandular swelling, bleeding, oedema, persistent cough, hypertension, bone pain and tertian malaria.
- Bark: used topically to treat wounds, ulcers, syphilitic sores and headache.

Other Local Usage (If any):

• No available information.



Chemical Constituents:

• Antioxidant compounds, flavonoids, quassinoid and alkaloids.



Contra Indications (If any):

- Not to be taken by pregnant and breastfeeding women
- Those with medical conditions or taking medications (check with healthcare provider before taking the supplement)
- Extracts should not be taken by patients with prostate cancer (pending verification).



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Morinda citrifolia L.



Vernacular name/s	 Bangkoro, Nino, Noni (Philippines). Nhor prey, nhor thom (Cambodia); pacel (Indonesia); nho (Lao PDR); mengkudu (Malaysia); Hai ba ji (Singapore); Yor ban (Thailand); grand morinda, Nhau, Nhau Ion (Viet Nam). Ba ji tian (China); ach (India); awl tree (Australia, India, Java, and Polynesia); canary wood, cheese fruit (Australia); Indian mulberry (Australia, Guam, Java, Florida, Hawaii, India, Puerto Rico).
Family	Rubiaceae
Plant description	Perennial. Flowers: perfect, with 75-90 heads ranging from ovoid to globose. Leaves: shiny, opposite, and pinnately veined. Membranous, elliptic to elliptic-ovate blades measure 20-45 cm (8-18 in) long, 7-25 cm (3.5-10 in) broad, and are glabrous. Fruits: yellowish white (mature), fleshy, 510 cm (2-4 in) long, 3-4 cm (1.2-1.6 in) wide, soft and fetid. Seeds: with specific air chamber that allows them to remain viable even after months of floating in water.
Propagation	Seeds, stem or root cuttings, and air-layering are all viable methods of propagation for noni. Seed and cuttings taken from stem vertically are the favoured methods of propagation. Birds, mice, bats, and other animals are likely to disperse seeds in natural ecosystems.



• Tropical and subtropical. Native to Asia, Australia, Indo-Pacific (Eastern Polynesia, Melanesia, Western Polynesia, and Micronesia, Indonesia, and Southeast Asia). In the Philippines, it can be seen in Cagayan, Ilocos Norte, and Isabela.

Geographical distribution/ Ecology

It can survive and thrive in the harshest of environments (eg. infertile, acidic, and alkaline soils), extremely dry to extremely moist weather), a broad range of precipitation patterns, including summer, winter, bimodal, and uniform, up to 3000 mm/year and a broad variety of light conditions, from full sun to more than 80% shade. After a fire, it can rejuvenate by growing new leaves from the roots or stems.



Uses Supported by Experimental and or Clinical Data

- Antibacterial, antiviral, antifungal, antitumor potential, analgesic hypotensive, antiinflammatory and immune-enhancing effects
- Reduce total cholesterol and triglyceride

Uses in Local / Traditional Medicine

- Fruit as an emmenagogue. Fruit juice improves gout discomfort and heals wounds and ulcers.
- Leaves: Fresh leaves placed on ulcers, to speed up the healing process. Chewing leaves helps to cure diabetes by releasing and activating the characteristics of soluble dietary fiber. Leaf extracts are used to treat parasite illnesses. Administered topically, helps to reduce acne.
- Root extract: Chronic discomfort, uncomfortable inflammation, swelling and excellent laxative.
- Leaves (heated and applied to the chest and abdomen): Coughs, nausea, colic, enlarged spleen, and fever (Malaysia); deobstruent and emmenagogue (IndoChina); wound treatment, tonic and febrifuge (India).



- Ripe fruit: emmenagogue, swelling spleens, liver disorders, beriberi, bleeding, and coughs (Malaysia, China), tuberculosis (Hawaii).
- Fruit pulp liquid, mashed with sugar: laxative (Java); tuberculosis (Hawaii).
- Bark was employed as a febrifuge in the Congo, a property linked to morindine (Congo)

Other Local Usage (If any):

- Cosmetics, drinks, food colorant and preservative agent, spices and culinary herb/vegetable
- Material used for dyeing/tanning
- Essential oils



Chemical Constituents:

• Scopoletin, rubiadin, mdrindin, citrifoinoside, morindone, damnacathal, daecetylasperulosidic acid, Iridoid glucosides (6α-hydroxyadoxoside and 66,76-epoxy-8-episplendoside)

Contra Indications (If any):

- People with chronic renal disease or kidney failure
- Hypersensitivity to noni juice or other calcium channel-blockers
- Cardiogenic shock
- Effectiveness of noni juice is greatly reduced when it is given concomitant with powerful CYP3A4 inducers
- Preparation for immediate release (sublingually or orally) for hypertension that is urgent or emergent



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Economic Potential/ Commercial Products





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- Forest & Kim Starr CC BY 4.0



Orthosiphon aristatus (Blume) Miq.



Vernacular name/s	 Balbas-pusa; kabling-parang; kabling-gubat (Tagalog). Kapen prey (Cambodia); kutum, bunga laba-laba, kumis kucing, remuk jung, songot koceng, sesalaseyan (Indonesia); misai kucing, ruku hutan (Malaysia); se-cho, myit-shwe (Myamar); yaa-nuat-maeo, Yaa-nuad-maew, pa-yab-mek (Thai); ra-meo (Viet Nam). Mao xu cao (Chinese); nek no hige (Japan); cat's whiskers, kidneys tea plant (English); Java thé, moustaches de chat (French); Katzenbart (German).
Family	Lamiaceae
Plant description	Perennial herb , up to 1 meter tall. Leaves : dark green, simple, glabrous, and lanceolate with serrated margins (5cm long, 2.5cm wide). Stem: Purplish, with four smooth sides. Flowers: Hairy, white, 2-lipped flowers, 5 cm-long, whisker-like stamens. Inflorescences, grouped in a conical shape (6-10 cm long). Fruit: oblong-ovoid nutlet. 1.5-2mm in length.
Propagation	Stem cutting: 15-20 cm long with buds, 4-6 cuttings in a single hole under shade.
Geographical distribution/ Ecology	 Native to Asian countries, Papua New Guinea, and Philippines (Cagayan, Nueva, Ecija, Pampanga, Isabela, Bulacan, Coron, Rizal), temperate islands like China and Taiwan and subtropical country like Australia. Generally in shaded but not too dry areas, in forest borders, thickets, roadsides, grasslands and re-growths as well as places directly hit by sunlight at up to 1000 m elevation



Uses Supported by Experimental and or Clinical Data

• No available information

Uses in Local / Traditional Medicine

- Unspecified part: Diuretic, renal related illnesses, arthritis, gallstones and diabetes
- Leaves: diabetes, urinary and renal diseases (Myanmar), decoction: arteriosclerosis, gout, bladder and kidney pain, and rheumatism treatment (Indonesia & Malaysia); in combination with Androgaphis paniculata: diabetes; diuretic for nephrosis and severe oedema (India)
- Plant infusion: stimulate urination, cure jaundice and fever, influenza, rheumatism, hepatitis, and bilary lithiasis (Vietnam).
- Diuretic and anti-lithiatic agents as well as treatment for dysuria (Thailand)

Other Local Usage (If any):

- Food (herb and spice), ornamental
- Lotions and creams



Chemical Constituents:

- Leaves: Flavones (including sinensetin), saponins, a glycoside (orthosiphonin), an essential oil, and a considerable quantity of potassium (which is largely responsible for the diuretic effect)
- Plant extract: Caffeic acid, rosmarinic acid and sinensetin

Contra Indications (If any):

No available information



Economic Potential/ Commercial Products





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THAILAND



Amomum krervanh Pierre ex Gagnep.



Vernacular name/s	 Thai cardamom, Cambodian cardamom, Krawaan, Krawaan khaao, Krawaan pothisat, Krawaan chan, Krawaan dam (Thailand); kreko krervanh, karvanh, krewanh (Cambodia); round Siam cardamom Cardamom, candamon (Engl<u>i</u>sh).
Family	Zingiberaceae
Plant description	Rhizomatous herb , up to 3 m high. Leaves: alternate, oblong or oblong- ovate; 40-60 cm long, 8-12 cm wide; having base cuneate, margin entire; apex acuminate. Petiole is long and sheathed. Flowers are yellow. The cone-like Inflorescence , 8-12 cm long, 4-5.5 cm wide, comes up from rhizome. Fruits: rounded smooth, lobed. Seeds: numerous, dark brown, scented.
Propagation	Seed or sucker
Distribution / Ecology	Found in the eastern and southern regions of Thailand; Chanthaburi, Surat Thani, Trang, Yala, Narathiwat.





Usage

Uses Supported by Experimental and or Clinical Data

- Antibacterial activity: Ethanolic extracts inhibited Pseudomonas aeruginosa ATCC 27853 (MIC: 25 mg/ml).
- Antimalarial activity: 4 monoterpenes, 1 flavonoid, and 2 diterpenes. Three monoterpenes vis a vis merthenal, merthenol and trans-pinocarviol: EC₅₀ (10.5-10.8 g/ml).
- Auto immune activity suppression: Fruit aqueous extract: Inhibited 95% of the auto immune activity.

Uses in Local / Traditional Medicine

- Fruits: treatment for appetite loss, periodontitis, severe headache caused by wind element, emenagogue, carminative, and stomachic.
- Seeds: for stomachache; as an antidiarrheal and stomachic.
- Roots: for balancing the element; treatment of periodontitis; as a blood purifier
- Root bark: chronic ailments and skin diseases treatment, expectorant and stomachic
- Leaves: severe headache and fever (caused by abnormality of wind element) treatments, periodontitis, stomachic, carminative, antipyretic and expectorant.
- Not specified part used: for stomachache; abnormality of wind element as an expectorant, anti flatulent, stomachic, anti dysentery, anti atherosclerosis, carminative, anti tuberculosis and aphrodisiac.



Scientific Data

Chemical Constituents:

• Seed oil : borneol, camphene, 1,8-cineole, p-cymene, α-humulene, linalool, myrcene, αpinene, β-pinene, terpinene, α-terpineol.

Contra Indications

• No available information

Economic Potential/ Commercial Products



Beverages



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Coccinia grandis (L.) Voigt



Vernacular name/s	Tam loeng, Khae-doh (Karen-Mae Hong Son).
Family	Cucurbitaceae
Plant description	Climbing perennial herb with tuberous roots and simple tendril. Leaves: simple, alternate, ovate, 5-angular to deeply 5-partite; consisting of base deeply cordate. Margin entire to pinnatipartite lobes or segments, finely dentate, glabrous. Flowers: Large, white, dioecious. 1-3 male flowers in each leaf-axil. Each flower consists of pedicel 1.5-6 cm long; calyx-tube obconical, 7-12 mm long, lobes patent-recurved, entire, 3-5 mm long; corolla white, light green at base, 2.5-4 cm, divided about half of its length, strongly nerved, pubescent on both sides; Fruit: numerous, berry, ovate, bright red, smooth and indehiscent, compressed with finely warty margin.
Propagation	Seeds
Geographical distribution	Native to tropical Asia and Africa. Widely cultivated.
Ecology	Grows wild on open, waste ground throughout the country

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Uses Supported by Experimental and or Cinical Data

• Antibacterial, antioxidant, anticancer, immunomodulatory, antihyperlipidemic, anthelmintic, anti-malarial, anti-diarrheal, analgesic, hepatoprotective, anti-ulcer, anti-inflammatory, antihyperglycemic, antimicrobial and antiparasitic effect.

Uses in Local / Traditional Medicine

• Roots: for alleviation of toxic symptoms; treatment of dimness of vision, scorpion, centipede.



Usage

Chemical Constituents:

- Leaves: inorganic elements, proteins.
- Fruits: cucurbitacin B, (24R)-24ethylcholest-5-en-33-ol glucoside, taraxerol, taraxerone.
- Not specified part used: alkaloids, inorganic elements, B-sitosterol.

Contra Indications (If any):

• No available information.



Economic Potential/ Commercial Products







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.
Cucurbita moschata Decne.



Vernacular name/s	 Cushaw, Fak thong, Naam tao pumpkin (Thai). Winter squash (English).
Family	Cucurbitaceae
Plant description	An annual, monoecious, long running climber with soft pilose. Stems: moderate hardness, round or smoothly 5-angled. Tendril: divided into 3- 4 branches. Leaves: simple, alternate, round or kidney-shaped, cordate base; margin shallowly lobed, serrulate or slightly 5-angled; apex obtuse; hairy on both surfaces. Flower: solitary in auxiliary, acuminate in bud. Male flower has long peduncle; calyx campanulate, divided into 5 lobes. Corolla is yellow to yellow-orange, 10-12 cm long, campanulate, 5 clefted; Female flower consists of short peduncle; calyx and corolla, ovary inferior; style short; stigma large about 2 cm long, bright orange or green. Fruits: varies in shape and color; dull in color; flesh yellow to dark orange, edible. Seeds: numerous, ovate, flat, dingy white to dark brown, separating from pulp and edible.
Propagation	Seeds
Geographical Distribution/ Ecology	Tropics.Widely cultivated

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Uses Supported by Experimental and or Clinical Data

• Seeds: anthelmintic activity (cucurbitine as the active ingredient).

Uses in Local / Traditional Medicine

• 40 g of raw or 60 g of pickled pumpkins: scurvy protection properties in guinea pigs fed with a diet containing oats and autoclaved hay.

Other Local Usage (if any):

Usage

No available information



Chemical Constituents:

- Flowers: L-alanine, aminocaprylic and Laspartic acid, carotene, L-glutamic acid, glycine, histidine, histone, isoleucine, isorhamnetin-3-rutinoside, kaempferol-3-0-robinobioside, kaempferol-3rutinoside, L-leucine, phenylalanine, pigments, L-proline, proteins, quercetin-3rutinoside, thiamine, L-valine.
- Fruits: amino acids, antheraxanthin, ascorbate oxidase, auroxanthin, carbohydrates, carotene, a -carotene, β-carotene, y-carotene, β-carotene-5,6-epoxide, neo-β-carotene-B, neoβ-carotene-U, citric acid, d-cryptoxanthin, B-cryptoxanthin, cucurbitacins, cucurbitacin-A23-reductase, cucurbitacin-hydroxylase, cucurbitaxanthin, cucurbitene, cystine, dehydroascorbic acid, enzymes, esterase, fat, flavoxanthin, fructose, globulin, B1,3-glucanase, glucose, inorganic elements: lactic acid, linolenic acid, lutein, malic acid, neochrome, niacin, oxalic acid, pectins, protein, quinic acid, raffinose, reductase, riboflavin, stachyose, starch, sucrose, taraxanthin, tartaric acid, thiamine, L-tryptophan, violaxanthin, vitamins: vitamin C, waxes: zeaxanthin,
- Seeds: albumin, 24-a-alkyl-A?-sterols, amino acids, a-amyrin, Bamyrin, arachidic acid, Larabinose, L-arginine, asparagine, L-aspartic acid, avenasterol, campesterol, carotene, cerebroside, cholesterol, chondrillasterol, cherosterol, codisterol, cururbita-5, 24-dienol, cucurbitaxanthin A and B, cucurbitine, cysteine, dehydrofungisterol, 25-dehydroporitera

Contra Indications (If any):

No available information



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Cyperus rotundus Linn.



Vernacular name/s	 Yaa haew muu, Yaa khon muu (Mae Hong Son). Yellow nuts edge, nut grass
Family	Cyperaceae
Plant description	Plant , 10-25 cm tall, consisting of stems, tuberous base, rising singly from a creeping, underground root-stock. Leaves: linear, broadly grooved on the upper surface, dark green. Flowers: small inflorescence, 2-4 (-6) bracts. Inflorescence consists of a few slender branches, with the longest usually not more than about 7.5 cm. Spikes consisting of about 2-10 spikelets, each spikelet narrow, flattened; glumes rather narrow, blunt, closely overlapping with 3 stamens; style 3-branched. Nut: oblong- obovate nearly half as long as glume, strongly 3-angled, yellow, turning black when ripe.
Propagation	Seeds or tuber
Geographical Distribution/ Ecology	Waste ground and along road-sides. Considered as weed in lawns.



Usage

Uses Supported by Experimental and or Clinical Data

• There are many claimed efficacies in Thai and Chinese medicinal recipes. Substantial studies were conducted on its pharmacological activities and toxicity.

Rhizomes, tuber, roots

Antipyretic activity

• Petroleum ether extract (5.0 mg/kg i.p) in yeast-induced pyrexic rats.

Analgesic activity

• Petroleum ether extract (5.0 mg/kg, i.p) in aconitine-induced rats.

Anti-inflammatory activity

- Intraperitoneal administration of methanol, chloroform or petroleum ether extract (10.0 mg/ kg) in the caragenin-induced rat pedal edema model.
- A methanol extract in the formalin-induced rat pedal edema model.
- A fraction of petroleum ether extract. Orally active and 8 times more potent than hydrocortisone.
- A water extract, used as 2% ophthalmic solution, decreased redness and reduction in pain and ocular discharge in patients with conjunctivitis.

Anticonvulsant activity

• 70% ethanol extract (Intraperitoneal administration) in metrazole- and strychnineinduced convulsive mice.

Sleep inducing / tranquilising effect

• Methanol / alcohol extracts affect barbiturate tranqulising effect in mice and rats.

Diuretic activity

• A 95% ethanol extract increased urine output by 12-60% in dogs and rats.

Hypotensive activity

• Water and alcohol extracts: significant hypotensive effect in cats and dogs. A 50% ethanol extract given intra peritonealy elicited a weak hypotensive effect in dogs.



Smooth muscle relaxant activity / antispasmodic activity

- A methanol extract (1.0 mg/ml) on rat ileums contracted by acetylcholine.
- A 50% ethanol extract (mg/ml) on guinea pig ileums.
- The alcohol extract: smooth muscle relaxant activity on rabbit ileums.
- The methanol extract: strong uterine relaxant effect on oestrogen-treated rat uterus (1.0 mg/ml).

Effects on heart

• Subcutaneous injection of a water extract to frogs led to systolic cardiac-arrest. Lower concentration produced positive isotropic and negative chronotropic effects on isolated frog hearts as well as rabbit and cat hearts when the animals received the extract intravenously. Intravenous injection of the water extract also produced vasodilatation of coronary arteries in frogs, cats and rabbits.

Antihepatotoxic activity

• A methanol extract produced antihepatotoxic activity in carbon tetrachloride-treated mice at a dose of 670.0 mg/kg. Similar effects were produced by 50% methanol and water extracts.

Antifungal and anti yeast activities

• Extract (via agar plate method): 100% inhibition of Sclerotinia sclerotiorum, Phytophthora capsici and Colletotrichum chardonianum and 44% inhibition of Aspergillus niger. Alcohol extract: antifungal activity against Trichophyton rubrum, Epidermophyton floccosum and Microsporum gypseum.

Antibacterial

- Ethanol extract: effective against S. aureus, ß-Streptococcus gr. A and Pseudomonas aeruginosa. Ineffective against Klebsiella pneumoniae, Shigella dysenteriae, S. flexneri, S. sonnei and S. boydii.
- Ether extract: no activity against all four species of tested Shigella bacteria.

Antimalarial activity

- Clinical trial: ethanol extract produced a cure rate of 41.6% in malarial patients.
- Dichloromethane (5-9 g/ml), petroleum ether and methanol extracts (10-49 g/ml) of tubers inhibited Plasmodium falciparum KI strain. The active principle was o-cyperone (5.5 μg/ml).

Antihistaminic activity

• A 50% ethanol extract showed an antihistaminic effect (1 mg/ml) on guinea pig ileums.

Antitumor activity

- Petroleum ether defatted ethanol extract (500 mg/kg intraperitonealy) inhibited 31% Ehrlich-ascites carcinoma in mice.
- In the cylinder plate method, a 5% aqueous, methanol, acetone and ether extracts showed 15, 25, 10 and 15 mm inhibition, respectively, on the Ehrlich-ascites carcinoma cells.
- Petroleum ether defatted ethanol extract inhibited Hela (Effective dose: 32.0 µg/ml).

Plant growth inhibition activity

- Tubers' aqueous extract inhibited white clover, Digitaria sanguinalis and rumex' growth.
- An essential oil from the roots inhibited germination and hypocotyl elongation of lettuce and white clover.

Toxicity assessment

- Root aqueous extracts 90.0 mg/kg, intraperitoneal: non-toxic to mice
- LD₅₀ of an alcohol extract (2:1) in mice.
- Root ethanol extract defatted with petroleum ether in mice : LD₅₀ 0.5 gm/kg, in mice given using similar route.

Leaves: Anthelmintic activity

• Aqueous extract, via oral to infected mice exhibited anthelmintic activity against Trichostrongylus axei, Syphacia obvelata and Nippostrongylus brasiliense.

Seeds: Oestrogenic activity

• Seeds oil via subcutaneous administration produced a low-order oestrogenic activity in female mice.

Essential oil: Insecticidal activity

• Against Rhizopthera dominica (0.78%) and Stegobium paniceum (0.24%), Sitophilus oryzae and Bruchus chinensis.

Essential oil: Antimicrobial activity

• More effective against Gram-negative bacteria than Gram-positive bacteria. Remarkable inhibitions to spore germination of yeasts, molds and dermatophytes.

Uses in Local/Traditional Medicine

- Roots: diuretic, antipyretic and stomachic.
- *Rhizomes: diuretic, cardiotonic, sudorific, antidysentery, health promoter, carminative, antiflatulence, digestive agent, antipyretic, stomachic, appetite stimulant.*
- Unspecified part: promotion of health and longevity; treatment of beri-beri, gastric ulcer, fatigue, hemorrhoids.
- Any disorder which causes cachexia or wasting diseases; carminative. Antidysentery, antipyretic, fire element tonic, tonic for fetus in pregnant women, earth element tonic.
- *Rhizomes: One handful of rhizomes or 60-70 rhizomes are slightly pounded and boiled with water. and water extract is taken for stomach discomfort.*
- Five fresh rhizomes are pounded and mixed with honey for oral administration.

Other Local Usage (if any):

• No available inf.ormation



Chemical Constituents:

Tubers: alkaloids, arachidic acid, A-cadinene, calamenene, carbohydrates, carnaubic acid, caryophyllene, cineole, 1,8-cineole, (+)-copadiene, acopaene, p-coumaric acid, cyperene, cyperene-l, cyperene-ll, cyperenone, cyperol, cyperolone, acyperone, a-(+)cyperone, cyperotundone, cytochrome C oxidase, β elemene, enzymes, (+)epoxyguaiene, essential oil, 4α - 5α -oso-eudesm-11-en- α -ol, fats and fatty-acids, ferredoxin, ferulic acid, flavonoids, D-fructose, D-fucose, D-glucose, glycerol, βguaiene, humulene, α -humulene, p-hydroxybenzoic acid, inorganic elements, isocyperol, kobusone, iso-kobusone, lauric acid, leucocyanidin, leucocyanidin glucosides, linoleic acid, linolenic acid series a and b, myristic acid, oleanolic acid, oleanolic acid-3-O-neohesperidoside, oleic acid, palmitic acid, palmitoleic acid, pectins, phenols, α -pinene, polyphenol, polyphenoloxidase, proteins, protocatechuic acid, resins, rotundenol, α -rotundol, β -rotundol, rotundenol, α -rotunnol, β -rotunol, β santalene, α -selinene, β -selinene, β -sitosterol starch, stearic acid, sterols, sucrose, sugeonol, sugetriol, tannin, L-tyrosine oxidase, vanillic acid, vitamin C.



- Stem: fructose, glucose, iron, phosphorus, sucrose.
- Leaves: chlorophyll A, chlorophyll B, luteolin.
- Flowers: luteolin.
- Whole plant: cyperenon

Contra Indications (If any):

No available information



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Diospyros mollis Griff.



Vernacular name/s	Ebony tree, ma kluea, pheephao (Shan-Northern), Mak-kluea (Khmer- Trat).
Family	Ebenaceae
Plant description	An evergreen tree , up to 30 m high. All parts often turning blackish when dry. Leaves: simple, distichous, ovate to ovate-oblong, 4-8 cm long, 1.5-4 cm wide, consisted of acute, obtuse or rounded base; margin entire, apex acute or acuminate, both surfaces chartaceous, pubescent then glabrescent, conspicuous; nerves 10-15 pairs, petiole 5-10 mm long, pubescent. Flower: auxiliary, unisexual. Male flowers: cymose, 4-merous; consisting of pedicel 1 mm long, pubescent; calyx campanulate, 1-2 mm long, divided to middle, pubescent outside, glabrous inside; corolla urceolate, 6-8 mm long, divided to middle, glabrous on both sides; stamens 14-24, glabrous; rudimentary ovary pilose or glabrous. Female flowers: solitary, consisting of pedicel 1-3 mm long, pubescent; larger calyx and corolla; ovary ovoid, pubescent, 8-10 ocular; styles 4, pubescent; staminodes 8-10, glabrous. Fruit: globose, 2 cm in diameter, glabrous; fruiting calyx is divided to middle, pubescent outside, glabrous inside, with lobes reflexed, inconspicuous nerves; having fruit-stalk 2-5 mm long; endosperm smooth.
Propagation	Seeds
Distribution / Ecology	Commonly found in dry upper mixed deciduous forest; at altitudes of 5- 500 m and also distributed in all parts of Thailand.

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Usage

Uses Supported by Experimental and or Clinical Data

Wood: Toxicity assessment

• A 50% ethanol extract of wood, given either orally or subcutaneously at a dose of 10 g/kg, showed no toxicity in mice.

Fruits: Anthelmintic activity

• The young fruit juice, mixed with lime water, gave good results in hookworm-infested patients.

Fruits: Antispasmodic activity

• An extract of fresh fruits can irreversibly inhibit the spontaneous contractions of isolated rat ileums as well as contractions induced by either acetylcholine or histamine.

Uses in Local / Traditional Medicine

- Roots: treatment of any disorders or diseases causing cachexia or wasting diseases, hemorrhoids, fainting and chronic gastrointestinal ailments of in children between the ages of 5 and 13 characterized by marked malnutrition, usually associated with intestinal parasitism; as an anthelmintic and antiemetic.
- Whole plant: treatment of chronic gastrointestinal ailments of in children between the ages of 5 and 13 characterized by marked malnutrition, usually associated with intestinal parasitism, roundworm infestation and any disorders causing cachexia or wasting diseases; as an anthelmintic.
- Stem bark: treatment of any disorders causing cachexia or wasting diseases and chronic gastrointestinal ailments of in children between the ages of 5 and 13 characterized by marked malnutrition, usually associated with intestinal parasitism; as an anthelmintic.
- Wood: treatment of chronic gastrointestinal ailments of in children between the ages of 5 and 13 characterized by marked malnutrition, usually associated with intestinal parasitism; as an anthelmintic.
- Fruits: treatment of chronic gastrointestinal ailments of in children between the ages of 5 and 13 characterized by marked malnutrition, usually associated with intestinal parasitism, for roundworm, tapeworm and threadworm infestations, coughs and fungal infections of the feet; as an anthelmintic.



- Seeds: treatment of roundworm and tapeworm infestations.
- Not specified part used: treatment of any disorder causing cachexia or wasting diseases, chronic gastrointestinal ailments in children between the ages of 5 and 13 characterized by marked malnutrition, usually associated with intestinal parasitism, for roundworm, tapeworm, pinworm and hookworm infestations (anthelmintic).

Traditional Recipes /Formulation

Anthelmintic: Various recorded recipes are as follows:

- Ten fruits are pounded and squeezed, the juice obtained is mixed with coconut milk and taken when stomach is empty. The number of fresh fruits used in the recipe corresponds with the age of the patient but not exceeding 25.
- After washing, they are pounded with salt and water (1 glass), mixed thoroughly and filtered through muslin cloth. One glass of extract is taken before bedtime. To stop emptying of bowel patients are recommended to take a bath.
- Five to six fresh fruits are pounded with coconut milk or milk and taken as an anthelmintic.
- The amount of fresh fruits used is the same as in 2 (above), but after pounding and squeezing, the juice is mixed with fish sauce (1 teacup). One teacup of coconut milk is taken a few minutes before the preparation.
- The amount of fresh fruits used is the same as in 2 above, but after pounding and squeezing, the juice is mixed with water and coconut milk (one bowl). The patient should take the drug early in the morning. For patients suffering from constipation, laxative may be taken.

Other Local Usage (if any):

• No available information

Scientific Data

Chemical Constituents:

- Roots: betulin, 4, 5, 8-trimethoxy naphthaldehyde.
- Stembark: betulin acetate, elliptinone, lupenone, lupeol, mamegakinone.
- Leaves: diospyrol-8, 8'-di-O-(6-β-D-apiofuranosyl-β-D-glucopyranoside).
- Fruits: β-amyrin, betulinic acid, dihydrodihydroxyacenaphthene rhamnoside, diospyrol, diospyrol-8, 8'-di-O-β-D-glucoside, n-hentriacontane, lupeol, 3-methyl naphthalene-1, 8-diol, naphthalene, n-nonacosane, oleanolic acid, oleic acid methyl ester, palmitic acid methyl ester, saturated hydrocarbons, β-sitosterol, stearic acid methyl ester.
- Fruit pulp: elliptinone, lupeol, mamegakinone, taraxerol
- Not specified part used: diospyrol.

Contra Indications (If any):

• Avoid using fruit juice-lime mixture to avoid blindness. The oxidized form of fruit juice were reported to cause nausea, vomiting, drowsiness and causing loose stools.

Economic Potential/ Commercial Products





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Garcinia mangostana Linn.



Vernacular name/s	Mangosteen, Mangkhut
Family	Guttiferae
Plant description	Tree, 7-12m high; straight trunk, dark brown to blackish bark, young branch quadrangular, exuding yellow gum-resin. Leaves: opposite, ovate or elliptic-oblong, cuneate base, acute apex, entire margin; 15-25 cm long, 6-11 cm wide; leathery, dark green and glossy above, yellowish green below; midrib prominently raised on both surfaces, petiole 1.2-2.5 cm long. Flowers: solitary or in pairs near the twig ends. Female flowers are 4-5 cm wide, unisexual, sepals roundish, curved; petals ovate, pink, fall off rapidly; 5-20 sterile stamens, ovary globose, stigma 4-8 lobes, yellow, sessile. Fruit: globose, 4-7 cm in diameter; with short and thick stalk; four persistent sepals at the base; the remnant of the stigma lobes at the apex; thick rind becomes purple when ripe; 6-8 seeds; white, juicy, delicious pulp.
Propagation	Seeds. (Slow-growing tree, takes about 15 years to fruit). Seeds have a short germination period, and should be planted immediately. It requires a partially shaded planting area and watered regularly. Transplantation can be done for 2-year-old seedlings.
Distribution / Ecology	Requires moist and hot climate, preferably with a short dry season. Commonly cultivated in southeastern and southern parts of Thailand.



Usage

Uses Supported by Experimental and or Clinical Data

Fruits

- **Central Nervous System (CNS) depressant activity in mice and rats** (Characterized by ptosis, sedation, decreased motor activity, potentiation of pentobarbital sleeping time and ether anesthesia): Mangostin and its derivatives except 3,6-di-O-methyl mangostin.
- **Cardiovascular effect:** Mangostin-3, 6-di-O-glucoside stimulates myocardial and increased the blood pressure of frogs and dogs. Both actions were partially blocked by propanolol, a B-receptor antagonist.
- Anti-inflammatory activity (in normal and bilaterally adrenalectomized rats): Mangostin, 1-isomangostin and mangostin triacetate.
- Anti-ulcer activity in rats: Mangostin
- Antibacterial activity: Crude mixtures of five xanthones (isomangostin, β-mangostin, y-mangostin, gartanin and 8-deoxygartanin) inhibited both penicillin susceptible and penicillin resistant Staphylococcus aureus. Mangostin had the lowest minimal inbibitory concentration value (MIC 7.8 mg/ml). Gartanin, y-mangostin, 1-isomangostin, and 3-isomangostin exhibited activity at higher concentrations.
- **Piscicidal activity** against tilapia Oreochromis niloticus Linn: Aqueous extract (1,000 ppm).
- Antifungal and antiyeast activities: Mangostin against Trichophyton mentagrophytes, Microsporum gypseum, and Epidermophyton floccosum (1 mg/ml) but ineffective on Candida albicans.
- Antidiarrheal activity: xanthones in the fruit rind.

Uses in Local / Traditional Medicine

• **Pericarp:** wound healing, dysentery; treatment of infected wounds, suppurations and chronic ulcers.



Traditional Recipes:

Anti-diarrhoea

- Dried fruit rind boiled in saturated calcium hydroxide solution.
- Water suspension of dried fruit rinds scrapped on a rough stone surface.
- Boiled dried fruit rind. 1-2 teaspoonful every 4 hours (children), a tablespoonful every four hours (adult).

Wound treatment

• Dried fruits scrapped on rough stone surface and mixed with saturated calcium hydroxide solution. Resulting mixture to be applied over the wound areas.

Other Local Usage (if any):

• No available information.



Scientific Data

Chemical Constituents:

Leaves: 1,6-dihydroxy-3-methoxy-2-(3methyl-2-butenyl) xanthone, 1,5,8-trihydroxy3-methoxy-2-(3-methyl-2-butenyl) xanthone.

Heart wood: maclurin, 1,3,6,7-tetrahydroxy xanthone, 1,3,6,7-tetrahydroxy xanthone-O-β-D-glucoside.

Fruit peel: chrysanthemin, cyanidin-3-0-6-D-sophoroside, 8-deoxygartanin, 1,5dihydroxy-2-isopentenyl-3-methoxy xanthone, 1,7-dihydroxy-2-isopentenyl-3-methoxy xanthone, 5,9dihydroxy-8-methoxy-2,2-dimethyl-7-(3methylbut-2-enyl)-2(H), 6(H)-pyrano-xanthen-6one, fructose, garcinone A,B,C and D, gartanin, glucose, cis-hex-3-enyl acetate, 3isomangostin, 3-isomangostin hydrate, l-isomangostin, 1isomangostin hydrate, kolanone, mangostin, 6-mangostin, a-mangostin, mangostin-3,6di-O-gulcoside, normangostin, sucrose, tannins, BR-xanthone-A, BR-xanthone-B.

Seed aril: calabaxanthone demethylcalabaxanthone, 2-(Y, y-dimethylallyl)-1, 7-dihydroxy-3 methoxyxanthone, 2, 8-bis-(y, y-dimethylallyl)-1, 3, 7 trihydroxyxanthone, mangostin.

Unspecified part: phenolic esters and ethers of alcohols, cyanidin-3-glucoside, cyanidin-3-sophoroside, gartanin, 3isomangostin, 1-isomangostin, mangostin, y-mangostin, pigment.





Economic Potential/ Commercial Products





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Musa sapientum L.



Vernacular name/s	Banana, cultivated banana, kluai, kluai khai, kluai tai, kluai som, kluai hom (Northern), kluai naak (Bangkok), kluai lepmue, kluai hom chan, kluai hakmuk (Central), kluaimanee-ong, ma-li-ong (Shan-Northern), chek (khmer-Chanthaburi) ya-khai, sakui (Karen-Mae Hong Son), laek (Chong-Chanthaburi).
Family	Musaceae
Plant description	A large herb with both underground and aerial stems. Leaves: Large, spirally arranged, oblong, 1.5-4 by 0.7-1.0 m; truncated apex, margin entire; midrib thick; side veins parallel, numerous; petiole stiff, 30-90 cm long, rounded beneath, upper grooved. Flowers: Unisexual on a 30-150 cm long hanging stalk. Flowers are grouped, subtended by a large reddish purple bract arranged spirally on the axis of the inflorescences. Each flower is a big, tubular; consisting of a petal, 5 fertile stamens, a staminode, stiff filament, oblong anther, inferior ovary and 6-lobed stigma Fruit: >10 cm long cylindrical, thick skin commonly yellow, creamy pulp, sweet when ripe. Seeds: none or few, suborbicular.
Propagation	Bulbs or suckers rising from the underground stem around the trunks base of the trunk. Recommended planting: about 50 cm deep, filled with good soil and manure; spacing is about 5 m. The trunk must be pruned every year when overcrowding occurred. Planting is at all seasons and needs proper regular irrigation Manure should be applied 3 times; at 7 days, 3 months, and 5 months after planting.
Distribution / Ecology	Common in the tropics and is native to Southeast Asia. It requires well- drained and moist soil.

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Uses Supported by Experimental and or Clinical Data

Antibacterial activity

Usage

- Leaves : slight antibacterial activity
- Stem: inhibited Gram-positive, Gram-negative, acid-fast and Gram-variable bacteria.

Paralysis of skeletal muscle (chick, mouse & frog)

• Tree trunk aqueous extract: dose dependent paralysis of all (chick, mouse & frog) skeletal muscle. The neuromuscular blockade was reversed by calcium, added prior complete paralysis. The nature of the block resembles a potent local anesthetic with an initial atypical labilizing effect on cell calcium unlike conventional curariform block.

Antifungal activity

• Pulps and skins of green and ripe fruits (including a substance distillable at low pressure) inhibited Fusarium oxysporum and F. lycopersici.

Antibacterial activity

- Pulps and skins of ripe bananas inhibited Escherichia coli, Staphylococcus aureus, Serratia marcescens, Mycobacterium phlei, Bacillus subtilis, Sarcina lutea, Rhodococcus roseus and Xanthomonas translucens
- A substance distillable at low pressure effectively inhibited E. coli, S. aureus, S. lutea, M. phlei, Bacillus cereus, and X. translucens.
- The acidic banana juice, partially bactericidal against Bacillus typhosus; juice of halfripe fruit was usually more effective than that from fully ripe fruit.

Nutrition

- A mixture of Vigna sinensis, banana and Carica papaya used as a supplement to promote normal growth in rats.
- Banana juice: effective in preventing scurvy

Effects on excretion of catecholamine and indolamine in urine of rats

• Male Wistar rats fed with banana for six days at a dose of 20g/animal (first day and increased by 4 g/day (i.e 40 g on the 6th day), resulted in increased excretion of noradrenaline, dopamine, and serotonin in the treated rats than in normal rats.

Insect attractant activity

• Fresh ripe fruits aqueous extract with skin moderately attract oriental fruit flies.



Anti-ulcerogenic activity

- The dried unripe plantain bananas prevent aspirin-induced ulcers in rats via gastric mucosa stimulation. Hence increasing mucosal mass and mucus production to exhibit a protective effect. The aqueous extract was 300 fold more active than the powder.
- Banana had both prophylactic and curative effects on aspirin-induced ulcers- Banana powder strengthened gastric mucosal resistance and promoted the ulcer healing in rats.

Digestion of banana carbohydrates

• Studied in humans by feeding ileostomy subjects with banana and measuring the amounts excreted in the stool. The carbohydrate excretion from the consumed banana ranged from 4-19 g/day and directly related to the starch content.

Hypoglycemic activity

• Crystals obtained from the banana flowers containing triterpene or steroid with a melting point of 129-131°C and molecular weight (MW) of 424.

Uses in Local / Traditional Medicine

- Strangury (roots), hernia (stem); haemostatic (stem, leaves), wound healing (latex from leaves)
- Fruits: for longevity; treatment of peptic ulcers and burns, haemorrhoids; anti diarrhoea and anti disentry.

Other Local Usage (if any):

No available information



Scientific Data

Chemical Constituents:

• Fruits: alcohols, aldehydes, barium, 3,4-benzopyrene, biphenyl, carbohydrates, carotene, chlorophyll A, chlorophyll B, condensed tannins, copper, cyanidin, delphinine, L-dopa, dopamine, epinephrine, nor-epinephrine, essential oil, fats and fatty acids, O.-glucan phosphorylase A, B, C, hydrocarbons, inorganic elements, iron, iso-amyl acetate, ketone, lithium, manganese, nicotinic acid, pectins, pelargonidin-3,5diglucoside,O-phenylphenol, proteins, proteolytic enzymes, riboflavin, serotonin, silver, thiabendazole, thiamine, vitamin A, vitamin B, vitamin C, zinc.

- Flowers: caffeic acid, campesterol, cinnamic acid, p-coumaric acid, cyclomusalenol, cyclomusalenone, dopa, dopamine, ferulic acid, gallic acid, norepinephrine, protocatechuic acid, serotonin, β-sitosterol, stigmasterol, triterpenoid
- Not specified part used: (245)-14A, 24-dimethyl-9 β, 19-cyclo-5α -cholest-25-en-3 β -0l, ascorbate oxidase, carbohydrates, carotene, catecholamines, 4-demethylsterols, 4,4'-dimethyl-sterols, enzymes, glucose, inorganic elements, 4-α methyl-sterols, niacin, oxalic acid, riboflavin, serotonin, thiamine, vitamin A, vitamin C.

Contra Indications:

• No available information





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Piper betle Linn.

2. Market Barket	

Vernacular name/s	 Phlu, see-keh (Malay-Narathiwat) Betel vine (English)
Family	Piperaceae
Plant description	The plant is a stout creeper , climbing by adventitious roots at the nodes, quite glabrous. Leaves: simple, alternate, broadly ovate or rounded, 5-18 by 2-10 cm, having apex acute or acuminate, unequally rounded at the base or broadly heart-shaped, coriaceous, having prominent vein beneath. Flowers: minute, in cylindrical male or female spikes, pendulous, male spikes are 2-12 cm long, having peduncle 1.5-3 cm long, female spikes are long-peduncled, without calyx and corolla, having one small bract with each flower; ovary with one cell and one ovule. Fruit: berry, small, round, pulpy; containing one globose seed.
Propagation	Cuttings planted next to poles, trellises or tree trunks for support.
Distribution / Ecology	Indigenous to Ceylon, India, and Malaya and cultivated for its leaves throughout tropical and subtropical Asia. It requires a rich, humous, moist soil and a partially shaded condition.



Usage

Uses Supported by Experimental and or Clinical Data

Leaves:

- Antimitotic activity (Dried leaves alcohol extract (8,000 ppm): Cellular changes on onion root tip cells via production of agglomeration of chromosomes and bridged metaphases during mitosis. Differences in condensation of the chromosomes, bizarre forms of nuclei (cells with large nuclei) with no corresponding increase in cytoplasm etc. observed in the treated cells.
- Antimutagenic activity: Both water and acetone extracts suppressed the mutagenicity of betel quid (dose dependent manner), benzo (a) pyrene and dimethylbenzanthracene. Acetone extract is more potent than a water extract in inhibiting the mutagenicity of environmental mutagens. Eugenol and hydroxychavicol, two phenolic compounds isolated from betel leaves showed a dose-dependent suppression of methbenzanthracene induced mutagenesis in Salmonella typhimurium strain TA 98 with metabolic activation. Hydroxychavicol was more potent than eugenol.
- Antimicrobial activity: Petroleum ether, ether, chloroform and 95% alcohol extracts of betel leaves inhibited Mycobacterium tuberculosis (MIC=1:5,000), 6-Streptococcus group A (MIC=1:600), Staphylococcus aureus (MIC=1:400), Trichophyton mentagrophytes (MIC=1:1,400) and T. rubrum (MIC=1:100). Best results were obtained with the ether extract. The ether extract formulated into several dosage forms for external uses; ointment, cream and paste. At a concentration of 2%, all dosage forms were effective against the stated bacteria and fungi. No sensitivity or skin inflammations were reported when each preparation was applied on rabbit skin at a dose of 0.5 g daily for 3 consecutive days. At a dose of 0.25 g daily for 6 days, betel leaf extract in hydrophilic petrolatum base induced redness on rabbit skin both before and after UV irradiation.

In a study on the effect of betel and its extracts on the growth and aflatoxin production by Aspergillus parasiticus, leaf extract exhibited higher antimycotic activity than did those from the fruits. Leaves' chloroform and ethanol extracts showed more antimycotic activity than other extracts. An ethanol extract of leaves at the level of 450 mg/ml eliminated A. parasiticus growth and aflatoxin production.

Five propenyl phenols with significant fungicidal and nematocidal activity were isolated from leaves chloroform extract betel and were identified as chavicol, chavibetol, allylpyrocatechol, chavibetol acetate, and allylpyrocatechol diacetate. Water, petroleum ether and ether extracts exhibited antibacterial against Escherichia coli, Salmonella enteritidis, Shigella flexneri, Aerobacter aerogenes, Erwinia sp., Serratia marcescens, Proteus vulgaris and Klebsiella pneumoniae. Another report showed antibacterial activity for aqueous alcohol extracts against Vibro cholerae, V. parahemolyticus, Salmonella typhosa, Shigella flexneri, E. coli, S. aureus and Ps. aeruginosa. Water, petroleum ether and ether extracts showed antibacterial activity against E. coli, S. enteritidis, Sh. flexneri, A. aerogenes, Erwinia spp., S. marcescens, P. vulgaris and K. pneumoniae.

Smooth muscle relaxant activity: Aqueous extract exhibited smooth muscle relaxant activity on isolated rat ileums.

Toxicity assessment: LD_{50} 3.22 g/kg (oral) against mice. At doses below 2 g/kg, the test animals were depressed and slept, respiration not affected. At higher doses (from 2.5 g/kg), more depressant effects and sleep. Later, the test animals, died from respiration failure.

Carcinogenic activity (fruits): Betel fruits exhibited no carcinogenic activity when given orally to adult human subjects.

Quids

Carcinogenic activity: Histopathological effects of chewing of betel guid with tobacco was studied by simulating different chewing habits, using mouse glandular stomach mucosa as a model system. Lime and betel leaves probably played a protectant role by reducing the dysplasia and metaplasia. Betel, leaf, areca nut, lime, tobacco and two popular brands of Indian chewing mixture induced unscheduled DNA synthesis to a very significant extent. The extracts of areca nut, nut with lime and both brands of commercial chewing mixture induced replication of DNA synthesis. Chronic oral administration of extracts of Areca catechu (red nut), Piper betel (leaf) and combination of areca nuts, betel leaves and lime to mice for 8-10 months resulted in marked architectural atypia in the glandular stomach mucosa. The initial histological changes were erosions and regenerative hyperplasia of the pyloric glands. After atrophy and erosion of the mucosa, regenerative glandular hyperplasia developed in mice receiving lime suspension while marked adenomatous hyperplasia exhibiting excessive glandular proliferation, often with peripheral growth into the stomach cavity, with few cellular atypism developed in animals receiving combinations of betel leaves and catechu and low concentration of lime. High dose of lime together with betel leaves probably played a protective role by reducing the dysplastic changes and metaplasia. Betel leaves were found to be an irritant and increased the mitotic index.

Essential oil:

Hypotensive activity: Dogs were given betel essential oil intravenously at a dose of 15 mg and a transient hypotensive effect was detected. Similar results were obtained in atropinized or vagolectomized dogs. When a dose of 50 mg was used, the hypotensive effect was persistent. Other effects reported were cardiac depression, effect which resulting in a slower heart rate and lower contractions of heart muscles; no changes in respiration were detected. At a dose of 150 mg, respiration was totally inhibited. Perfusion of the isolated frog heart was carried out using 100 mg of essential oil which caused a lowering of heart rate and decreased contractions and tonus of the heart.

Skeletal muscle relaxant activity: Essential oil of betel leaves at a dose of 2.5 mg/L produced a relaxation of frog rectus abdominis.

Antispasmodic activity: At a concentration of 12.5 mg/L, the essential oil decreased contractions of small intestines in rats and rabbits. This action was not blocked by dehydroergotamine methane sulphonate. A relaxation of rat uterine muscle resulted when the essential oil was used at a concentration of 100 mg/L.

Anthelmintic activity: The essential oil of betel leaves, at a concentration of 1.0 g/L, exhibited anthelmintic activity on earthworms (Ascaris lumbricoides).

Uses in Local / Traditional Medicine

- Roots: treatment for physiological function disorders.
- Stem: treatment for endo-parasites infections
- Leaves: for promotion of healthy teeth and skin; treatment of skin diseases.
- Flowers: eye diseases treatment.
- Not specified part: treatment for skin diseases, urticaria, bronchial sputum occlusion.

Other Local Usage (if any):

No available information



Chemical Constituents:

- Leaves: a-alanine, β-alanine, L-alanine, allo-ocimene, a-amino butyric acid, anethole, L-arginine asparagine, L-aspartic acid, 1,3-benzodioxole-2propenyl, cadinene, α-cadinene, α-cadinol, carbohydrates, carvacrol, carvicol, caryophyllene, chavibetol, chavicol, 1,8-cineole, cis-caryophyllene, a-costol, cystine, essential oil, estragole, eugenol, geraniol, L-glutamic acid, glycerides, glycine, n-hentriacontane, hexadeconic acid, histidine, inorganic elements, L-leucine, L-lysine, d-(+)-malic acid, L-methionine, methyl benzoate, methyl-2hexadecan-1-ol, trans-β-ocimene, oxalic acid, n-pentatriacontane, phenylalanine, Lproline, proteins, pyridine alkaloids, L-serine, β-sitosterol, y-sitosterol, stearaldehyde, stearic acid, stigmasterol, tannins, terpinen-1-ol, terpinene, terpinolene, a-terpinyl acetate, L-threonine, a-thujene, triacontyl, alcohol, L-tryptophan, L-tyrosine, L-valine, vitamin C.
- Fruits: carbohydrates, glycerides, inorganic elements oil, proteins, pyridine alkaloids, tannins.
- Roots: carbohydrates, glycerides, inorganic elements, oil, pectins, proteins, pyridine alkaloids.
- Not specified part used: essential oil.



• Norman R. Farnsworth, Nuntavan Bunyapraphatsara. 1992. Thai Medicinal Plants. 1992: 193-196.

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Punica granatum Linn.



Vernacular name/s	Tubtim, Siae lin (Chinese), Phi laa (Nong Khai), Philaa khaao (Nan), Ma koh (Northern), Maak-chang (Shan-Mae Hong Son).
Family	Punicaceae
Plant description	An erect shrub up to 3 m high, much branched from the base, having branchlets slender, often ending in a spine. Leaves: simple; oblong- lanceolate, 1-9 by 0.5-2.5 cm; consisting of obtuse or emarginate apex; base acute, shiny, glabrous. Flowers: orange red, about 3 cm in diameter, 1-5 borne at branch tips, the others solitary in highest leaf-axils, sessile or subsessile; consisting of calyx 2-3 cm long, tubular, lobes erect or recurved, thick, coriaceous; petals the same numbers as the calyx lobes, rounded or very obtuse, from edge of hypanthium, caducous; stamen numerous within upper half of hypanthium. filament free; inferior ovary, ovules numerous, style 1, stigma capitate. Fruit: globose berry, crowded by persistent calyx-lobes, having pericarp leathery filled with numerous seeds , which are surrounded by pink and red, transparent, juicy, acid, pleasant tasting pulp.
Propagation	Seeds or layering
Distribution / Ecology	Native to the Mediterranean region. Cultivated as a fruit-tree or ornamental or for medicinal purposes.

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Usage

Uses Supported by Experimental and or Clinical Data

Fruits

- Antiviral activity: Aqueous extract was effective against Red virus type I and Coxsackie B9 virus.
- Antibacterial activity: The lime-water extract of fruit rind pulp when mixed with each of three formulae of Thai traditional antidiarrheal drugs, showed antibacterial activity while the traditional formula alone showed no effect.

Uses in Local / Traditional Medicine

Antidiarrhoeal:

- The fresh shoots, boiled with water (1:3) and concentrated to one third of the original volume. Then the extract is taken frequently during the day.
- The dried bark, boiled with water and the extract is taken at a dose of 1-2 teaspoonfuls every four hours for children and 1-tablespoonful for adults.

Other Local Usage (if any):

• No available information



Scientific Data

Chemical Constituents:

- Fruits : anthocyanins, ascorbate oxidase, carbohydrates, α-carotene, β -carotene, citric acid, corilagin, cryptoxanthin, fats, flavonoids, D-fructose, gallic acid, gallotannin, granatin A and B, gum, inulin, D-(+)-malic acid, mucilage, niacin, N-octadec-9-enoic acid (elaidic acid), oil, oxalic acid, oxidase, pectins, 1,2,3,4,6 penta-O-galloyl-β-D-glucose, polysaccharides, proteins, punicafolin, quercetin-3-glycoside, quinic acid, resin, riboflavin, starch, strictinin, succinic acid, sucrose, tannin, D-(+) tartaric acid, 1,2,4,6-tetra-O-galloyl-β-D-glucose, tetraterpenoids, thiamine, vitamins, vitamin D, waxes.
- Fruit juice: ascorbic and citric acids, monosaccharides, pectins, phenols, sugars, tannin.
- Fruit rind: hydrolyzable tannins, pelletierine
- Fruit pulp: callistephin, chrysanthemin, cyanin, ellagic acid, granatin B, pectin, pelargonin, punicalagin, punicalin.
- Leaves : betulinic acid.

- Seeds: coumestrol, estrone, pectin, sugars, tannins, vitamin C.
- Seed coat: callistephin, chrysanthemin, cyanin, delphin, delphinidin-3-O- β -D-glucoside, pelargonin.
- Seed oil: heneicosanoic, 4-methyllauric 3methylstearic, nonadecanoic, punicic, tricosanoic acids
- Roots : betulic acid, friedelin, isopelletierine , D mannitol, methyl pelletierine,Nmethyl-isopelletierine, pelletierine , pseudo-pelletierine ß – sitosterol , tannins , ursolic acid .
- Stem bark : betulinic acid, casuariin, casuarinin, citric acid, ellagitannins, essential oil, flavogallol , friedelin , inorganic elements isopelletierine , D-mannitol , N-methylisopelletierine , neohesperidin , pelletierine , punicacorteins A,B,C and D, punicalagin, punicalin, quercetin-3-rutinoside, β-sitosterol , tannin , ursolic acid.

Contra Indications

• Insufficient reliable information on safety of pomegranate extracts in pregnancy and lactation. Potential genotoxicity of one whole fruit extract has been reported in an animal study.

(\$)

Economic Potential/ Commercial Products





Beverages





Bibliography & Photo Credit

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Rhinacanthus nasutus (Linn.) Kurz



Vernacular name/s	Thong phan chang, Yaa man kai (Central).
Family	Acanthaceae
Plant description	A small shrub , up to 1.5 m high; the stem is obtusely quadrangular, when young it is covered with fine, up curved hairs. Leaves: simple opposite; elliptic or lanceolate; 4-6 by 2-3 cm; chartaceous; entire; light green; shortly pubescent having acute base and apex. Flowers: white, in short axillary clusters; densely appressed pubescent. The calyx is divided into 5 deeply acute parted, light green, 5-6 mm long. The corolla-tube is about 2 cm, having brownish purple spots at the throat of the tube, bilabiate, upper lip erect, bifid, lower lip 3-lobed; stamens, inserted in the throat; ovary 2-loculed. Capsule is loculicidal, 2 valved.
Propagation	Seeds or cuttings
Distribution / Ecology	The plants scatter along the edges of evergreen forests. They are usually grown as ornamentals and require sandy and well-drained soil.



Usage

Uses Supported by Experimental and or Clinical Data

Roots

- **Insect attractant and signaling properties:** Ether extract against male Mediterranean fruit flies but showed equivocal results on Aspiculurus tetraptera, both male and female melon flies, and both male and female oriental fruit flies (Dacus dorsalis).
- Juvenile hormone activity: Ether extract (500.0 ug/animal) on Oncopeltus fasciatus.
- Antimicrobial activity: Extracts failed to exhibit antimicrobial activity against dermatophytes, black mold, white mold and yeasts.

Whole Plant

- A 50% alcohol extract (100 mg/kg administered intravenously) produced (i) a slight increase in heart rate and blood pressure of anesthetized dogs (ii) an antipyretic effect in rabbits
- The whole plant exhibited no toxic symptoms in mice when a 50% alcohol extract was force-fed or injected subcutaneously into animals at a dose of 10 g/kg.

Branches and Leaves

- Antifungal activity: Water low inhibitory against Microsporum gypseum, Trichophyton rubrum, Epidermophyton floccosum, Candida albicans, Cryptococcus neoformans and Saccharomyces spp.
- Antifilamentous fungi by the chloroform and 95% ethanol extracts
- Anti dermatophytic / ringworm activity

Uses in Local / Traditional Medicine

- Whole plant: treatment of skin diseases, oozing eczema due to lymphatic disorders, Tinea versicolor, ringworm, pruritic rash, yaws, cancer, inguinal hernia, amputating necrosis of penis and disorders of urination.
- Roots: treatment for Tinea versicolor, ringworm, and skin diseases, cancer; antipyretic and antidote for snake venom.
- Stem: health improvement.



- Leaves: health improvement; Tinea versicolor infection treatment, ringworm, pruritic rash, skin diseases, cancer, falling hair, abscess pain and leukorrhea; antipyretic, antihypertension, antidote for snake venom, antiinflammatory and detoxicant.
- Not specified part used: for longevity; treatment for leukorrhea, hair thinning, cancer and dysuria with urinary stones or discharges; antihypertensive.

Contra Indications

• No available information.



Chemical Constituents:

- Flowers: rutin
- Leaves: rhinacanthin A, rhinacanthin B and oxymethylanthraquinone
- Root: resin rhinacanthin

Economic Potential/ Commercial Products







Skin care products



Bibliography

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Saccharum officinarum L.



Vernacular name/s	 Oi Ampov (Cambodia); Oy dam (Lao PDR); tebu (Malaysia); Kyan (Myanmar); Tubo (Philippines); Mia (Viet Nam). Sugar cane (English)
Family	Graminae
Plant description	A robust, erect and tufted perennial herb, up to 2 m high with many nodes. Short conspicuous internodes filled with solid, juicy pulp. Leaves: long, blade linear-lanceolate; the base narrowed into sheath clasping the stem, sharp serrate margin, siliceous, midrib prominent and broad. Flower: large showy, plume like panicles, up to 1m or more; spikelets in pairs, the one pedicellate and the other sessile, about 3 mm long, with silvery-silky hairs twice as long as the body of the spikelets. Both spikelets 2-flowered, the lower empty, the upper bisexual; glumes equal, mostly chartaceous, lemma of upper floret awnless.
Propagation	Cuttings, often selected from the upper nodes of the plants.
Distribution / Ecology	 Cultivated in most parts of Southeast Asia and very extensively in tropical and subtropical regions of the world. The plant requires a hot, humid climate, loamy and well-drained soil.



Usage

Uses Supported by Experimental and or Clinical Data

• A study on the effect of diet on the cholesterol level in some population groups in New Guinea showed that natives of Mappia, whose staple foods were sweet potatoes and sugar cane, had an average cholesterol content in the blood serum of 129+21 (males) and 163+38 (females) mg/100 ml. The reported cholesterol levels were lower than those of oil company laborers, whose varied diet contained many European foods; the average cholesterol contents of blood serum were 183 (males) and 187 (females) mg/100 ml.

Uses in Local / Traditional Medicine

• Anticancer and immunostimulating activities

Other Local Usage (if any):

• No available information



Scientific Data

Chemical Constituents:

- Roots: asparagine, nitrogenase, vanilloyl-1-O-B-D-glucoside acetate.
- **Stem**: acid phosphatase, aconitic acid, adenosine triphosphatase, L-alanine, Alkaloids, amino acids, a-amylase.
- Leaves: alanine, fumaric acid, 4'-O-B-D-glucoside-5,7-dimethyl-apigenin, Glutaric acid, a-ketoglutaric acid, malic acid, malonic acid, succinic acid, trans-aconitic acid.
- Molasses: saccharan A,B,C,D,E and F,trans-aconitic acid.
- *Flowers*: 5-O-methyl apigenin, 3,4,5,7 tetrahydroxy-3-6-dimethoxy flavone.

Contra Indications

No available information




Economic Potential/ Commercial Products



• Norman R. Farnsworth, Nuntavan Bunyapraphatsara. Thai Medicinal Plants. 1992: 218-221.



Senegalia catechu (L.f.) P.J.H.Hurter & Mabb.)



Vernacular name/s	Seesiat
Family	Leguminosae
Plant description	A small to a middle size thorny tree , circa 3.15 m tall, dark grey or brownish grey bark. Leaves: Bipinnate, 9-17 cm long, numerous small sessile leaflets. Stipules modified into a pair of thorns at petiole base. Flowers: Small, yellow or pale yellow in axillary cylindrical spikes, 5-10 cm long. Bell-shaped calyx and corolla divided into 5 lobes with numerous free stamens. Fruits: Long straight flat pods, 5-10 cm long, smooth, pointed at both ends; the mature pod is dark brown, longitudinally dehiscent, containing 3-7 seeds .
Propagation	Seeds
Geographical Distribution / Ecology	Grows best in open dry places with almost all soil types. Found in scrub and cultivated for medicinal purpose.



Usage

Uses Supported by Experimental and or Clinical Data

- Antibacterial activity against Staphylococcus aureus (catechu resin 95% ethanol extract).
- *Hypoglycemic activity in food-restricted normal male rats (seed)*
- Antiviral activity against Ranikhet virus; 50.0 µg/ml (Stem ethanol-water (1:1) extract).
- Acetylcholine or histamine induced contraction (antispasmodic activity): Stem (ethanolwater (1:1) extract)
- Molluscicidal against Biomphalaria glabrata: Hot water extract at 200.0 ppm.
- Toxicity assessment: Ethanol water (1:1) extract produced no toxic effect when given to mice at 100 mg/kg.

Uses in Local / Traditional Medicine

• Stomachic; wound healing, cough, throat pain, dysentery and diarrhea; treatment of severe bloody diarrhea most likely from withdrawal symptoms; for wounds, skin diseases, and gingivitis.

Other local usage (if any):

No available information



Scientific Data

Chemical Constituents:

• 1-epicatechin (heartwood), (+)-catechin (leaves), (-)-epicatechol, flavonoids (stem bark), oligosaccharide (gum).

Contra Indications (If any):

- May cause infertility (both male and female).
- Not to be use pregnant and lactating women or patients suffering from bleeding disorders, low blood pressure, auto-immune diseases (such as lupus, rheumatoid arthritis, multiple sclerosis)

Economic Potential/ Commercial Products



tree bark for colourant /dye







Aquarium fish medicine

Anti-diarrhoea supplements



- Norman R. Farnsworth, Nuntavan Bunyapraphatsara. Thai Medicinal Plants. 1992: 7-9.
- https://bettabotanicals.com/products/cutch-tree-bark



Solanum violaceum Ortega



Mawaeng ton, Ma khwaeng, Ma khwaeng khom, Ma khwaeng dam (Northern); Ma waeng, Waeng khom (Surat Thani, Songkla); Sa-kangkhae (Karen-Mae Hong Son); Maak-haengkhong (Shan-Mae Hong Son).

Vernacular name/s

Family Solanaceae

	Plant description	Branched shrub, up to 1 m high. Stem and branches: covered with stellate hairs and stout, recurved prickles. Leaves: simple, alternate or sub-opposite, usually crowned at the top of the branch. The blade is ovate, unlobed or shallowly 2 or 3 lobed on each side; 3-10 by 2-6 cm; subcoriaceous; having densely stellate hairs on both surfaces and prickly along the nerves. Inflorescences: lateral; consisting of flowers wheel shaped, showy, five parted, violet with yellow stamen in the middle, about 2 cm in diameter; calyx campanulate with lanceolate acute lobes, tomentose, prickly; corolla short tubular, 5 lobed, densely pubescent outside; stamens 5, filament very short, anther oblong; style straight longer than the stamens. Fruit: globose, subtended by the spreading calyx lobes, about 1 cm in diameter; glabrous, red when ripe, having numerous seeds inside.
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Propagation Seeds

Distribution /Wide spread in tropical and subtropical Asia. Commonly found along
waste landfill sites and road sides.





Usage

Uses Supported by Experimental and or Clinical Data

- Fruits water extract: reduced rabbit blood sugar level 2 hours post treatment
- Ethanol extracts: reduced rabbit blood sugar level 2,_3 and 4 hours post treatment and reduced rat blood sugar level an hour post treatment.

Uses in Local / Traditional Medicine

• CNS depressant, hypotensive, antimicrobial, anticancer and low hypoglycemic activity.



Scientific Data

Chemical Constituents:

 Solanine (roots), solasodine (stem), diosgenin, β-sitosterol, solanine, solasodine (leaves), carbohydrases, diosgenin, d-glucosidase, maltase, pseudoglucosidase, B-sitosterol, solanine, solasodine (fruits).

Economic Potential/ Commercial Products



Herbal cough medicine



Bibliography & Photo Credit

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$\mathcal{V}\!\mathit{IET}\,\mathcal{N}\!\mathit{A}\mathcal{M}$

Acorus gramineus Aiton



Vernacular name/s	 Thach xuong bõo, bo hoang Slep narm (Lao PDR); jerangau (Malaysia); taw lin nay (Myanmar); wan nam (Thailand)
Family	Acoraceae
Plant description	Perennial, semi-aquatic marsh herb, about 0.5 m high. Rhizome: aromatic, creeping, 5–30 cm long. Leaves: linear, sheathed amplexicaul in fascicles, 10–50 cm long, 0.4–0.8 cm wide; basal short and narrow; upper apex attenuate acute; glabrous on both sides; main nerves parallel. Inflorescence: terminal spadix on a compressed scape, surrounded by a broad and long leaf-like spathe; spadix cylindrical, attenuate and slightly curved, 5-10 cm long; Flowers numerous, small, bisexual, yellowish green; perianth in 6 lobes; sepals 3; petals 3; stamens 6; filaments short; ovary oblong, ovate. Seed: berry elongated, bright red when ripe.
Propagation	Rhizome
Geographical distribution / Ecology	Widely distributed in the tropical and subtropical regions of ASEAN including Viet Nam. It is scattered in mountain areas, mainly along the streams or climbing on rocks by a fibrous root system. Seeds are usually dispersed by water and often observed between the rocks along streams. The plant has been continuously overexploited.



Uses Supported by Experimental and or Clinical Data

• Rhizome: sedative, antispasmodic, hypotensive actions and aids sleep. Facilitate soberness in alcoholic related amnesia. Compound trans-4-propenyl veratrol affect central nervous system.

Uses in Local Traditional Medicine

Usage

• Tonic; it warms the stomach benefitting the digestion, relieves pain, improves eyesight and hearing, and counteracts rheumatism and osteodynia. Safe to be combined with other herbal drugs (daily dosage at 3–8 g), in the form of a decoction, pills or powder.

Other Uses (if any)

No available information



Chemical Constituents:

• *Rhizome:* 0.34–0.41% essential oil including myrcene, camphor, cis-methyl isoeugenol, á-asarone, â-asarone and shyobunone.

Contra Indications (If any):

• No available information



Economic Potential / Commercial Products



Fragrance candle



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Aquilaria crassna Pierre ex Lacomte



Vernacular name/s	 Tram hurong, do bau, ky nam Daem chan (Cambodia); Ket sa na, may dam, po hueng (Lao PDR); krit sa na (Thailand)
Family	Thymelaeaceae
Plant description	A large evergreen tree , 15-29 cm high, with a diameter of 40-50cm. bark grayish brown, easy to peel off, smooth, inner bark with much water. Crown open. Leaves: , oval, upper surface glossy and green, lower surface light-coloured. Inflorescence: yellow; fruit: a capsule, obovoid, 4 x 3 cm in size, hard when dry. Furnished with short, grayish yellow hairs and persistent calyx.
Propagation	Seed
Geographical Distribution / Ecology	Found mostly in Viet Nam, Lao PDR and Cambodia, and abundantly in primary and secondary forests on typical ferralitic soils with shallow to moderately deep surface layers.





Usage

Uses Supported by Experimental and or Clinical Data

• No available information

Uses in Local / Traditional Medicine

 Antiemetic, diuretic, treatment for sedative palpitation, asthma, chest-ache and stomachache.

Other Local Usage (if any):

• No available information



Scientific Data

Chemical Constituents:

• Wood: 13% oil. Main components: benzylacetone (26%); metoxybenzylaceton (53%); terpinenol 11% and cinnamic acid.

Contra Indications (if any)

• No available information



Economic Potential/ Commercial Products



Agarwood chip







Agarwood incense





Prayer beads

Agarwood oil

Agarwood oil



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Illicium verum Hook. f.



Vernacular name/s	 Hoi, Dai hoi (Viet Nam) Dok chan, poy kak bua, chinpaetklip,poikak bua (Thailand); bunga lawang, adas china (Malaysia); bunga lawang (Indonesia); Star anise (English)
Family	Illiaceae
Plant description	A small or medium tree , 6-8 m height, diameter up to 15-36 cm. Trunk straight, terete. Bark grey-brown; branchlets green; crown conical to globose, looks beautiful. All parts of the tree have an agreeable aromatic smell. Leaves: simple, usually clustered at branch-tips into pseudoverticils of 3-4 leaves. Leaves ovate, 6-12 cm long, 2-5 cm wide; leaf blade thick and brittle, dark-green above, paler beneath. Petiole glabrous, 7-10 mm long. Flower: big, pink-white. Peticil stout and short. Sepals 6, pink at margin, green at back. Petals 16-20; broad-elliptic sepal, white outside, red inside, dark-red at the middle of flower. Stamens 10-20, shorter than petals, elliptic; carpels 6-8. Fruit: consists of 6-8 follicles, spreading woody and brown when mature, dehiscent by ventral side. Seed: solitary in each follicle, brown, glossy and glabrous.
Propagation	Seed
Geographical distribution/ Ecology	Originating from North Viet Nam and South of China, the tree can be found on red, brown-red or yellow ferralitic soil, developed from schist- sandstone with deep, fertile and well-drained soils.

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Uses Supported by Experimental and or Clinical Data

• No available information

Usage

Uses in Local Traditional Medicine

- The essential oil: rheumatism dyspepsia, fish poisoning, neuritis, colic and antiemetic.
- Carminative, stomachic, stimulant and diuretic properties.

Other Uses (if any)

• Spice and common flavouring for medicinal teas, cough mixtures and pastilles.



Chemical Constituents:

• Essential oils in fruits, leaves and seeds – anethol (80-90%), terpene (10-20%), pinene, dipentene, limonene, estradol, phellandrene, safrole and terpineol.

Contra Indications (If any):

No available information



Economic Potential/ Commercial Products



Dried star anise

Dried star anise





Cinnamon-star anise mix beverage

Dried star anise







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Litsea cubeba L.



Vernacular name/s	Mang tang, man tang (Viet Nam); lindos (Malaysia)
Family	Lauraceae
Plant description	A small tree , 8-10 m high and 7-15 cm in diameter. Stem and branches green or yellowish green when young. Twigs glabrous, black when dry. Leaves: simple, alternate, oblong-ovate, soft and thin, 6-9 cm long, 2-3 cm wide, glabrous. Veins evident on both surfaces. Leaves and bark smell of citronella. Inflorescence: compound. Axis slender, very short (0.1-0.2 cm). Fruit: globose, about 0.4-0.7 cm in diameter, succulent, yellowish green when young, black when mature.
Propagation	Stem cutting and seed
Geographical distribution / Ecology	 Distributed in Lao PDR, China, Cambodia, Viet Nam, Malaysia., Found abundantly in secondary forests.





Uses Supported by Experimental and or Clinical Data

No available information

Uses in Local Traditional Medicine

• Essential oil: deodorant, diarrhoea, snake-bite, dyspepsia, flu, coughs and cold.

Other Uses (if any)

• Spices



Chemical Constituents:

• Rich in essential oil. The fruits and leaves contain 6-15% and 0.2-0.4% oil respectively. The major components are composed of 70-90% citral, methyheptenone, cineol and aldehyde.



Economic Potential / Commercial Products











Essential oil





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ASEAN HERBAL & MEDICINAL PLANTS VOLUME 3



Momordica charantia



Phyllanthus niruri



Centella asiatica

ASEAN Herbal & Medicinal Plants Vol.3 is a sequel publication of the first two volumes published in 2010 and 2017 respectively. A compilation of 85 herbal and medicinal plants species from nine ASEAN member states vis a vis Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Thailand and Viet Nam. Information such as scientific and vernacular names, botanical description, local uses (for medicinal and other uses) as well as related scientific information are summarize for easy reference. Where available, photos of commercialized product or products derived therefrom are also highlighted in cognizance of their economic potential.

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