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INDIAN HERBAL MEDICINES USED FOR TREATMENT OF DEMENTIA: AN OVERVIEW

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ABSTRACT

Dementia is a progressive neurological disease of the brain. It demolishes the vital brain cells, causing trouble with memory, thinking, and behavior, brutal enough to affect work, lifelong hobbies, and social life. Recognized factors in dementia include acetylcholine deficiency, free radicals, and inflammation of the brain tissue. Since, the drugs and natural remedies have been prescribed to enhance the memory and protect the memory functioning in dementia people. The traditional herbal medicine, numerous plants have been used to treat age related cognitive disorders.The use of herbs to treat ailments would later form a large part of Ayurveda.In the first millennium BCE, there emerges in post-Vedic India the traditional medicine system known as Ayurveda, meaning the "complete knowledge for long life". According to the compendium of Charaka, the Charakasamhita health and disease are not predetermined and life may be prolonged by human effort. The compendium of Suśruta, the Suśrutasamhitā defines the purpose of medicine to cure the diseases of the sick, protect the healthy, and to prolong life. Most remarkable is Sushruta's penchant for scientific classification His medical treatise consists of 184 chapters, 1,120 conditions are listed, including injuries and illnesses relating to ageing and mental illness. Dementia is a progressive neurological disease of the brain. It demolishes the vital brain cells, causing trouble with memory, thinking, and behavior, brutal enough to affect work, lifelong hobbies, and social life. Recognized factors in dementia include acetylcholine deficiency, free radicals, and inflammation of the brain tissue, It is syndrome or set of symptoms and signs occur at the same time is due to a disease in the brain. It is progressive impairment of memory, thinking, and orientation, learning capacity, language and judgments. Dementia occur due to the cerebral ischemia, energy failure, and

calcium over load, glutamate mediated exitotoxicity, oxidative stress and structural and functional changes.

KEY WORDS: Herbs, Dementia,Neurological,Acetyl cholinesterase,cerebral ischemia.

INTRODUCTION

Dementia is a term that describes the loss of cognitive function, usually because of damaged brain cells as it includes memory loss and at least one of the following, difficulty with language, impaired movement, and inability to plan and initiate appropriate behaviors socially or at work.[1]Dementia is a progressive neurological disease of the brain. It demolishes the vital brain cells, causing trouble with memory, thinking, and behavior, brutal enough to affect work, lifelong hobbies, and social life. Since, the drugs and natural remedies have been prescribed to enhance the memory and protect the memory functioning in dementia people. The traditional herbal medicine, numerous plants have been used to treat age related cognitive disorders. Which are today popular all over the world due to their proven effective qualities. The drugs acting on the brain are called as nootropic drugs. The natural memory enhancing drugs controlled the activity of acetyl cholinesterase (AChE). AChE modulates acetylcholine (ACh) to proper levels by degradation accordingly excessive AChE activity produce to constant Ach deficiency leads to memory and cognitive impairments. This natural agent inhibits the excessive AChE activity and protects the people suffering from dementia. The Indian medicinal plants are the most prolific sources for treatment of dementia. This review focuses on natural Indian medicinal plants used for treating and curing the dementia.Herbal therapy may provide an alternative to treating some psychiatric conditions. According to the American Psychiatric Association, approximately 10-25% of women and 5-12% of men will suffer from depression at some point in their lives.[2]More than humens are suffer from brain disorders including dementia.[2] It is syndrome or set of symptoms and signs occur at the same time is due to a disease in the brain. It is progressive impairment of memory, thinking, and orientation, learning capacity, language and judgments.Dementia occur due to the cerebral ischemia, energy failure, calcium over load, glutamate mediated exitotoxicity, oxidative stress and structural and functional changes. [3]Plants having a more important value in human life since the ancient times, and for the Indians, plants are more valuable than the all world. Plants are used since the ancient times for food, stick as well as medicine. Plants helps to saving and maintain the healthy life, and that’s region plant may be as a god worship.Plants have been a source of medicine and a major resource for health care

since ancient times, with some traditional herbal medicines in use for more than 5,000 years.[4]The history of medicine in India can be traced to the remote past. The earliest mention of medicinal use of plants is found in the Rigveda, probably the oldest repositories of human knowledge written between 4500 and 1600 b.c. The Atharvaveda also contain prescriptions of herbs for various ailments. The use of herbs to treat ailments would later form a large part of Ayurveda.In the first millennium BCE, there emerges in post-Vedic India the traditional medicine system known as Ayurveda, meaning the "complete knowledge for long life".[5] According to the compendium of Charaka, the Charakasamhita, health and disease are not predetermined and life may be prolonged by human effort. The compendium of Suśruta, the Suśrutasamhitā defines the purpose of medicine to cure the diseases of the sick, protect the healthy, and to prolong life. . Most remarkable is Sushruta's penchant for scientific classification: His medical treatise consists of 184 chapters, 1,120 conditions are listed, including injuries and illnesses relating to ageing and mental illness.[6]

What is dementia?

Dementia is a descriptive term derived from the Latin, originally meaning “madness” from “root de men’s” (meaning de – ‘without’ + ment, the root of mens “mind”) indicating on observable decline in mental abilities.[7]It is chronic and progressive syndrome characterised by decline in mental functioning in which memory thinking, judgment and ability to concentrate are impaired. There also may be a change in personality. In commonly dementia develop more in women than the men, Dementia isn't an acute condition that suddenly appears, and it usually does not require emergency treatment, but it can develop suddenly when a severe injury, disease or toxin destroys brain cells, or it can develop slowly, especially in senior citizens.[8]

Signs and Symptoms

- Reduces the ability to learn.
- Loss of reason, retain, or recall of past experience.
- Loss of patterns of thoughts, feelings and activities.
- Additional mental and behavioral problems.
- Behavior may be disorganized, restless or inappropriate.
- Some people become restless or wonder about by day and sometimes at night.
- There may be a sudden change to tears or anger (‘’a catastrophic reaction’’).
- Suffers to deny that relatives, even relatives in their immediate family, are their relatives.

- Depression affects 20-30% of people who have dementia, about 20% have anxiety.
- Cognitive dysfunction of shorter duration is called “delirium”.
- Especially in later stage of the condition, subjects may be disoriented in time (not knowing the day, week, or even year) in place (not knowing where they are), and in person (not knowing who they and/or others around them are). [9]

CLASSIFICATION OF DEMENTIA

Dementia is yet not classified in specific manner, and different-different scientist & researchers classified in different – different types that are.[10]

CORTICAL AND SUBCORTICAL

CORTICAL

- Alzheimer’s disease
- Pick’s disease
- Binswanger’s
- Creutzfeldt Jakob disease
- Paralytic dementia

SUBCORTICAL

- Huntingtons’s disease
- Parkinsons disease
- AIDS

PRIMARY & SECONDARY

PRIMARY

Alzheimer's Disease

Pick’s disease

Vascular disease

Lewy body dementia

Huntington’s disease

Parkinson’s disease

Paralytic dementia

TRADITIONAL HERBAL MEDICINES USE FOR TREATMENT OF DEMENTIA

S. No	Common	Botanical name	Chemical	Uses
1	Palash	Butea monosperma (Fabaceae)	Triterpenflavonoids, butein, butin, isobutrin, coreopsis, isocoreopsin, sulphurein, monospermoside,	Antimicrobial activity,Antiinflammatory activity, antihepatotoxic, Anticonvulsive, Antidiabetic, Diarrhoea, Alzheimer disease. [52,53]
2	Ashwagandha	Withania somnifera (Solanaceae)	alkaloids and steroidal lactones	Tumors, tubercular glands, ulcer.
3	Gaach-munga & agasti.	Sesbania grandiflora (Fabaceae)		Diuretic, laxative, antipyretic, bitter tonic, diarrhea, dementia.
4	Beech wood & Gmelina	Gmelia arborea (Lamiaceae)	Alkaloids, saponins, carbohydrate, phenolic, tannins, anthraquinone.	Stomachic, laxative, antihelmintic, fevers, ulcers, dementia
5	Nardin & muskroot	Spikenard (Valerianaceae)	tannins, volatile oil, and diterpene acids	Coughs, women enduring menstrual disorders, pulmonary infection, loss of memory.
6	Wild carrot	Daucus carota (Apiaceae)	Flavonoids, volatile oi, pinene, asparagines,	Flaworing agent, persistent diarrhea, maintence of memory, lung cancer.
7	Almond	Prunus amygdalus (Rosaceae)	Amygdalin glycoside	Kidneystones, constipation, laxative, emollient, dementia.
8	Mate, Yerba mate,	Ilex paraguariensis (Aquifoliaceae)	xanthines ,caffeine theobromine,theophylline	Antioxidants, improve the immune system, burns, dementia.
9	Maca	Lepdium meyenii (Brassicaceae)	fats carbohydrates protein calcium and potassium	Favorable mood, anxiety, sperm motility
10	Sesame & Sesame seed	Sesamum indicum (Pedaliaceae)	lignans pinoresinol and lariciresinol	physiological activities, Antioxidant, prolong youth and beauty, improve memory.
11	Ginger	Zingiber officinale (Zingiberaceae)	volatile oil, starch, fat citral, Geranial	Stomachin, carminative, flavouring agent, maintence of memory.

12	Basil Sweet Basil	Ocimum basilicum (Lamiaceae)	Pinene,eugenol, linalool, Camphor, cineole, estragol	Memory/focus, longevity tonics, antioxidant,antifungal, carminative.[53,54,55]
13	Blueberries & blueberry	Viccinium (Ericaceae)	Vitamin C, Calcium, Copper Iron, Cyanidin, Delphinidin, Malvidin, Epicatechin, Myricetin, Quercetin	Gout, longevity tonics,memory/focus, antioxidant.
14	Club Moss	Lycopodium clavatum (Lycopodiaceae)	Alkaloids ,lycopodine, clavatine, clavatoxine, nicotine,flavonoids apigenin, triterpenes	Memory/focus.
15	Tulasi	Ocimum tenuiflorum (Lamiaceae)	Ascorbic-acid, beta-carotene, beta-sitosterol, carvacrol, eugenol	Colds, congestion, memory/focus, nausea, antibacterial, antitussive.
16	Vinca & Periwinkle	Catharathus roseus (Apocynaceae)	Vincamine, vanillic-acid, ursolic acid vinblastine, vindoline, vincristine	Diarrhea,hypertention, memory/focus, antibacterial,anticancer, carminative.
17	Brahmi	Baccopamonnieri (plantaginaceae)	Bacosides A, bacosides B	Improve memory capacity, improve cognitive ability.[55,56]
18	Sessile	Alternanthera sessilis(Amaranthaceae)	carotenoids,triterpene ,saponins,flavonoids, steroids stigmasterol, β-sitosterol	Diuretic, tonic and cooling, hair oils, improve memory.
19	Calamus & rush	Acorus calamus (Acoraceae)	Triploid, tetraploid A, eugenol.	Perfume industry, flavoring agent, improve memory capacity.
20	Pippali & Piper longum	Long pepper (Piperaceae)	Alkaloids, piperine, piplartine, piplasterol	Bronchitis, stomach-ache, spleen tumours.
21	Sankh Pushpi	Convolvus plricaulis (Convolvulaceae	coumarins, flavonoids, alkaloids,	Insomnia, fatigue, low energy level, loss of memory.
22	Aconite & monkshood	Aconitum (Ranunculaceae)	Terpenoid, aconitine	Cold, fever, pneumonia, asthama, loss of memory.
23	Mandukaparni	Centella asiatica (Mackinlayaceae)	0. 1 % essential oils, volatile oil, asiatic acid madecassic acid asiaticosid,asiaticoside A" tcrminolic acid,asiaticoside B	Antibacterial, anti-inflammatory, anxiolytic, wound healing, balance memory.
24	Liquorice	Glycyrrhiza glabra (Fabiaceae)	saponins, glycosides, coumarins, flavonids.	Asthama, digestive system, inflammation, ulceration, loss of memory.[56,57]

25	Guduchi	Tinospora cardiofollia (Menispermaceae)	Diterpene,Polyphenols,Polysaccharides	gout, jaundice,rheumatism, tuberculosis, Dementia
26	Aamla	Phyllanthusemblica (Phyllanthaceae)	vitamin C, emblicanin A, emblicaninB,phyllanemblinin flavonoids	Enhance digestion, constipation, fever, cough, asthama, enhance intellect.[57,58,59]
27	Punarnava	Boerhavia diffusa (Nyctaginaceae)	Punarnavine, alkaloid,	Diuretic,antibacterial, antioxidant,
28	Wild castor & wild croton	Baliospermum montanum (Eupharbiaceae	Alkaloids,phenols,carbohydrates, tannins, steroids, saponins,flavonoids, cardiac glycosides,proteins,terpenoids, resins	Constipation,ulcers, swellings,asthama,memory/focus
29	Palash	Butea monosperma (Fabaceae)	Triterpene, flavonoids, butein, butin, isobutrin, coreopsin, isocoreopsin, sulphurein,monospermoside	Antimicrobial activity, Anti inflammatory activity,antihepatotoxic,Anticonvulsive,Antidiabetic,Diarrhoea, Alzheimer disease.[60,61]

SECONDARY

Alcoholic dementia

Vitamin deficiency

Infection disease

Creutzfeldt-Jkob disease

Metabolic disorders

Pseudodementia

Brain tumor

REVERSIBLE & IRREVERSIBLE

REVERSIBLE

- Normal pressure hydrocephalus
- Wernicke-Korsakoff syndrome

IRREVERSIBLE

- Alzheimer's disease (AD)
- Vascular dementia (VaD)
- Lewy body dementia
- Fronto-temporal dementia (FTD)

INDIAN HERBAL MEDICINES BEST CHOICE OF DEMENTIA DISEASE

BACOPA MONNIERI

Synonyms

Indian Pennywort, Gratiolamonnieria, Bacopamonnieri, water hyssop, brahmi, thyme-leafed gratiola.

Scientific classification

Kingdom	Plantae
Order:	Lamiales
Family:	Plantaginaceae
Genus:	Bacopa
Species:	B. monnieri

Fig1.structureof Bacopa Monnieri

Description

Bacopamonnieri (waterhyssop, brahmi, thyme-leafed gratiola, water hyssop) is aperennial, creeping herb whose habitat includes wetlands and muddy shores. Brahmi is also the name given to Centellaasiatica, particularly in North India, and Kerala where it is also identified in Malayalam as muttil or kodakan. This identification of brahmi,as C. Asiatica has been in use for long in northern India, C. asiaticaas a synonym of brahmi, although that may be a case of mistaken identification that was introduced during the 16th century.[12]The leaves of this plant are succulent and relatively thick. Leaves are oblanceolate and are arranged oppositely on the stem. The flowers are small and white, with four or five petals. Its ability to grow in water makes it a popular aquarium plant. It can even grow in slightly brackish conditions. Propagation is often achieved through cuttings.[13]

Chemical constituents

Alkaloids (Brahmine And Herpestine),Saponins (D-Mannitol And Hersaponin, Acid A, And Monnierin), Flavonoids (Luteolin And Apigenin), Betulic Acid, Stigmasterol, Beta-Sitosterol.

Uses

Antioxidant, improve memory capacity, improve cognitive ability, inhibiting lipoxygenase activity.[15]

ALTERNANTHERA SESSILIS

Synonyms

Sessile, joyweed, and dwarf coppe rleaf.

Scientific classification

Kingdom:	Plantae
Order:	Caryophyllales
Family:	Amaranthaceae
Genus:	Alternanthera
Species:	A. sessilis

Fig2.Structureof Alternanthera Sessilis

Description

This is a perennial herb with prostrate stems, rarely ascending, often rooting at the nodes. Leaves obovate to broadly elliptic, occasionally linear-lanceolate, 1-15 cm long, 0.3-3 cm wide, glabrous to sparsely villous, petioles 1-5 mm long. Flowers in sessile spikes, bract and bracteoles shiny white, 0.7-1.5 mm long, glabrous; sepals equal, 2.5-3 mm long, oute ones 1-nerved or indistinctly 3-nerved toward base; stamens 5, 2 sterile. In the wild it flowers from December till March. On careful observation you will notice that flowers of Alter nantherasessilis are situated over the stem and their shape is round. As its flowers look like the eyes of a fish, Alternantherasessilis is called Matsyakshi, fisheyed. Other Indian names of this plant are Koypa (Marathi), Honganne (Kannada). Leaves along with the flowers and tender stems are used as vegetable in Karnataka. It is diuretic, tonic and cooling. Juice of this plant, deemed beneficial to eyes, is an ingredient in the making of medicinal hair oils and

Kajal (kohl). The red variety of this plant is a common garden hedging plant, which is also used as a culinary vegetable.

Chemical constituent

Carotenoids, triterpene ,saponins ,flavonoids, steroids, stigmasterol, β-sitosterol.

Uses

Diuretic, tonic and cooling. Juice of this plant, deemed beneficial to eyes, making of medicinal hair oils and Kajal (kohl).[16]

ACORUS CALAMUS

Synonyms: Sweet Flag, Calamus, rush and sedge.

Scientific classification

Kingdom:	Plantae
Order:	Acorales
Family:	Acoraceae
Genus:	Acorus
Species:	A. calamus
Kingdom:	Plantae

Fig 3. Structure AcorusCalamus

Botanical information

The tetraploid form Acoruscalamus var. angustatus is native throughout Asia, from India to Japan and the Philippines and from Indonesia to Siberia.[18]

Chemical constituent

Both triploid and tetraploid A. calamus contains alpha-asarone. Other phytochemicals include: Beta-asarone, and eugenol.

Use

In the perfume industry, flavor for pipe tobacco, bitter tonocs, improve memory capacity, sedative, laxative,diuretic, carminative.[19]

LONG PEPPER

Synonyms

Piper longum, Pippali, and Indian long pepper, pippali large, catkins (Big).

Scientific classification

Kingdom:	Plantae
Order:	Piperales
Family:	Piperaceae
Genus:	Piper
Species:	P. longum

Fig 4.structure of Long Pepper

Description

In India it is found in Bengal, Bihar, Annamaliai district of Tamilnadu and Cherapunji in Assam. It can be cultivated from sea level upto an altitude of 1000 meters. It is perennial crop. Temperature variation from 10˚ to 35˚ C is tolerated by plant.Thecolour of long pepper is pale brown to dark brown, odour- aromatic spicy, taste- hot and sweet taste, size – 2 to 5 cm in length 0.4 to 0.5 cm in diameter, and shape is circular and elongated.

Chemical constituents

It consists of alkaloids piperine, piplartine and piplasterol (about 6%), 1% essential oil and pungent resin. Large variety contains not less than 1.0% while small variety contains not less than 0.4% of piperine.

Uses

It is widely used in ayurvedic and Unani medicines, especially in diseases of respiratory tract. The roots are used for bronchitis, stomach – ache, diseases of spleen and tumours. It improves appetite. It is also used in pickles.[20]

CONVOLVULUS PLURICAULIS

Synonyms: SankhPushpi, Shankhini, Kambumalini, Samkhapushpi, Sankaphuli.

Scientific classification

Kingdom:	Plantae
Order:	Solanales
Family:	Convolvulaceae
Genus:	Convolvulus
Species:	C. pluricaulis

Fig 5. Structure of Convolvulus pluricaulis

Description

Convolvulus pluricaulis is a perennial herb that seems like morning glory. Its branches are spread on the ground and can be more than 30 cm long.The flowers are blue in color (5mm) and the leaves, which are elliptic in shape (2mm), are located at alternate positions with branches orflowers. Known as Aloe weed in English, the herb is commonly found in India, especially in the state of Bihar. All the parts of the herb are known to possess therapeutic benefits. It is believed to be the only herb that is capable of enhancing all the aspects related to brain power, such as learning, memory and the ability to recall. However, its popularity stems from its ability to treat insomnia effectively

Chemical constituents

Chemical studies of whole plant have shown the presence of glycosides, coumarins, flavonoids and alkaloids. Shankhapushpine, (the alkaloid) has been identified as active principle. B. sitosterol glycoside, HydroxyCinnamic acid, Octacosanoltetracosane along with glucose, sucrose also have been isolated from the plant.

- Shankhapushpine
- Convolamine
- Scopoletin
- Ceryl alcohol
- β-sitosterol
- Sodium, Potassium Zinc, Manganese ,Copper ,Iron and Magnesium

The root also tends to contain fatty acids (mostly palmitic, myristic, and linoleic acid) [8]

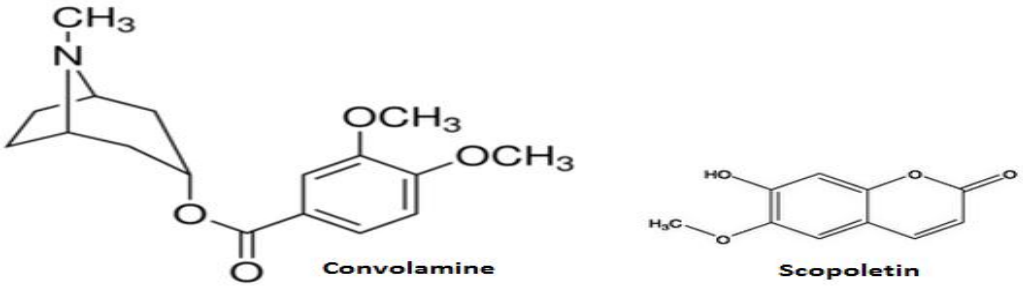

Fig 6.Structure of convolamine and scopoletin

Uses

Shankpushpi is used traditionally to treat nervous debility, insomnia, fatigue, low energy level, fever, loss of memory, brain tonic, psychostimulant and tranquilizer.[21]

ACONITUM

Synonyms

The queen of poisons, aconite, monkshood, wolf's bane, leopard's bane, women's bane, devil's helmet orblue rocket.

Scientific classification

Kingdom:	Plantae
Order:	Ranunculales
Family:	Ranunculaceae
Genus:	Aconitum

Fig 7.Structure of Aconitum

Description

The dark green leaves of Aconitum species lack stipules. They are palmate or deeply palmately lobed with 5–7 segments. Each segment again is 3-lobed with coarse sharp teeth. The leaves have a spiral (alternate) arrangement. The lower leaves have long petioles. Dissected flower of Aconitum vulparia, showing the nectaries the tall, erect stem is crowned by racemes of large blue, purple, white, yellow or pinkzygomorphic flowers with numerous stamens. They are distinguishable by having one of the five petaloid sepals (the posterior one), called the galea, in the form of a cylindrical helmet; hence the English name monkshood. There are 2–10 petals, in the form of nectaries. The two upper petals are large. They are placed under the hood of the calyx and are supported on long stalks. They have a hollow spur at their apex, containing the nectar. The other petals are small and scale-like or

non-forming. The 3–5 carpels are partially fused at the base. The fruit is an aggregate of follicles, a follicle being a dry many-seeded structure.

Chemical constituents

Aconite contains 0.3-2% terpenoid alkaloids, principally aconitine.[24, 23]

Uses

In treatment of colds, pneumonia, quinsy, laryngitis, croup, and asthma, and fever, appendicitis, pain, and in loss of memory.[25]

CENTELLA ASIATICA

Synonyms

Thankuni, Mandukaparni, Kodangal.

Scientific classification

Kingdom:	Plantae
Order:	Apiales
Family:	Mackinlayaceae
Genus:	Centella
Species:	Centellaasiatica

Fig 8.Structure of Centellaasiatica

Description

Centellaasiatica grows in tropical swampy areas. The stems are slender, creepingstolons, green to reddish-green in color, connecting plants to each other. It has long-stalked, green, reniform leaves with rounded apices which have smooth texture with palmately netted veins. The leaves are borne on pericladial petioles, around 2 cm. The rootstock consists ofrhizomes, growing vertically down. They are creamish in color and covered with root hairs. The flowers are pinkish to red in color, born in small, rounded bunches (umbels) near the surface of the soil. Each flower is partly enclosed in two green bracts. The hermaphrodite flowers are minute in size (less than 3 mm), with 5-6 corolla lobes per flower. Each flower bears five stamens and two styles. The fruit are densely reticulate, distinguishing it from species of Hydrocotyle which have smooth, ribbed or warty fruit. The crop matures in three months, and the whole plant, including the roots, is harvested manually.[26, 27, 28]

Chemical constituents

0.1 % essential oils and other volatile constituents, asiatic acid madecassicacid asiaticosideasiaticoside A" tcrminolic acid, asiaticoside B.

Uses

Antibacterial, antiviral, anti-inflammatory, antiulcerogenic, anxiolytic, nervine and vulnerary, and can act as a cerebral tonic, a circulatory stimulant, and a diuretic, wound healing , leprosy, balance memory.[29]

GLYCYRRHIZA GLABRA

Synonyms: Glycyrrhizaglandulifera,Liquorice or licorice

Scientific classification

Kingdom:	Plantae
Order:	Fabales
Family:	Fabaceae
Genus:	Glycyrrhiza
Species:	G. glabra

Fig 9. Structure of Glycyrrhizaglabra

Description

It is a herbaceous perennial, growing to 1 m in height, with pinnate leaves about 7–15 centimeters (3–6 in) long, with 9–17 leaflets. The flowers are 0.8–1.2 cm (½–⅓ in) long, purple to pale whitish blue, produced in a loose inflorescence. The fruit is an oblong pod, 2–3 centimetres (1 in) long, containing several seeds.[30]

Chemical constituents

Licorice contains saponins, glycosides, estrogenic substances, coumarins, flavonids, choline, asparaqine, volatile oil, glabridin, isoflavene glabrene.

Uses

Asthama, inflammation, gastritis, peptic ulceration, and excessive acid problems, stimulates the adrenal glands, Kidney cancer, tooth decay, toxic shock syndrome, addiction, thyroid cancer, viral infection, loss of memory.[31]

TINOSPORA CORDIFOLIA

Synonyms

Guduchi, Amritavalli, amrta,

Scientific classification

Kingdom:	Plantae
Order:	Ranunculales
Family:	Menispermaceae
Genus:	Tinospora
Species:	T. cordifolia

Fig 10. Structure of Tinospora Cordifolia.

Description

Tinosporacordifolia, which is known by the common name Guduchi, is an herbaceousvine of the family Menispermaceae indigenous to the tropical areas of India, Myanmar and Sri Lanka.The plant is a glabrous climbing shrub found throughout India, typically growing in deciduous and dry forests. The leaves are heart shaped. The succulent bark is creamy white to grey in color, with deep clefts spotted with lenticels. It puts out long, slender aerial roots, and is often grown on mango or neem trees. Flowers are yellow, growing in lax racemes from nodes on old wood. Fruits are drupes, turning red when ripe.[32]

Chemical constituents

The active adaptogenic constituents are diterpene compounds, polyphenols, and polysaccharides, including arabinogalactan polysaccharide (TSP).

Uses

Reducing the hepatotoxicity, tuberculosis, Escherichia coli, gout, jaundice, and rheumatism. [33, 34]

PHYLLANTHUS EMBLICA

Synonyms

Indian gooseberry, aamla, amalika, Emblicaofficinalis

Scientific classification

Kingdom:	Plantae
Order:	Malpighiales
Family:	Phyllanthaceae
Genus:	Phyllanthus
Species:	P. emblica

Fig 11. Structure Of Phyllanthusemblica

Description

The tree is small to medium in size, reaching 8 to 18 m in height, with a crooked trunk and spreading branches. The branchlets are glabrous or finely pubescent, 10–20 cm long, usually deciduous; the leaves are simple, subsessile and closely set along branchlets, light green, resembling pinnate leaves. The flowers are greenish-yellow. The fruit is nearly spherical, light greenish yellow, quite smooth and hard on appearance, with six vertical stripes or furrows.Ripening in autumn, the berries are harvested by hand after climbing to upper branches bearing the fruits. The taste of Indian gooseberry is sour, bitter and astringent, and it is quite fibrous.[35]

Chemical constituents

contain high amounts of ascorbic acid (vitamin C), 445 mg/100g, ellagitanninssucas emblicanin A(37%), emblicaninB (33%), punigluconin (12%)and pedunculagin (14%). It also contains punicafolin and phyllanemblininA, phyllanemblin other polyphenol flavonoids, kaempferol, ellagic acid and gallic acid.[36,37]

Uses

Enhance digestion, constipation, and antipyretic, purify the blood, reduce cough, alleviate asthma, stimulate hair growth, and enhance intellect.[38]

BOERHAVIA DIFFUSA

Synonyms

Punarnava, red spiderling, spreading hogweed, tarvine.

Scientific classification

Kingdom:	Plantae
Order:	Caryophyllales
Family:	Nyctaginaceae
Genus:	Boerhavia
Species:	B. diffusa

Fig12. Structure of Boerhavia diffusa

Description

Boerhaviadiffusa is widely dispersed, occurring throughout India, the Pacific, and southernUnited States. This wide range is explained by its small fruit, which are very sticky and grow a few inches off the ground, ideally placed to latch on to small migratory birds as they walk by.[39]

Chemical constituents: Punarnavine, alkaloid.

Uses

Protect eyesight, diuretic, diabetics, antibacterial, antioxidant and hepatoprotective, anticancer, antiestrogenic, immunomodulatory, and antiamoebic, promyelocytic leukemia, cardioprotective, enhance memory.[40,41,42]

BALIOSPERMUM MONTANUM

Synonyms:

Jatropha Montana, Baliospermumaxillare, Baliospermumsolanifolium, wild castor, wild croton and wild sultan seed.

Scientific classification

Kingdom:	Plantae
Order:	Malpighiales
Family:	Euphorbiaceae
Genus:	Baliospermum
Species:	Baliospermummontanum

Fig 13. Structure of Baliospermummontanum

Description

Baliospermummontanum is a stout under-shrub 0.9-1.8m in height with herbaceous branches from the roots. Leaves are simple, sinuate-toothed, upper ones small, lower ones large and sometimes palmately 3-5 lobed. Flowers are numerous, arranged in axillary racemes with male flowers above and a few females below. Fruits are capsules, 8- 13mm long and obovoid. Seeds are ellipsoid smooth and mottled.[43]

Chemical constituent

Alkaloids, phenols, carbohydrates, tannins, steroids, saponins, flavonoids, cardiac glycosides, proteins, terpenoids, resins, and glycosides.

Uses

In constipation, abdominal pain, general anasarca, piles, calculus, helminthic infections, suppurative ulcers, swellings, asthma, snakebite, anti-hypertensive, anti-dontalgic, purgative, tonic, anodyne, digestive, acrid, thermogenic, anthelmintic, diuretic, febrifuge, diaphoretic, rubefacient and antiinflammatory.[44]

BUTEA MONOSPERMA

Synonyms

Palash, Dhak, Palah, Flame of the Forest, Bastard Teak, Parrot Tree, Keshu, and Kesudo.

Fig 14. Structure of Buteamonosperma

Description

It is a medium sized dry season-deciduous tree, growing to 15 m tall. It is a slow growing tree, young trees have a growth rate of a few feet per year. The leaves are pinnate, with an 8–16 cm petiole and three leaflets, each leaflet 10–20 cm long. The flowers are 2.5 cm long, bright orange-red, and produced in racemes up to 15 cm long. The fruit is a pod 15–20 cm long and 4–5 cm broad.[45]

Chemical constituents

Triterpene, flavonoids, butein, butin, isobutrin, coreopsin, isocoreopsin, sulphurein, monospermoside, and isomonospermoside, chalcones,aurones, isobutyine, palasitrin, Myricyl alcohol, stearic, palmitic, arachidic and lignoceric acids, glucose, fructose, histidine, aspartic acid, alanine and phenylalanine.

Uses

Antifungal activity, antimicrobial activity, antibacterial activity, Anti-inflammatory activity, antihepatotoxic, Anticonvulsive activity, Antidiabetic activity, Wound healing activity, Diarrhoea, Alzheimer disease.

WITHANIA SOMNIFERA

synonyms

Ashwagandha, winter cherry, Physalissomnifera, Withaniakansuensis Kuang.

Scientific classification

Kingdom:	Plantae
Order:	Solanales
Family:	Solanaceae
Genus:	Withania
Species:	W. somnifera

Fig15. Structure of Withaniasomnifera

Description

This species is a short shrub growing 35 to 75 centimeters tall. Tomentose branches extend radially from a central stem. The flowers are small and green. The ripe fruit is orange-red.Withaniasomnifera is cultivated in many of the drier regions of India, such as Mandsaur District of Madhya Pradesh, Punjab, Sindh, Gujarat,and Rajasthan. It is also found in Nepal.

Chemical constituents

The main constituents of ashwagandha are alkaloids and steroidal lactones. Among the various alkaloids, withananine is the main constituent. The other alkaloids are somniferine, somnine, somniferinine, withananine, pseudo-withanine, tropine, pseudo tropin.

Uses

Tumors, tubercular glands, carbuncles, and ulcers.[46]

SESBANIA GRANDIFLORA

Synonyms

Aeschynomenegrandiflora, Agatigrandiflora,agati or hummingbird tree, gaach-munga, agasti.

Scientific classification

Kingdom:	Plantae
Order:	Fabales
Family:	Fabaceae
Genus:	Sesbania
Species:	S. grandiflora

Fig 16. Structure of Sesbaniagrandiflora

Description

It is a fast-growing tree, leaves are regular and rounded and the flowers white and red in color according to its species. The fruits look like flat, long and thin green beans. The tree thrives under full exposure to sunshine and is extremely frost sensitive.Its a small soft wooded tree up-to 3-8m, leaves 15–30 cm long; leaflets 10-20 pairs or more and an odd one. Oblong, 1.5-3.5 cm long variety red, 7.5–10 cm long in lax, 2-4 flower racemes, calyx campanulate, shallowly 2-lipped. Pods slender, falcate or straigh, 30–45 cm long, suture thick, Seeds ca. 30, to 8mm.[47]

Chemical constituents

It contain arginine, cysteine, histidine, isolcucine, phenylalanine, tryptophan, valine, threonine, alanine, aspargine, aspartic acid, oleanolic acid, galactose, Rhamnose&glucuronic acid.[48]

Uses

Leaves used as tonic, diuretic, laxative, antipyretic, chewed to disinfect mouth and throat. Flower in headache, dimness of vision, Catarrh, Headache, cooling and improving appetite, bitter, astringent, acrid, antipyretic. Bark is used for cooling, bitter tonic, anthelmintic, febrifuge, diarrhea, Small pox, dementia.[48, 49]

GMELINA ARBOREA

Synonyms

Beech wood, Gmelina, Goomar teak, Kashmir tree, Malay beechwood, gamhar, khamara, khumbhari, sewan.

Scientific classification

Kingdom:	Plantae
Order:	Lamiales
Family:	Lamiaceae
Genus:	Gmelina
Species:	G. arborea

Fig 17. Structure of Gmelinaarborea

Description

Gmelinaarborea is a fast growing tree, which grows on different localities and prefers moist fertile valleys with 750–4500 mm rainfall. It does not thrive on ill-drained soils and remains stunted on dry, sandy or poor soils; drought also reduces it to a shrubby form. The Gmelinaarborea tree attains moderate to large height up to 30 m with girth of 1.2 to 4 a chlorophyll layer just under the outer bark, pale yellow white inside. Gmelinaarborea wood is pale yellow to cream coloured or plukish-buff when fresh, turning yellowish brown on exposure and is soft to moderately hard, light to moderately heavy, lustrous when fresh, usually straight to irregular or rarely wavy grained and medium course textured. Flowering takes place during February to April when the tree is more or less leafless whereas fruiting starts from May onwards up to June. The fruit is up to 2.5 cm long, smooth, dark green, turning yellow when ripe and has a fruity smell.This tree is commonly planted as a garden and an avenue tree; growing in villages along agricultural land and on village community lands and wastelands. It is light demander, tolerant of excessive drought, but moderately frost hardy. It has good capacity to recover from frost injury. Gamhar trees coppices very well with vigorous growth. Saplings and young plants need protection from deer and cattle.[50]

Geographical source

In India, Gmelinaarborea occurs extensively from the Ravi eastwards in the sub-Himalayantracts, common throughout Assam and adjoining areas of northern West Bengal, also in southern Bihar and Odisha, sporadically found in western and southern India and

planted elsewhere on a large scale. Gamhar most commonly occurs in West Bengal forests in mixed forests.[51]

Chemical constituents

Alkaloids, saponins, carbohydrate, phenolic, tannins, anthraquinone.

Uses

Stomachic, galactagogue laxative and antihelmintic, abdominal pains, burning sensations, fevers, headache, ulcers, leprosy, diuretic, growth of hairs, snakebite.[52]

SPIKENARD

Synonyms

Nardostachysjatamansi, Nard, nardin, muskroot,

Scientific classification

Kingdom:	Plantae
Order:	Dipsacales
Family:	Valerianaceae
Genus:	Nardostachys
Species:	N. jatamansi

Fig 18. Structureof Spikenard

Description:

Spikenard is a flowering plant of the Valerian family that grows the Himalayas of Nepal, China, and India. The plant grows to about 1 m in height and has pink, bell-shaped flowers. It is found in the altitude of about 3000–5000 meters. Spikenard rhizomes (underground stems) can be crushed and distilled into an intensely aromatic amber-colored essential oil, which is very thick in consistency. Nard oil is used as a perfume, an incense, a sedative, and anherbal medicine said to fight insomnia, birth difficulties, and other minor ailments. Lavender (genus Lavandula) was also known by the ancient Greeks as nardos, nard, after the Sanskrit 'narada', or 'nalada'. The scent of spikenard attracts cats, a strange phenomenon in itself.[53]

Chemical constituents

Spikenard contains tannins, volatile oil, and diterpene acids.

Uses

Coughs and skin complaints, women enduring menstrual disorders or prolapsed uteruses, pulmonary infection, heal wounds, burn injuries and swellings, loss of memory.[53]

DAUCUS CAROTA

Synonyms

Wild carrot, bird's nest, bishop's lace, Queen Anne's lace,

Scientific classification

Kingdom:	Plantae
Order:	Apiales
Family:	Apiaceae
Genus:	Daucus
Species:	D. carota

Fig19. Structure of Daucuscarota

Description

Daucuscarota is a biennial plant that grows a rosette of leaves in the spring and summer, while building up the stout taproot that stores large amounts of sugars for the plant to flower in the second year. As the plant grows, the bases of the cotyledon are pushed apart. The stem, located just above the ground, is compressed and the internodes are not distinct. When the seed stalk elongates, the tip of the stem narrows and becomes pointed, extends upward, and becomes a highly branch edinflorescence. The stems grow to 60–200 cm (20–80 in) tall. Most of the taproot consists of parenchymatous outer cortex (phloem) and an inner core (xylem). High-quality carrots have a large proportion of cortex compared to core. Although a completely xylem-free carrot is not possible, some cultivars have small and deeply pigmented cores; the taproot can appear to lack a core when the colour of the cortex and core are similar in intensity. Taproots typically have a conical shape, although cylindrical and round cultivars are available. The root diameter can range from 1 cm (0.4 in) to as much as 10 cm (4 in) at the widest part. The root length ranges from 5 cm (2.0 in) to 50 cm (20 in), although most are between 10 and 25 cm (4 and 10 in). [54]

Chemical constituents

Flavonoids, and a volatile oil including asaronecarotol, pinene, sugars, pectin, carotene, vitamins, minerals, and asparagines, porphyrins,

Uses

Flavoring agent, intestinal parasites, persistent diarrhea, improve eyesight, maintence memory, Altitude sickness, Wrinkles, Lung cancer.[55]

PRUNUS AMYGDALUS

Synonyms

Almond, Prunusdulcis, Amygdaluscommunis, Amygdalusdulcis, Badam,

Scientific classification

Kingdom:	Plantae
Order:	Rosales
Family:	Rosaceae
Genus:	Prunus
Species:	P. amygdalus

Fig 20. Structure of Prunusamygdalus

Description

The almond is a deciduous tree, growing 4–10 metres (13–33 ft) in height, with a trunk of up to 30 centimetres (12 in) in diameter. The young twigs are green at first, becoming purplish where exposed to sunlight, then grey in their second year. The leaves are 3–5 inches long, with a serrated margin and a 2.5 cm (1 in) petiole. The flowers are white to pale pink, 3–5 cm (1–2 in) diameter with five petals, produced singly or in pairs and appearing before the leaves in early spring. Almonds begin bearing an economic crop in the third year after planting. Trees reach full bearing five to six years after planting. The fruit matures in the autumn, 7–8 months after flowering.

Chemical constituents

Amygdalin glycoside.

Uses

Gallstones, kidney stones, and constipation, dry skins, laxative, emollient, demulcent, pectoral, and nutritive, anti tumor properties, anti anxiety, treatment of dementia,[56,57,58]

ILEX PARAGUARIENSIS

Synonyms

Yerba mate, erva-mate, mate.

Scientific classification

Kingdom:	Plantae
Order:	Aquifoliales
Family:	Aquifoliaceae
Genus:	Ilex
Species:	I. paraguariensis

Fig 21. Structure of Ilex paraguariensis

Description

Yerba mate, Ilex paraguariensis, is a shrub when young and a tree when adult, and grows up to 15 metres (49 ft) tall. The leaves are evergreen, 7–11 cm long and 3–5.5 cm wide with a serrated margin.The flowers are small, greenish-white, with four petals. The fruit is a red drupe 4–6 mm in diameter.[59]

Chemical constituents

Mate contains three xanthines, caffeine, theobromine and theophylline, the main one being caffeine.

Uses

Antioxidants, improve the immune system, detoxify the body, relieve allergies, reduce the risk of diabetes and hypoglycemia, burns more calories, reduce the risk of heart attacks and strokes, increases mental energy and focus, improves mood, and promotes a deeper sleep, however sleep may be affected in people who are sensitive to caffeine.[60, 61]

LEPIDIUM MEYENII

Synonyms

Lepidiumperuvianum, maca, maca-maca, maino, ayakchichira, and ayakwillku.

Scientific classification

Kingdom:	Plantae
Order:	Brassicales
Family:	Brassicaceae
Genus:	Lepidium
Species:	L. meyenii

Fig22. Structure of Lepidiummeyenii

Description

The growth habit, size, and proportions of maca are roughly similar to those of the radish and the turnip, to which it is related. The green, fragrant tops are short and lie along the ground. The thin, frilly leaves sprout in a rosette at the soil surface, not growing more than 12 to 20 cm in height. The off-white, self-fertile flowers are borne on a central raceme, and are followed by 4–5 mm siliculate fruits, each containing two small (2-2.5 mm) reddish-gray ovoid seeds.[62]

Chemical constituents

Composition is 60-75% carbohydrates, 10-14% protein, 8.5% dietary fiber, and 2.2% fats. calcium and potassium, the essential trace elements iron, iodine, copper, manganese, and zinc as well as fatty acidsincluding linolenic acid, palmitic acid, and oleic acids, and 19 amino acids.

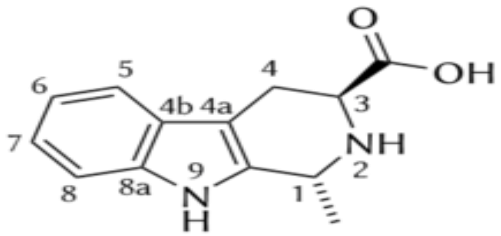

Fig23. Structure of (1R, 3S)-1-Methyltetrahydro-carboline-3-carboxylic acid

Uses

Favorable effects on energy and mood, decrease anxiety, improve sexual desire, improve sperm production, sperm motility, and semen volume .[63, 64]

LEPIDIUM MEYENII

Synonyms

Sesame, Sesame seed

Scientific classification

Kingdom:	Plantae
Order:	Lamiales
Family:	Pedaliaceae
Genus:	Sesamum
Species:	S. indicum

Fig24. Structure of Lepidiummeyenii

Description

An annual plant growing 50 to 100 cm (1.6 to 3.3 ft) tall, with opposite leaves 4 to 14 cm (1.6 to 5.5 in) long with an entire margin; they are broad lanceolate, to 5 cm (2 in) broad, at the base of the plant, narrowing to just 1 cm (0.4 in) broad on the flowering stem.The flowers are yellow, tubular, 3 to 5 cm (1.2 to 2.0 in) long, with a four-lobed mouth. The flowers may vary in colour with some being white, blue or purple. Sesame fruit is a capsule, normally pubescent, rectangular in section and typically grooved with a short triangular beak. The length of the fruit capsule varies from 2 to 8 cm, its width varies between 0.5 to 2 cm, and the number of loculi from 4 to 12.[64]

Chemical constituents

Sesame seeds contain the lignans pinoresinol and lariciresinol.

Uses

Beneficial physiological activities, Antioxidant, prolong youth and beauty, improve memor.[64, 65]

ZINGIBER OFFICINALE

Synonyms

Ginger, ginger root, ardraka, black ginger, chiang, nagara, race ginger, sunthi

Scientific classification

Kingdom:	Plantae
Order:	Zingiberales
Family:	Zingiberaceae
Genus:	Zingiber
Species:	Z. officinale

Fig25. Structure ofZingiberofficinale

Description

The ginger has a slender stem; ginger is a perennial plant, about 24 to 39 inches in height. Compared the second and following stems, the first stems are lengthier and also bear beautiful and fragrant flowers. The ginger flowers are greenish yellow and streaked with purple down the sides. Dark green ginger leaves are characterized by a famous midrib that is sheathed at the growing base. The seeds of the ginger appear in the rate fruiting body. The underground stem of the ginger is the most familiar part of the plant and it is extensively used for commercial as well as domestic purposes. Often mistakenly called the root of the ginger, the irregular shape and size of the underground section of the stem is most importent part of this herbs- the plant stores food reserves in this underground stem. More than 35% of the world's production is from India.

Chemical constituents

Ginger consists of volatile oil (1-4%), starch (40-60%), fat (10%), fiber (5%), inorganic material (6%), residual moisture (10%) and acrid resinous matter (5-8%). Geranial and citral, oleo-resin, ginger oil constituted of monoterpene hydrocarbons, and sesquiterpenes hydrocarbons.

Uses

Ginger is used as a stomachin, carminative, stimulant and flavouring agent. Ginger oil is used in mouth washes, ginger beverages and liquors, motion sickness, enhanced gastric motility, maintence of memory.[66]

OCIMUM BASILICUM

Synonyms: Basil, Sweet Basil, Thai Basil, or Sweet Basil.

Scientific classification

Kingdom:	Plantae
Order:	Lamiales
Family:	Lamiaceae
Genus:	Ocimum
Species:	O. basilicum

Fig26. Structure of Ocimumbasilicum

Description

Basil is one of the best loved culinary herbs for good reason. Basil improves appetite and like other herbs in the mint family it settles the stomach, improves appetite and is a natural disinfectant. Basil is known for its many varieties, many with distinct aromas that come from different qualities in their essential oils contained in the leaves. The strong clove scent of sweet basil comes from eugenol, the citrus scent of lemon basil and lime basil comes from a higher portion of the aldehyde citral and limonene, which gives actual lemon peel its scent. African blue basil has a strong camphor smell because it has camphor and camphene in higher proportions. Anise basil contains anethole, the same chemical that makes anise smell like licorice, and in fact is sometimes called anise basil.

Chemical constituents

Camphor, cineole, estragol, (or methyl chavicol), eugenol, linalool, pinene, rosmarinic acid.

Uses

Insect/flea Bites, Longevity Tonics, Memory/Focus, Warts. Antioxidant, Antispasmodic, Aromatic, Carminative, Cephalic, Diaphoretic/sudorific, Digestive, emetic, Emmenagogue, Febrifuge, Galactagogue Nervine, Refrigerant, Stimulant, Stomachic. Air Fresheners, Aromatherapy, Culinary/Kitchen, Facial Care, Insect Repellent.[67]

VACCINIUM

Synonyms

Blueberries, blueberry, huckleberry, ligonberry, Vacciniumcorymbosum.

Scientific classification:

Kingdom:	Plantae
Order:	Ericales
Family:	Ericaceae
Genus:	Vaccinium
Species:	Vacciniumspp

Fig27. Structure of Vaccinium

Description

Plants of this group typically require acidic soils, and as wild plants they live in habitats such as heath, bog and acidic woodland (for example, blueberries under oaks or pines). The plant structure varies between species – some trail along the ground, some are dwarf shrubs, and some are larger shrubs perhaps 1 to 2 m (3 to 7 ft) tall. The fruit develops from an inferior ovary, and is a berry; it is usually brightly coloured, often being red or bluish with purple juice.. The metabolism and photosynthetic parameters of Vaccinium can also slightly alter in winter-warming experiments.

Chemical constituents

Vitamin C Thiamin Riboflavin Niacin Pantothenic acid Vitamin B Folate Vitamin A, Vitamin E, Calcium, Copper Iron, Magnesium, Cyanidin, Delphinidin, Malvidin, Peonidin, Petunidin, Epicatechin, Myricetin, Quercetin.

Uses

It is used in treatment of Gout, Longevity Tonics, memory/Focus, Nutrition, it has a antioxidant properties.[68, 69]

LYCOPODIUM CLAVATUM

Synonyms

club moss ,wolf s claw ,huperziaserrata,wolf s –foot clubmoss,stage's –horn clubmoss orgroundpin .

Scientific classification

Kingdom:	Plantae
Order:	Lycopodiales
Family	lycopodiaceae
Genus	Clavatum
Species:	Lycopodiumclavatum

Fig 28. Structure of Lycopodiumclavatum

Description

It is a spore-bearing vascular plant, growing mainly prostrate along the ground with stems up to 1 m long; the stems are much branched, and densely clothed with small spirally-arranged leaves. The leaves are 3–5 mm long and 0.7–1 mm broad, tapered to a fine hair-like white point. The branches bearing spore cones turn erect, reaching 5–15 cm above ground, and have fewer leaves than the horizontal branches. The spore cones are yellow-green, 2–3 cm long and 5 mm broad. The horizontal stems produce roots at frequent intervals along their length, allowing the stem to grow indefinitely along the ground. The stems superficially resemble small seedlings of coniferous trees, though it is not related to these.

Chemical constituents

Alkaloids including lycopodine, clavatine, clavatoxine, nicotine, polyphenolic acids including dihydrocaffeic, flavonoids including apigenin, triterpenes.

Uses

The spores of this moss, "Lycopodium powder", are explosive if present in the air in high enough densities. They were used as flash powder in early photography, Chinese, memory/Focus.[70, 71]

OCIMUM TENUIFLORUM

Synonyms

Holy Basil, Tulsi, Tulasi, Indian Basil, Ocimumtenuiflorum.

Scientific classification

Kingdom:	Plantae
Order:	Lamiales
Family:	Lamiaceae
Genus:	Ocimum
Species:	O. tenuiflorum

Fig 29. Structure of Ocimumtenuiflorum

Ocimumtenuiflorum

Ocimumtenuiflorum, also known as Ocimum sanctum, Holy basil, or tulasī, is an aromatic plant in the family Lamiaceae which is native throughout the Eastern World tropics and widespread as a cultivated plant. It is an erect, much branched subshrub, 30–60 cm tall with hairy stems and simpleopposite green or purple leaves that are strongly scented. Leaves have petioles and are ovate, up to 5 cm long, usually slightly toothed. The flowers are purplish in elongate racemes in close whorls. The two main morphotypes cultivated in India and Nepal are green-leaved (Sri or Lakshmi tulasi) and purple-leaved (Krishna tulasi). Tulasi is cultivated for religious and medicinal purposes, and for its essential oil. It is widely known across South Asia as a medicinal plant and an herbal tea, commonly used in Ayurveda, and has an important role within the Vaishnavite tradition of Hinduism, in which devotees perform worship involving holy basil plants or leaves.

Chemical constituents

Ascorbic-acid, beta-carotene, beta-sitosterol, carvacrol, eugenol, linoleic-acid, methyl-chavicol, oleic-acid, mucilage, palmitic-acid, saponins, stearic-acid, tannin.

Uses

Ayurvedic, colds, congestion, flu, memory/focus, nausea, stress, adaptogens, antibacterial, antitussive, carminative, demulcent, diaphoretic, diuretic, emetic, laxative, insect repellent, stomachic.[72,72]

CATHARANTHUS ROSEUS

Synonyms

Periwinkle, lesser periwinkle, myrtle, vinca, catharanthus, vincarosea, Bigleaf Periwinkle, Large Periwinkle, Greater Periwinkle and Blue Periwinkle.

Scientific classification

Kingdom:	Plantae
Order:	Gentianales
Family:	Apocynaceae
Genus:	Vinca
Species:	Catharanthusroseus

Fig 30. Structure of Catharanthus Roseus

Description

Catharanthusroseus is a trailing vine, spreading along the ground and rooting along the stems to form dense masses of groundcover individually 2-5 m across and scrambling up to 50-70 cm high.The leaves are opposite, nearly orbicular at the base of the stems and lanceolate at the apex, 3-9 cm long and 2-6 cm broad, glossy dark green with a leathery texture and an entire but distinctly ciliate margin, and a hairy petiole 1-2 cm long. The flowers are hermaphrodite, axillary and solitary, violet-purple, 3-5 cm diameter, with a five-lobed corolla. The calyx surrounding the base of the flower is 10–17 millimetres (0.39–0.67 in) long with hairy margins. The flowering period extends from early spring to autumn.

Chemical constituents

Vincamine, vanillic-acid, ursolic acid, p-coumaric-acid, beta-sitosterol, reserpine, tannin, vinblastine, vindoline, vincristine.

Uses

Diarrhea, hypertention, memory/focus, menorrhagia, antibacterial, anticancer, antispasmodic, carminative, cephalic, coagulant /hemostatic, depurative, diuretic, sedative.[73, 74]

CONCLUSION

Herbs may play a promising role in the early treatment of Dementia and other conditions involving poor memory and dementia. One of the chief benefits is that they have a low toxicity compared to pharmaceutical agents. another beneficial thing is that plants are shows very less interaction with other plants than the pharmaceutical agents, mostly time we view plants or vegetable are improve body immune system thus less chances to develop diseases. When plants are used for treatment of any disease, than they cure that particular disease along with the treat some minor or major type of other diseases, it is generally not seen in case of

allopathic drug. There is no reason why botanicals cannot be used adjunctively with drugs, or other complementary approaches such as SAMe, fish oil, and antioxidant vitamins. A review of the literature indicates that the Indian medicinal plants are the most prolific source for treatment of dementia. Therefore, if clients have family members with a history of dementia, or other states involving poor memory, they may start taking these remedies prior to the onset of symptoms, to delay or possibly prevent the advent of the symptoms. baccopamonneiri is a native plant with rasayna properties and the main ingredient in this preparation for a disease – free life with long lasting youth, great vigour and no dementia. The study directly reviewed and documented information on over Indian medicinal plant species with links to age relating disease.

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