

Iberis amara Linn.

- Family** ▶ *Cruciferae; Brassicaceae.*
- Habitat** ▶ Native to Europe; cultivated in gardens. Reported to occur in Chamba.
- English** ▶ Rocket Candytuft, Clown's Mustard.
- Action** ▶ Used for gout, rheumatism, also for bronchitis and asthma; as a tonic in enlargement of heart to allay excited action of the heart.

The seeds contain a mustard oil and a glycoside, glucoiberin. The plant contains sulphur-containing glucosinolates; also contains bitter and toxic tetracycloterpenoids, cucurbitacin E and I.

The seed extract exhibited cytotoxicity against renal and brain tumours and melanoma cell lines. The activity may be attributed to the presence of cucurbitacins E and I.

Ichnocarpus frutescens R. Br.

- Family** ▶ *Apocynaceae.*
- Habitat** ▶ Uttar Pradesh, Madhya Pradesh, Bihar, Assam and the Sunderbans.
- English** ▶ Black Creeper.
- Ayurvedic** ▶ Gopavalli, Krishna Saarivaa (var.), Krishna-muuli, Shyaamalataa.
- Siddha/Tamil** ▶ Karunannari, Makalikilanzhu.

Folk ▶ Kaalisar, Karantaa.

Action ▶ Root—demulcent, diuretic, alterative, diaphoretic; used in fevers, dyspepsia and cutaneous affections. The roots of the plant are used as a substitute for Indian sarsaparilla and are often mixed with the roots of *Hemidesmus indicus* (their therapeutic properties for use as sarsaparilla have not been established).

The root gave 2-hydroxy-4-methoxybenzaldehyde.

Alkaloids and flavonoids were present in the roots but not in the leaves and fruits. Saponins were absent in these parts. The whole plant gave *n*-butyl sorboside, kaempferol and its glucoside.

Ilex aquifolium Linn.

- Family** ▶ *Aquifoliaceae.*
- Habitat** ▶ Native to Europe; grown occasionally in gardens at hill stations.
- English** ▶ English Holly, Common Holly.
- Action** ▶ Leaves—diaphoretic, febrifuge. Used in catarrh, pleurisy, intermittent fever, smallpox and rheumatism. Also in jaundice. Berries—violently emetic and purgative; employed in dropsy. Powdered berries are used as astringent to check bleeding.

(Berries possess totally different qualities as compared to leaves.)

The plant contains ilicin (a bitter principle), ilexanthin, theobromine (only in the leaf) and caffeic acid. Alkaloid theobromine is used for asthma. In Greece, boiled leaves are used for treating enlarged prostate.

An extract of the plant caused a fatal drop in blood pressure in rats.

The ethanolic extract of the fruits yields cyanogenic glucosides.

Ilex paraguariensis St.-Hil.

Family ► *Aquifoliaceae*.

Habitat ► Native to South America; cultivated in some Indian gardens. In northern India, grows in Lucknow.

English ► Mate Tea, Yerba Mate, Paraguay Tea.

Action ► Stimulant to brain and nervous system, mild antispasmodic, eliminates uric acid. Used for physical exhaustion, rheumatism, gout and nervous headache. (A national drink of Paraguay and Brazil.) Causes purging and even vomiting in large doses.

Key application ► In physical and mental fatigue. (*German Commission E, WHO*.) In fatigue, nervous depression, psychogenic headache especially from fatigue, rheumatic pains. (*The British Herbal Pharmacopoeia*.) *German Commission E* reported analeptic, positively inotropic, positively

chronotropic, glycogenolytic, lipolytic and diuretic properties.

The leaves contain xanthine derivatives, including caffeine (0.2–2%), theobromine (0.3–0.5%), theophylline (absent in some samples), polyphenolics, tannins and chlorogenic acid, vanillin, vitamin C, volatile oil. Used in the same way as tea, due to its caffeine and theobromine content.

Mate is a world famous tea and is commonly consumed in several South American countries.

The flavour constituents exhibited moderate to weak broad-spectrum antimicrobial activity against several Gram-positive bacteria. Some components are bactericidal, particularly against the most carcinogenic bacteria, *Streptococcus mutans*.

Illicium anisatum Linn.

Family ► *Magnoliaceae; Illiciaceae*.

Habitat ► Indigenous to China.

English ► Star Anise.

Unani ► Baadiyaan (related species).

Action ► Carminative and pectoral. Used in hard, dry cough where expectoration is difficult. (Oil of Anise is distilled in Europe from the fruits of *Pimpinella anisum*.)

The seeds, though used as a substitute for Star Anise, contain toxic constituents, anisatin, neoanisatin, 6-deoxymajucin, besides pseudoanisatin and sesquiterpene lactones.

Illicium verum Hook. f.

Family ▶ *Magnoliaceae, Illiciaceae.*

Habitat ▶ Native to China. Fruits imported from China and Indo-China.

English ▶ Star Anise, Chinese Anise, Aniseed Stars.

Unani ▶ Baadyaan Khataai.

Siddha/Tamil ▶ Takkola, Anasippo.

Folk ▶ Anasphal.

Action ▶ Carminative (used for colic), stimulant, diuretic. Also used in rheumatism.

Key application ▶ In catarrhs of the respiratory tract and peptic discomforts. (*German Commission E.*)

The fruit contains a volatile oil containing *trans*-anethole 80–90%, and feniculin (14.56%), with estragole, beta-bisabolene, beta-farnesene, caryophyllene, nerolidol.

The intake of *trans*-anethole (1.0%) does not show any chronic toxicity in rats. Veranisatins, isolated from the extract, showed convulsive effect in mice. Methanolic extract exhibited a hypothermic effect in mice.

Illicium griffithii Hook. f. & Thoms. is found in Bhutan and Khasi hills at altitudes of 1,400–1,100 m. The fruit, known as Baadiyaan, is bitter and astringent, reported to be poisonous. It is used as stimulant and carminative. Essential oil resembles that from aniseed (*Pimpinella anisum* Linn.) and fennel (*Foeniculum vulgare* Mill.)

Impatiens balsamina Linn.

Family ▶ *Balsaminaceae.*

Habitat ▶ Cultivated in plains throughout India.

English ▶ Garden Balsam. (Balsam Apple is not related to *Impatiens*. It is the fruit of *Momordica balsamina*.)

Ayurvedic ▶ Tarini (provisional synonym).

Unani ▶ Gul-menhdi.

Siddha/Tamil ▶ Kasittumbai.

Action ▶ Cathartic, diuretic, antirheumatic. Flowers—used in burns and scalds.

The plant is reported to contain cyanochroic constituents, antibacterial substances and an alkaloid. The seeds contain the triterpenoid hosenkol A, the first baccharance triterpenoid from natural source. The seeds also contain a protein-associated amyloid, galactoxyloglucan and beta-sitosterol.

In China, the aerial parts are used for the treatment of articular rheumatism. In Korea, the plant is used for treating tuberculosis. In Brunei, a decoction of the root is given in irregular menstruation. In Japan, the juice, obtained from the white petals, is applied topically to treat several types of dermatitis, including urticaria.

The flowers contain flavonols, flavonoid pigments, phenolic compounds and quinones.

An ethanolic extract (35%) of flowers shows significant anti-anaphylactic activity in mice.

The methanolic extract of the whole plant exhibited strong antibacterial

activity against *Bacillus subtilis* and *Salmonella typhimurium*; antibacterial and antifungal activity has been attributed to a naphthoquinone derivative.

Imperata cylindrica Rausch.

Synonym ▶ *I. arundinacea* Cyr.

Family ▶ *Gramineae; Poaceae*.

Habitat ▶ The hotter parts of India, both in plains and hills, ascending up to 2,300 m in the Himalayas.

English ▶ Thatch Grass.

Ayurvedic ▶ Darbha, Suuchyagra, Yagnika, Yagyabhuushana, Bahir.

Siddha/Tamil ▶ Dharba.

Folk ▶ Daabh.

Action ▶ Diuretic, anti-inflammatory.

The rhizomes contain flavonoids, together with lignans, graminone A and B. A sesquiterpenoid, cylindrene, and biphenylether compounds, cylindol A and B, are also reported.

Cylindrene and graminone B show inhibitory activity on the contractions of vascular smooth muscles and aorta of rabbit respectively; while cylindol A exhibits 5-lipoxygenase inhibitory activity.

The hot aqueous extract of the rhizomes show moderate GTP activity on primary cultured rat hepatocytes intoxicated with carbon tetrachloride cytotoxicity.

The leaves and stem contain cyanochroic constituents. The roots contain antibacterial substances. The root is used in fevers but does not possess antipyretic activity.

Dosage ▶ Root—50–100 ml decoction. (CCRAS.)

Indigofera arrecta Hochst.

Family ▶ *Fabaceae*.

Habitat ▶ Cultivated in Assam, Bihar and in parts of Uttar Pradesh.

English ▶ Natal Indigo, Java Indigo, Bengal Indigo.

Ayurvedic ▶ Nili (related species).

Action ▶ See *I. tinctoria*.

Aqueous extract of the plant exhibits antihyperglycaemic activity in rats due to insulinotropic property.

The indigotin content of the plant (0.8–1.0%) is higher than that of other species of *Indigofera*. The leaves contain up to 4% of a flavonol glycoside which on hydrolysis yields rhamnose and kaempferol.

Indigofera articulata auct. non-Gouan.

Synonym ▶ *I. caerulea* Roxb.

Family ▶ *Fabaceae*.

Habitat ▶ Bihar and Western and Peninsular India.

English ▶ Egyptian Indigo, Arabian Indigo, Wild Indigo, Surat Indigo.

Ayurvedic ▶ Nili (related species).

Siddha/Tamil ▶ Aaramuri, Irup-pumuri, Kattavuri.

Folk ▶ Surmai Nila.

Action ▶ Root, leaf—bitter tonic. Seed—anthelmintic.

Indigofera aspalathoides

Vahl ex DC.

Family ▶ *Fabaceae*.**Habitat** ▶ Plains of Karnataka, Andhra Pradesh and Tamil Nadu.**English** ▶ Wiry Indigo.**Ayurvedic** ▶ Nili (related species), Shivanimba.**Siddha/Tamil** ▶ Sivanaarvembu, Iraivanvembu.**Folk** ▶ Shivanimba (Maharashtra).**Action** ▶ Antileprotic, antitumour, anti-inflammatory. Used in psoriasis and erysipelas. Ash of the burnt plant is used for dandruff. Root is used in apthae.**Indigofera enneaphylla** Linn.**Synonym** ▶ *I. linnaei* Ali.**Family** ▶ *Fabaceae*.**Habitat** ▶ The Himalayas up to 1,200 m and in plains of India.**English** ▶ Trailing indigo.**Ayurvedic** ▶ Vaasukaa.**Siddha/Tamil** ▶ Cheppunerinjil.**Folk** ▶ Hanumaan-buuti, Bhui-nila.**Action** ▶ Juice of the plant—antiscorbutic, diuretic, alterative. The plant, boiled with oil, is applied to burns. A decoction is given in epilepsy and insanity.

The plant contains two unsaturated hydrocarbons—indigoferin and enneaphyllin. The seeds contain 37.8% protein, also yield lipids (4.4%) con-

taining palmitic and oleic acid. The toxicity of the plant is attributed to a non-protein amino acid, indospicine (6-amidino-2-aminohexanoic acid). (Consumption of the plant produces a neurological syndrome, known as Birdsville disease, in horses. The toxicity is greatly reduced when the material is chopped and dried.)

The aerial parts gave 3-nitropropionyl esters of D-glucose.

Indigofera oblongifolia Forsk.**Synonym** ▶ *I. paucifolia* Delile.**Family** ▶ *Fabaceae*.**Habitat** ▶ Throughout greater parts of India.**English** ▶ Wild Indigo, Mysore Paniced Indigo.**Ayurvedic** ▶ Bana-Nila, Dill, Jhill.**Unani** ▶ Vasmaa.**Siddha/Tamil** ▶ Kattukkarchamathi.**Folk** ▶ Jhil (Gujarat).**Action** ▶ Plant—antisyphilitic. All parts of the plant are found useful in enlargement of liver and spleen.

The leaves gave apigenin 7-rhamnoglycoside, apigenin 7, 4'-diglycoside, kaempferol-3-neohesperidoside and rhoifolin, along with protocatechuic, *p*-coumaric, *p*-hydroxybenzoic, salicylic and vanillic acid.

Indigofera pulchella

Roxb. in part.

Synonym ▶ *I. cassioides* Rottl. ex DC.

Family ▶ *Fabaceae*.

Habitat ▶ The hills in India.

Ayurvedic ▶ Nili (related species).

Siddha/Tamil ▶ Nirinji.

Action ▶ Root—used for cough.

Powder of the root applied externally for muscular pain in chest.

Leaves and roots—used for swelling of the stomach.

The seeds contain crude protein 27.6, pentosans 8.9 and water soluble gum 12.8%.

Indigofera tinctoria Linn.

Family ▶ *Fabaceae*.

Habitat ▶ Cultivated in many parts of India.

English ▶ Indigo.

Ayurvedic ▶ Nilikaa, Nilaa, Nila, Nili, Nilini, Nilapushpa, Ranjani, Shaaradi, Tutthaa.

Unani ▶ Habb-ul-Neel.

Siddha/Tamil ▶ Nili, Averi, Asidai, Attipurashadam.

Action ▶ Plant—antiseptic, hepatoprotective, hypoglycaemic, nervine tonic. Used in enlargement of liver and spleen, skin diseases, leucoderma, burns, ulcers, piles, nervous disorders, epilepsy, asthma, lumbago, gout. Leaf—anti-inflammatory. Used in blennorrhagia. Root—diuretic. Used in hepatitis. Root and stem—laxative, expectorant, febrifuge, anticephalalgic, anti-tumour, anthelmintic, promote growth of hair.

The Ayurvedic Pharmacopoeia of India recommends the use of dried whole plant in phobia, delusion and disturbed mental state.

Indicine (5–15 mg/g, dry basis) and the flavonoids, apigenin, kaempferol, luteolin and quercetin are present in various plant parts, maximum in the leaves and minimum in the roots (however quercetin was minimum in leaves). The presence of coumarins, cardiac glycosides, saponins and tannins is also reported.

Alcoholic extract of the aerial parts showed hepatoprotective activity in experimental animals against CCl₄-induced hepatic injury. The extract increased bile flow and liver weight in rats. The alcoholic extract also exhibited hypoglycaemic activity in rats.

The plant is used in the treatment of endogenous depression. It contains appreciable amounts of conjugated indoxyl (indican). The use of indigo and its constituents, indirubin and indigotin, prevents allergic contact dermatitis. The 8 weeks old tissues in culture contain maximum histamine content (5.0 mg/g dry weight).

Dosage ▶ Dried leaf—50–100 g for decoction; root—48 g for decoction (*API* Vol. II); whole plant—10–20 g for decoction. (*API* Vol. III.)

Indigofera trifoliata Linn.

Synonym ▶ *I. prostrata* Willd.

Family ▶ *Fabaceae*.

Habitat ▶ Throughout greater parts of India.

Folk ▶ Vana-methi.

Action ▶ Astringent, antileucorrhoeic, antirheumatic, alterative, restorative.

The seeds contain crude protein 31.5 pentosan 7.3, water soluble gum 3.0%.

Inula racemosa Hook. f.

Synonym ▶ *I. royleana* auct. non-DC.

Family ▶ *Compositae; Asteraceae.*

Habitat ▶ Temperate and Alpine Himalayas from Chitral to Nepal at 1,500–4,200 m.

English ▶ Elecampane.

Ayurvedic ▶ Pushkaramuula, Pushkara, Paushkara, Padmapatra, Kaashmira, Kushtha-bheda.

Action ▶ Antispasmodic, stomachic, antihistaminic, expectorant, anticatarrhal. Used for asthma, chronic bronchitis and pulmonary disorders.

Key application ▶ *Inula helenium*—as expectorant. (*The British Herbal Pharmacopoeia.*)

Roots are used in Kashmir as adulterant of *Saussurea lappa*.

The root contains a volatile oil, about 1–4%; major constituents being inulin (10.0) and sesquiterpene lactones, mainly alantolactone, isoalantolactone and their dihydro derivatives. Alantolactone and others in the mixture known as helenalin (sesquiterpene lactones) are toxic constituents of the root.

Alantolactone is anti-inflammatory in animals and has been shown to stim-

ulate the immune system. It is also hypotensive and anthelmintic in animals; antibacterial and antifungal *in vitro* It irritates mucous membranes. It is used as an anthelmintic in Europe and UK.

Plant extract showed potent antispasmodic effect against bronchial spasm induced by histamine and various plant pollens.

The root, when combined with *Commiphora mukul* gum-resin, acts as a hypolipidaemic agent, exhibits beta-blocking activity and beneficial effect in myocardial ischaemia.

The roots also exhibit sedative and blood pressure lowering activity.

The European species is equated with *Inula helenium* Linn.

Dosage ▶ Root—1–3 g powder. (*API* Vol. IV.)

Ionidium suffruticosum Ging.

Synonym ▶ *Hybanthus enneaspermus* (Linn.) F. Muell.

Family ▶ *Violaceae.*

Habitat ▶ The warmer parts of India from Delhi to Bengal and throughout Deccan Peninsula.

Ayurvedic ▶ Amburuha.

Siddha/Tamil ▶ Orilaithamarai.

Folk ▶ Ratna-purush.

Action ▶ Diuretic, antigonorrhoeic and demulcent. Root—given in urinary infections, for bowel complaints of children.

The plant gave a dipeptide alkaloid, aurantiamide acetate and a triterpene, iso-arborinol, and beta-sitosterol.

Ipomoea aquatica Forsk.**Synonym** ▶ *I. reptans* Poir.**Family** ▶ *Convolvulaceae*.**Habitat** ▶ Throughout the greater part of India.**English** ▶ Swamp Cabbage.**Ayurvedic** ▶ Kalambi, Naalika.**Siddha/Tamil** ▶ Vellaikeerai, Koilangu.**Action** ▶ Emetic and purgative. Used as an antidote to arsenical or opium poisoning. Plant juice is used for liver complaints; buds for ringworm.

The leaves are a good source of minerals (2.1%), vitamins (especially, carotene and tocopherol). Plant is given for nervous and general debility. Whole plant gave beta-carotene, xanthophyll, traces of taraxanthin, hentriacontane, beta-sitosterol and its glucoside.

The buds of pigmented variety are recommended as a food for diabetics. An insulin-like substance is reported from the buds.

The stems contain *N-trans*- and *N-cis*-feruloyltyramines, which have been found to be the inhibitors of *in vitro* prostaglandin synthesis.

The plant shows abundant growth in waste water and absorbs some organic and inorganic components, including heavy metals from waste water. The plant may be useful in the treatment of waste water by biogeofiltration.

Ipomoea batatas (Linn.) Lam.**Family** ▶ *Convolvulaceae*.**Habitat** ▶ Native to tropical America; cultivated throughout India for edible tubers.**English** ▶ Sweet potato.**Ayurvedic** ▶ Mukhaaluka, Rataalu, Raktaalu, Raktapindaka, Raktakanda.**Siddha/Tamil** ▶ Sakkareivelleikulan-gu.**Unani** ▶ Shakarkand, Rataalu.**Action** ▶ Root—used in strangury, urinary discharges, burning sensation, thirst. Whole plant—used in low fever and skin diseases.

Cooked tubers contain reducing sugars 6.45, sucrose 2.23, maltose 8–64, dextrans 0.51 and polysaccharides 14–13%. Cooking increases the sweetness as a result of the hydrolysis of starch to maltose and dextrans through the action of beta-amylase.

Sweet potatoes are rich in starch content. During the storage a part of starch content is converted into reducing sugars and subsequently into sucrose. In a sample stored for 5 months, the starch content was reduced from 19.1% to 14.1% while the percentage of reducing sugars (as dextrose) and sucrose increased from 0.9 to 1.7 and 1.9 to 6.1% respectively.

Indian types with white flesh contain little or no carotene, while American types with pink flesh contain as high as 5.4–7.2 mg/100 g of carotene. Vitamins present in the tubers are : thiamine 0.09–0.14, riboflavin 0.05–0.10 and vitamin C 16–22 mg/100 g.

The hot aqueous extract of leaves exhibits significant inhibitory activity of rat lens aldose reductase (AR). Ellagic

and 3,5-dicaffoylquinic acids have been isolated as potent inhibitors.

The leaves also contain polysaccharides which increase the platelet count in experimental animals due to enhanced production of thrombopoietin.

From the stem and root, hexadecyl, octadecyl and eicosyl *p*-coumarates have been isolated.

The tubers show significant lectin activity and exhibit haemagglutinating activity in trypsinized rabbit erythrocytes.

Ipomoea bona-nox Linn.

Synonym ▶ *I. alba* Linn.

Calonyction bona-nox Bojer.

C. aculeatum (Linn.) House.

Family ▶ *Convolvulaceae*.

Habitat ▶ Throughout India.

English ▶ Moon Flower.

Ayurvedic ▶ Chandrakaanti, Gulchaandani, Dudhiaa Kalami.

Siddha/Tamil ▶ Naganamukkori.

Folk ▶ Chaandani, Dudhiaa Kalami.

Action ▶ Root bark—purgative.
Leaves—used in filariasis.

The plant contains pentasaccharide glucoside of ethyl-11-hydroxy hexadecanoate. The seeds contain alkaloids, ipomine, isoipomine, methoxyipomine, dimethoxyipomine, ipalkidinium, ipalbidine and ipalbine.

Ipomoea digitata Linn.

Synonym ▶ *I. paniculata* R. Br. Burm.
I. mauritiana Jacq.

Family ▶ *Convolvulaceae*.

Habitat ▶ Tropical India in moist regions.

English ▶ Milky Yam.

Ayurvedic ▶ Kshira-vidaari, Kshirvalli, Payasvini, Swaadukandaa, Ikshukandaa, Gajavaajipriyaa, Kandapalaasha, Bhuumikuushmaanda.

Siddha ▶ Paalmudukkan kizhangu.

Folk ▶ Bilaaikanda. Bhuin Kakhaar (Orissa).

Action ▶ Cholagogue, galactagogue, alterative, demulcent, purgative.
Resin from root—uses similar to Jalap. Flour of raw rhizome is given in enlargement of liver and spleen, also for menorrhagia, debility and fat accumulation.

Rhizomes gave taraxerol acetate and beta-sitosterol. Fresh leaves contain 6.3 mg/100 g of carotene.

Vidaari is equated with *Pueraria tuberosa* DC. (*Fabaceae*). Dry pieces of *Dioscorea pentaphylla* Linn. are sold as Vidaari Kanda.

Dosage ▶ Tuber—3–6 g powder.
(CCRAS.)

Ipomoea eriocarpa R. Br.

Synonym ▶ *I. hispida* Roem. & Schult.
I. sessiliflora Roth.

Family ▶ *Convolvulaceae*.

Habitat ▶ Throughout India.

Ayurvedic ▶ Aakhukarni (related species), Sheetavalli (provisional synonym).

Folk ▶ Nikhari, Bhanwar (Punjab).

Action ▶ Antirheumatic, anticephalalgic, antiepileptic and antileprotic.

The plant is boiled in oil and used as an application for rheumatism, headache, epilepsy, fevers, ulcers, leprosy. The seeds are reported to contain a resin similar to that present in the seeds of *Ipomoea nil*.

***Ipomoea hederacea* (L.) Jacq.**

Synonym ▶ *Convolvulus hederacus* Linn.

Family ▶ *Convolvulaceae*.

Habitat ▶ North American species. Not found wild in India. Grown in Indian gardens.

Folk ▶ Krishna-bija, Kaalaadaanaa. Kakkattan (Tamil Nadu). Jirki (Andhra Pradesh).

Action ▶ Seed—purgative. Used as a substitute for Jalap (*Exogonium purga*).

The seed gave alkaloids—lysergol, chanoclavine, penniclavine, *iso*-penniclavine and elymoclavine.

***Ipomoea marginata* (Desr.) Verdc.**

Family ▶ *Convolvulaceae*.

Habitat ▶ Throughout India in the plains, especially on the bank of stream and rivers.

Ayurvedic ▶ Lakshmana (Also equated with *Ipomoea obscura*

(Linn.) Ker-Gawler.), Putradaa, Putrajanani.

Folk ▶ Tirutaalli (Kerala).

Action ▶ Used as a single drug for curing sterility in women, and for promoting fertility and virility.

The seeds of *Ipomoea obscura* contain non-ergolin type indole alkaloids, ipobscurine A and B and serotonin also alkaloid ipobscurine C.

***Ipomoea muricata* (Linn.) Jacq., non-Cav.**

Synonym ▶ *I. turbinata* Lag. *Convolvulus muricatus* Linn.

Family ▶ *Convolvulaceae*.

Habitat ▶ The Himalayas, West Bengal, Bihar, Orissa, Maharashtra and South India.

English ▶ Traveller's Midnight Lilies.

Ayurvedic ▶ Krishnabija (related species). (Sold as Kaalaadaanaa, seeds of *Ipomoea nil*.)

Siddha/Tamil ▶ Kattu Talai.

Folk ▶ Michaa.

Action ▶ Purgative, febrifuge. Seeds—cardiac depressant, spasmolytic, hypotensive, antibacterial, antifungal. Plant juice destroys bedbugs.

The seeds contain resin glycosides which are laxative. Lysergol is also present in the seeds. It exhibits hypotensive, psychotropic, analgesic, and uterus and intestine-stimulating properties. The presence of indole alkaloids is reported in the seed.

Ipomoea nil (Linn.) Roth

Synonym ▶ *I. hederacea* auct., non-Jacq.

Convolvulus bilobatus Roxb.

Convolvulus nil Linn.

Family ▶ *Convolvulaceae*.

Habitat ▶ Throughout India; also occurs as a weed.

English ▶ Pharbitis seeds.

Ayurvedic ▶ Antah-kotarpushpi, Kaalaanjani (provisional synonym), Krishnabija, Kaalaadaanaa, Shyaamabija, Shankhani, Jhaara-maaricha.

Unani ▶ Kaalaadaanaa.

Siddha/Tamil ▶ Kaakkattan.

Action ▶ Purgative and blood-purifier. A substitute for Jalap. Seeds—antifungal.

The seeds from Pakistan contain alkaloids—lysergol, chanoclavine, peniclavine, isopeniclavine and elymo-clavine. Also contain 14.2% resin and glucosides.

Commercial samples of the drug contain 14–15% of crude resinous matter. Research has shown that glycosidal part of the resin is inert; the non-glycosidal resin (2% of the drug) causes copious purgation in doses of 250 mg. Besides the resinous matter, the seeds contain a fixed oil (12.4%) and small amounts of saponin, mucilage and tannin.

The flowers of the plant contains anthocyanin pigments.

The plant extract exhibited hypoglycaemic activity in rats.

Dosage ▶ Seed—3–6 g powder. (CCRAS.)

Ipomoea pes-caprae (Linn.) Sweet.

Synonym ▶ *I. biloba* Forsk.

Family ▶ *Convolvulaceae*.

Habitat ▶ Near sea, especially on the West Coast.

English ▶ Goat's Foot Creeper.

Ayurvedic ▶ Chhagalaantri, Mar-yaada-valli.

Siddha/Tamil ▶ Adambu, Attukkal, Musattalai.

Action ▶ Astringent, stomachic, laxative, antidiarrhoeal, antiemetic, analgesic. Leaf—diuretic, anti-inflammatory. Used in colic, prolapsus ani; externally in rheumatism. Essential oil of leaves—antagonistic to histamine. Leaf extract is used for different types of inflammations including injuries caused by poisonous jelly-fish.

Clinical trials have proved that an extract (IPA) inhibited the action of jelly-fish toxins. Its topical application inhibited carrageenan-induced paw and ear oedema induced by arachidonic acid or ethyl phenylpropionate in rats. The crude extract of leaves also show inhibitory effect on prostaglandin synthesis *in vitro*.

Crude extract (IPA) of the leaves has also been shown to antagonize smooth muscle contraction induced by several agonists via non-specific mechanism. Antispasmodic isoprenoids,

beta-damascenone and E-phytol have been isolated from the extract. The antispasmodic activity was found to be in the same range as that of papaverine.

The alcoholic extract of leaves showed insulinogenic and hypoglycaemic activities in rats, comparable to the hypoglycaemic drug chlorpropamide.

The leaves and seeds contain indole alkaloid. Plant also contains a steroid, an amide, pentatriacontane, triacontane, volatile oil and behenic, melissic, butyric and myristic acids.

Ipomoea petaloidea Choisy.

Synonym ► *Operculina petaloidea* Choisy.

Family ► *Convolvulaceae*.

Habitat ► Throughout India; ascending to 300 m.

Ayurvedic ► Shyaamaa, Chhaa-galaantri, Vriddhadaaraka, Vriddhadaaru. *Argyreia nervosa* (Burm. f.) Boj., synonym *A. spiciosa* Sweet, *Convolvulaceae*, is equated with Vriddhadaaru and Vriddhadaaruka, while *Ipomoea petaloidea* and *I. pes-caprae* are also known by identical synonyms. *Operculina turpethum*, synonym *I. turpethum* is used as a substitute for *I. petaloidea*.

Unani ► Shaaraf.

Siddha ► Nilapoosani.

Folk ► Bidhaaraa, Nishoth (black var.)

Action ► Purgative. Used as a supporting herb for diseases of the nervous system.

Dosage ► Leaf, root—3–6 g powder; leaf juice—5–10 ml. (CCRAS.)

Ipomoea purga Hayne.

Synonym ► *I. jalapa* Scheide and Deppe.

Exogonium purga (Hayne) Benth.

Family ► *Convolvulaceae*.

Habitat ► Cultivated in the Nilgiris and Poona.

English ► Jalap.

Folk ► Jalaapaa.

Action ► Strong cathartic and purgative. Usually used with carminatives.

Resin from dried root (commercial jalap) contains beta-D-quinovoside of 11-OH-tetradecanoic acid. The glycosidal resin is known as “convolvulin”.

Ipomoea purpurea (Linn.) Roth.

Family ► *Convolvulaceae*.

Habitat ► Native of tropical America; found throughout greater part of India, grown in gardens.

English ► Tall Morning-Glory.

Folk ► Karakatiyaa (seeds).

Action ► Purgative. Seed extract—antibacterial.

The stem contains a soft resin (4.8%), essential oil (0.08%) and tannin. The

resin is the active principle, it contains ipuranol, which is identical with sitosterol glucoside, ipurolic acid, *d*-methyl acetic acid, hydroxylauric acid and glucose.

Ipomoea quamoclit Linn.

Synonym ▶ *Quamoclit pinnata* Bojer.

Family ▶ *Convolvulaceae*.

Habitat ▶ Native to tropical America; grown as an ornamental.

English ▶ Cypress Vine, Indian Pink.

Ayurvedic ▶ Kaamalataa.

Siddha/Tamil ▶ Kembumalligai, Mayirmanikkam.

Folk ▶ Sitaakesh.

Action ▶ Powdered root is given as a sternutatory. Pounded leaves are applied to bleeding piles.

The leaves and stems are reported to contain small amounts of alkaloids. Traces of hydrocyanic acid are present also in roots, stems and flowers.

Ipomoea reniformis Choisy.

Synonym ▶ *Merremia emarginata* (Burm. f.) Hallier f.

M. gangetica (L.) Cufod.

Family ▶ *Convolvulaceae*.

Habitat ▶ In damp places in upper Gangetic plains; Bihar, Bengal, Peninsular India.

Ayurvedic ▶ Aakhuparni, Aakhuparnika, Muusaakarni, Aakhukarni. Undurukarnikaa. (Also equated with Dravanti.)

Siddha/Tamil ▶ Yelikkaadhukeerai, Perettaikkirai.

Action ▶ Deobstruent, diuretic, alterative. Used for rheumatic affections, neuralgia, headache, skin diseases and urinary affections.

Evolvulus nummularis Linn. (*Convolvulaceae*) is also known as Muusaakarni (Muusaakaani) and is used for cutaneous affections.

Ipomoea sepriaria Koen. ex Roxb.

Synonym ▶ *I. maxima* (Linn. f.) G. Don.

Family ▶ *Convolvulaceae*.

Habitat ▶ Throughout greater part of India.

Ayurvedic ▶ Banakalami, Hanumaan-Vel, Manjika. (Also equated with Lakshmanaana.)

Siddha/Tamil ▶ Thaalikeerai (Lakshmanaana of the South).

Action ▶ Juice of the plant—deobstruent, diuretic, hypotensive, uterine tonic, antidote to arsenic poisoning. Seeds—cardiac depressant, hypotensive, spasmolytic.

Ipomoea vitifolia Blume.

Synonym ▶ *Merremia vitifolia* (Burm. f.) Hallier.

Convolvulus vitifolius Burm. f.

Family ▶ *Convolvulaceae*.

Habitat ▶ Throughout warmer parts of India, except the north-western arid region.

Folk ▶ Nauli, Nawal (Maharashtra).

Action ▶ Diuretic. Used in strangury, urethral discharges.

Iris ensata Thunb.

Family ▶ *Iridaceae*.

Habitat ▶ Temperate Northwestern Himalaya at 1,500–2,700 m. and from Kashmir to Himachal Pradesh. Often grown in gardens.

Ayurvedic ▶ Paarseeka Vachaa, Haimavati, Shveta Vachaa, Baal-bach.

Unani ▶ Irsaa, Sosan, Iris.

Folk ▶ Marjal, Unarjal (Kashmir).

Action ▶ Used in diseases of the liver.

Aerial parts contain xanthone glycosides; C-glycoside of apigenin and phenolic acids. Roots contain ceryl alcohol.

Natural irones, the main constituent of Orris oil, are obtained from different species of *Iris*. The laccases, obtained from *Iris* species and other plants are used in hair cosmetic preparations, as an oxidizing agent in oxidative hair dyes and permanent hair wave-setting compositions. The root extracts of *Iris* species are used in cosmetic preparations for the prevention of skin roughness and ageing.

Iris germanica Linn.

Family ▶ *Iridaceae*.

Habitat ▶ Native of Italy and Morocco; cultivated in Kashmir, also found run wild on graves.

English ▶ Orris, Iridis Rhizome, German Iris.

Ayurvedic ▶ Paarseeka Vachaa, Haimavati, Shveta Vachaa (also considered as Pushkarmuula), Baal-bach.

Action ▶ Demulcent, antidiarrhoeal, expectorant. Extract of the leaf is used for the treatment of frozen feet.

Key application ▶ In irritable bowel, summer diarrhoea in children, in stubborn cases of respiratory congestion. (Folk medicine.) (Claims negatively evaluated by *German Commission E*: “blood-purifying,” “stomach-strengthening” and “gland-stimulating.”)

The rhizomes gave triterpenes, beta-sitosterol, alpha- and beta-amyrin and isoflavonoids; an essential oil, about 0.1–2%, known as “Orris butter,” consisting of about 85% myristic acid, with irone, ionone, methyl myristate. Isoflavonoids include irisolidone, irigenin and iridin. In volatile oil, chief constituents are *cis*-alpha and *cis*-gamma-irones. Triterpenes include iridal and irigermanal. Rhizomes also gave xanthenes C. glucosylxanthenes (*Orris* root is the root of *Iris germanica*. In homoeopathy, *Iris versicolor* is used.)

Related species ▶ *I. florentina* Linn.; *I. pallida* Lam.

Iris kemaonensis Wall.

Family ▶ *Iridaceae*.

Habitat ▶ The Himalayas from Garhwal to Arunachal Pradesh at 2,400–3,600 m.

Folk ▶ Karkar, Tezma (Punjab).

Action ▶ Diuretic, spasmolytic, febrifuge; antidote for opium addiction.

The rhizomes contain isoflavones—iridin, iriskumaonin and its methyl ether, irisfloreantin, junipegenin A and irigenin.

Isatis nepalensis D. Don.

Family ▶ *Iridaceae*.

Habitat ▶ Temperate Himalaya and in Khasi Hills.

Ayurvedic ▶ Paarseeka Vachaa.

Folk ▶ Sosan, Shoti, Chalnundar, Chiluchi.

Action ▶ Deobstruent (in bilious obstructions), diuretic, cathartic. Used in diseases of the liver.

The plant contains an isoflavone, irisolidone. Rhizomes contain irisolidone and irigenin.

Isatis pseudacorus Linn.

Family ▶ *Iridaceae*.

Habitat ▶ On river banks, by the side of lakes, ponds. Native to Great Britain.

English ▶ Yellow Flag.

Folk ▶ Paashaanabheda (Gujarat).

Action ▶ Cathartic and acrid. Used in dysmenorrhoea and leucorrhoea. Juice of the root—used for obstinate coughs and convulsions.

Rhizomes contain a glycoside, irisin, iridin or irisine, reportedly present, with myristic acid.

Isatis versicolour Linn.

Family ▶ *Iridaceae*.

Habitat ▶ In swamps. Native to America and Canada.

English ▶ Blue Flag Root, Liver Lily.

Ayurvedic ▶ Haimavati Vachaa.

Action ▶ Anti-inflammatory, astringent, cholagogue, laxative, diuretic, antiemetic, blood and lymph purifier, alterative for sluggish conditions of liver, gallbladder and glandular system.

Key application ▶ As laxative. (*The British Herbal Pharmacopoeia*.)

The rhizomes contain a volatile oil; a glycoside, iridin; acids including salicylic and isophthalic; a monocyclic C31 triterpenoid; sterols, gum, resin. Irisin is the toxic constituent of the resin. It irritates the mucous membrane, liver and pancreas.

The drug is contraindicated in pregnancy. The root powder is toxic at 2 g and fluid extract at 3.7 ml.

Isatis tinctoria Linn.

Family ▶ *Crucifere; Brassicaceae*.

Habitat ► Native to Afghanistan and Western Tibet. Now cultivated as an ornamental.

English ► Dyer's Woad.

Action ► Plant—used in the form of an ointment for ulcers, oedematous and malignant tumours. Leaves—antimicrobial, antifungal.

The aerial parts yield tryptanthrin, indole-3-acetonitrile and *p*-coumaric acid methylester.

The roots contain anti-blood platelet aggregation constituents, uridine, hypoxanthine, uracil and salicylic acid together with indigo, palmitic acid and beta-sitosterol.

In China, tablets made from the leaves and roots of *Isatis tinctoria* and *Artemisia scoparia* have been found to be effective in treating hepatitis B patients.

Ixora coccinea Linn.

Family ► *Rubiaceae*.

Habitat ► South-western Peninsular India. Cultivated throughout India.

English ► Jungleflame *Ixora*.

Ayurvedic ► Bandhuka, Paaranti.

Siddha/Tamil ► Vetchi, Thechii.

Folk ► Rukmini, Rangan.

Action ► Herb—astrigent, antiseptic, blood-purifier, sedative, antileucorrhoeic, antidiarrhoeal, anti-catarhal. Used in dysmenorrhoea, haemoptysis, bronchitis. Root—astrigent, antiseptic (used against scabies and other skin

diseases). Flowers—prescribed in dysentery and dysmenorrhoea.

The saponifiable fraction of the petroleum ether extract of roots exhibited anti-inflammatory activity in carrageenan-induced paw oedema in albino rats.

The leaves contain a triterpenoid, lupeol, which shows anti-inflammatory activity. The crude alcoholic extract and the ethyl acetate fraction exhibited antigenic activity.

The flowers contain an essential oil (0.5%) which possesses antimicrobial activity. Flower contain leucocyanidin glycoside.

The plant substrate removes heavy metals, such as lead, cadmium and mercury from polluted water.

Ixora pavetta Andr.

Synonym ► *I. Parviflora* Vahl.

Family ► *Rubiaceae*.

Habitat ► West Bengal, Bihar, Western Central and South India.

English ► Torchwood Tree.

Ayurvedic ► Nevaari, Nevaali, Ishwara, Rangan.

Siddha/Tamil ► Shulundu-kora, Korivi.

Action ► Flowers—pounded with milk, for whooping cough. Bark—a decoction for anaemia and general debility. Fruit and root—given to females when urine is highly coloured. The leaves contain ixoral and beta-sitosterol. Leaves and flowers gave

flavonoids—rutin and kaempferol-3-rutinoside; stems gave a flavone glycoside, chrysin 5-O-beta-D-xylopyranoside. The aerial parts contain 6,7-dimethoxycoumarin. The seed oil gave capric, lauric, myristic, palmitic, stearic, arachidic, behenic, oleic and linoleic acids.

***Ixora javanica* (Blume) DC.**

Family ▶ *Rubiaceae*.

Habitat ▶ Gardens of Kerala and West Bengal.

Action ▶ Leaves, flowers—cytotoxic, antitumour.

The ethanolic, extract of leaves showed cytotoxic activity against Dalton's lymphoma, Ehrlich ascites carcinoma and Sarcoma 180 tumour cells in vitro. The flowers have been found to contain antitumour principles, active against experimentally induced tumour models.