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Sacred medicinal plants of India

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Abstract
Plants have long been utilised for therapeutic purposes. Most of these plants are regularly utilized by the public to treat common ailments, and some of them have religious significance. These practices are an important aspect of the Indian healthcare system, which can be seen throughout the country. Because they are high in medicinal secondary metabolites and oil, sacred plants is a valuable source of pharmaceuticals in both traditional and modern medicine. In India, around 3000 plant species have been identified as having therapeutic properties and are employed in traditional medical systems such as Homeopathy, Yunani, Siddha and Ayurveda. The remedies are made from all parts of the plant, including the leaves, stem, bark, root, flower, seed, etc. We've taken sacred medicinal plants from the north, south, east, and west of India, together with their botanical descriptions and therapeutic components has been discussed in this paper.

Keywords: Sacred medicinal plants, therapeutic purposes, ayurveda

1. Introduction
Plants are often regarded as one of the most important sources of medicinal substances. Medicinal plants are extensively used across the world, they constitute towards substantial resource base for traditional medicine, the herbal business and to source of livelihood and health security for a large portion of the global population. If look around the world's population, almost 60% uses traditional medicines. These are utilised for primary health care not only in impoverished countries' rural areas but also in rich countries where modern medicines are the norm [1].

According to a survey by the World Health Organization (WHO), across the world nearly 80% population relies on traditional forms of medicine (primarily plant-based) to address their basic healthcare needs. It is also estimated that medicinal plants account for approximately 40% of the pharmaceutical industry [2].

The use of plants as a source of medicine has been passed down through the generations and is an essential part of India's healthcare system. India is the world's largest producer of medicinal plants and is properly known as the botanical garden of the world [3]. In India, approximately 3000 plant species are recognised for therapeutic characteristics and are utilized in our ancient medical systems, such as Ayurveda, Yunani, Siddha, and Homeopathy, among others. The entire plant or various parts such as the leaves, stem, bark, root, flower, seed, etc are utilized for medication formulations. The Ayurvedic system has roughly 250,000 registered medical practitioners (total for all traditional systems: approximately 291,000), compared to approximately 700,000 for the medical system. In rural India, 70% of the population relies on the Ayurvedic system of medicine [4].

These herbs and plants are revered in various places of India and by various religions. In India, plant worship has been practised for centuries. It's the most ancient form of worship. All ancient communities throughout the world have documented tree worship. From the beginning of time, some plants have been revered in India.

For example, wherever the tulsi grows, from the Indo-Gangetic plains to the Indian Ocean's coastlines at Kanyakumari, it takes pride of place in the house's central courtyard and is meticulously nurtured. The tulsi plant has several medical benefits in addition to the intricate mythology that links it to Lord Krishna. The leaves are used widely in Ayurvedic medicine to prevent colds, headaches, stomach ailments, and even heart problems. It was declared as sacred to safeguard and honour this plant with so many medical benefits, a fitting tribute to its role in delivering crucial treatment [5].

Many sacred species are high in therapeutic secondary metabolites and oils which makes these species important source of pharmaceuticals in both traditional as well as modern medicine [6].

They are exploited in a variety of treatments because of their biocompatibility as well as their lower cost, efficacy, and global availability [7]. According to Rigveda, using plants as a source of medical properties is a very old concept. In Ayurveda, various qualities of plants as a source of medicine were investigated in detail, which laid the foundation of all medical studies, after many years [8].

This article emphasizes on various sacred plants found across India in Northern, Southern, Western and Eastern regions and their description with medicinal importance. The article has four sections based on Indian geographical regions and in each section five most important sacred plants with medicinal benefits are discussed which are commonly occurring in that geographical region of India as summarized in Table 1.

Table 1: Sacred medicinal plants from the northern, southern, eastern, and western regions of India.

S. No.	Medicinal Plant	Common name	Family	Ref.
		Eastern India		
1.	*Piper longum*	Pippli, Saturikki	Piperaceae	[9]
2.	*Anthocephalus cadamba*	Nipa, Kadamba	Rubiaceae	[13]
3.	*Ficus benghalensis*	Banyan Tree, Bargad	Moraceae	[16]
4.	*Rubia cordifolia*	Maddar, Manjishtha	Rubiaceae	[18]
5.	*Paris polyphylla*	Himalayan paris, Apuk, Stuwa	Melanthiaceae	[22]
		Western India		
6.	*Elaeocarpus ganitrus*	Rudraksh	Elaeocarpacea	[28]
7.	*Datura innoxia*	Dhatura	solanaceae	[35]
8.	*Lawsonia inermis*	Henna, Mehndi	Lytthraceae	[42]
9.	*Phyllanthus emblica*	Amla	Phyllanthaceae	[46]
10.	*Tridax procumbens*	Coatbuttons, Ghamra	Asteraceae	[52]
		Northern India		
11.	*Eugenia caryophyllus*	Clove, Loung	Myrtaceae	[58]
12.	*Santalum album*	Indian Sandalwood, Chandan	Santalaceae	[59]
13.	*Aegle marmelos*	Stone apple, Golden apple, Japanese bitter orange, Bael	Rutaceae	[64]
14.	*Crocus sativus*	Saffron, Kesar	Iridaceae	[68]
15.	*Elettaria cardamomum*	Elaichi, Green cardamom	Zingiberaceae	[72]
		Southern India		
16.	*Rauwolfia serpentina*	Snakeroot, Sarpagandha	Apocynaceae	[78]
17.	*Aloe vera*	First aid plant	Solanaceae	[82]
18.	*Nelumbo nucifera*	Lotus	Solanaceae	[88]
19.	*Cannabis Sativa*	Hemp	Cannabinaceae	[91]
20.	*Cocus nucifera*	Coconut	Arecaceae	[96]

2. Eastern India

*Piper longum (*Fig.1) (common name Pippli or Pepper) is a slender, aromatic climber with numerous leaves which are ovate, dentate and dark in colour. Its roots are creeping and jointed. It has a yellow monoecious flower and long fruit which is red when ripens and turns black when dried [9]. In Ayurveda, it is identified as “Trikatu” or “Grahniroga " due to its medicinal nature which can cure almost 1500 diseases. It is widely distributed in eastern India mainly in Assam hills Arunachal Pradesh and the lower hills of Bengal [10]. The major constituent of the fruit is piperine and others are protein, saponins, alkaloids, carbohydrates, and amygdalin. The essential oil within the fruit has antifungal, insecticidal and antimicrobial effects. Piperine has effects on the respiratory system thus used in treating asthma, clearing the throat and along with honey it can treat hiccups. This helps boost the reproductive system like in the expulsion of the placenta. The fruit can enhance digestion, assimilation, and metabolism of the food we eat. It can strengthen the nervous system, is used in inflammation and tines up the urinary system. They have a sedative effect and are used in epilepsy, also can treat insomnia. They can treat chronic malaria, viral hepatitis, anorexia and anaemia [11].

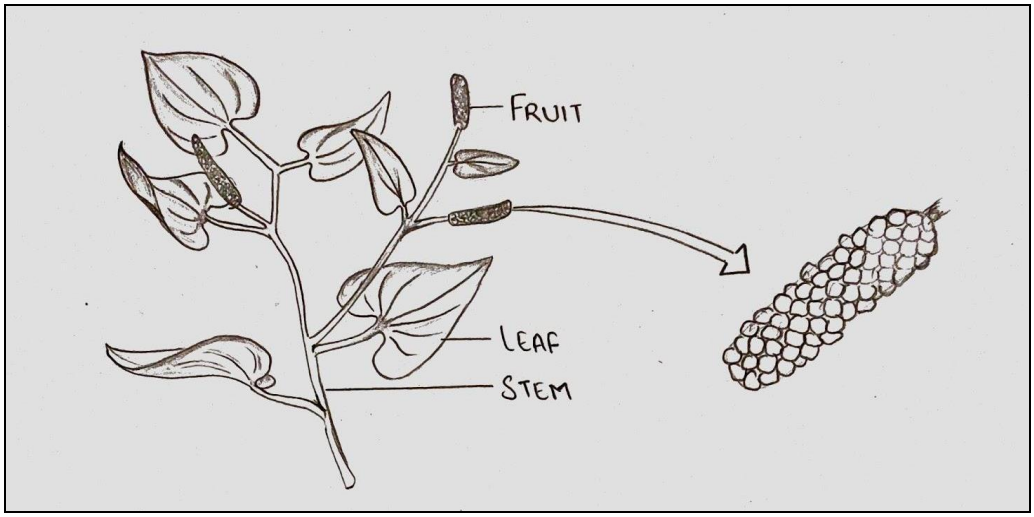

Fig 1: Twig of *Piper longum* and fruit (enlarged).

Anthocephalus cadamba (Fig.2) (common name Kadamba or Nipa) is a deciduous tree that can grow up to 37 feet with short branches having ovate, shiny and dark green leaves. Its flowers are orange in colour, terminal, solitary, and globose. They have large, fleshy and edible orange fruits. It is native and indigenous in India. These trees are found in tropical regions of northern India mainly in Odisha, Sikkim, Manipur and Assam. Since times of yore, this tree is related to Lord Krishna and its flowers are used as offerings in temples and social group festivals [12]. Its fruit contains secondary metabolites and has cadambine acid, quinovic acid, beta-sitosterol, triterpenes, saponins and tannins. This tree is used in Nakshatra Vanna representing Satabhisha (binary star system). Its name is related to the first Kingdom of Karnataka and was an emblem of Athmalik (now in Odisha). Its fruit can cure gastric irritability, fever and can purify the blood. Its leaves and stem bark can treat stomatitis, eye inflammation and act as an antibacterial. Its root paste can reduce blood sugar levels in diabetes mellitus. Reportedly these are used as anti-hepatic, anti-inflammatory, antimalarial, antimicrobial wound healing, antioxidant, analgesic, antipyretic, diuretics, and laxatives. They can also treat blood disease, skin disease, diarrhoea, anaemia, leprosy, and dysentery [13].

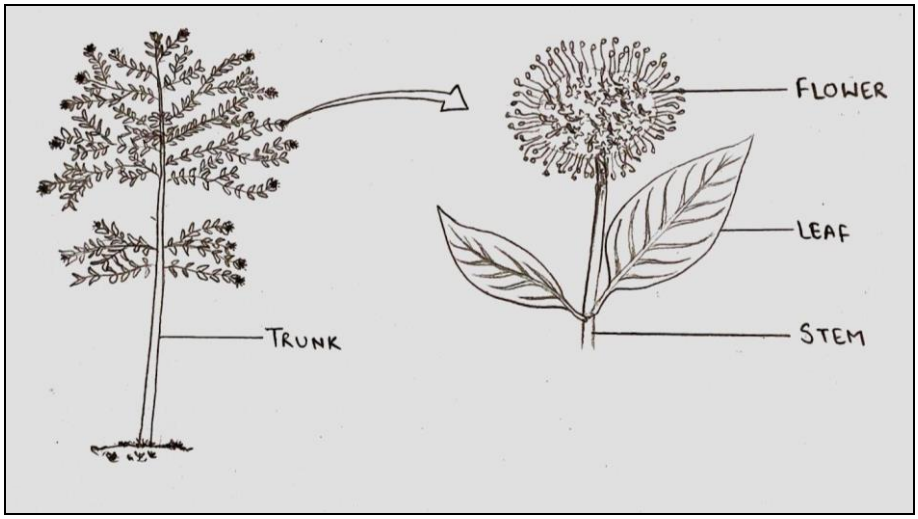

Fig 2: Habit of *Anthocephalus cadamba* and twig showing inflorescence (enlarged).

Ficus benghalensis (Fig.3) (Banyan Tree or Bargad) is a massive tree with branches spanning a large region. It has glossy, leathery, and glabrous leaves having an oval shape, are sessile, rounded, and obtuse. The stem has a smooth bark that is green when young and greyish white when mature. Male and female flowers are separate, and fruits are globose, sessile, fleshy, and range in colour from crimson to dark purple [14]. India's national tree is the banyan. It is extensively dispersed throughout India, especially in Andhra Pradesh and West Bengal. The banyan tree is revered to Gods such as Vishnu, Brahma, Kali, Lakshmi, and Kubera. Goddess Amba is reported to have delivered the tree. The Buddha is said to have sat beneath this tree. On the eve of Bat-Savitri, these trees are venerated in Uttar Pradesh and Bihar [15]. Flavonoids, phenols, tannins, saponins, aromatic acids, polysaccharides, triterpenoids, mucilage, and volatile oil are active principles. Bark and seeds can be used to treat diabetes and regulate body temperature. Brushing with the roots might help to strengthen gums and teeth. Wound healing, skin bruising, and inflammation can all benefit from the sap. Also used to treat skin conditions and vaginal infections [16]. Among their many uses include the treatment of diarrhoea and dysentery as well as rheumatoid arthritis, diabetes, and anxiety. For example, they can help lower cholesterol and prevent mosquito-borne infections. Their antibacterial, antifungal, and analgesic characteristics make them a valuable addition to the arsenal. Their antihelminthic, anti-immunomodulatory and hypolipidemic properties make them useful [17].

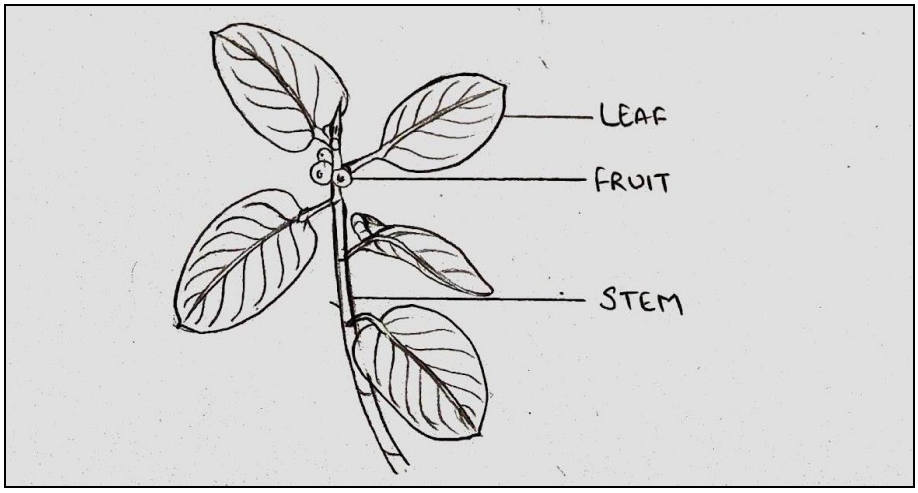

Fig 3: Twig of *Ficus benghalensis.*

Rubia cordifolia (Fig.4) **(**Madder or Manjishtha) is an herbaceous climber with a perennial life cycle. Long roots those are sweet, bitter, and caustic in flavour. Petioles are quadrangular, with glabrous, gleaming leaves. Long, rough, grooved stems with white bark that becomes slightly woody at the base. When ripe, the fruits are 4-6mm in diameter, globose, smooth, shiny, and purplish black. Manjishtha is found in the North-Eastern Himalayas. This is found primarily in Assam, Arunachal Pradesh, Meghalaya, and Sikkim, as well as in some parts of southeast India, including Kerala and Maharashtra. This plant is revered in West Bengal mythology and is also used to treat a variety of serious illnesses [18, 19]. Alkaloids, carbohydrates, sterols, phenolics, saponins, resins, flavonoids, proteins, and volatile oils are all found in them. Roots have anti-inflammatory, haemostatic, antipyretic, analgesic, and anthelmintic effects [20]. Ruberythric acid in roots is beneficial. Manjishtha is also used to improve the voice and to treat eye, ear, and blood inflammation. It treats vaginal and uterine irritation. It is used to treat calcium-containing stones in the urinary tract as a phototherapeutic medication. Leukoderma, ulcers, urine discharges, jaundice, and piles are all treated with it. In West Bengali tribes, the manjishtha stem is used to treat snake bites and scorpion stings. It's used to treat Alzheimer's disease, diabetes, cancer, acne, and as an immunomodulator and hepatoprotective [21].

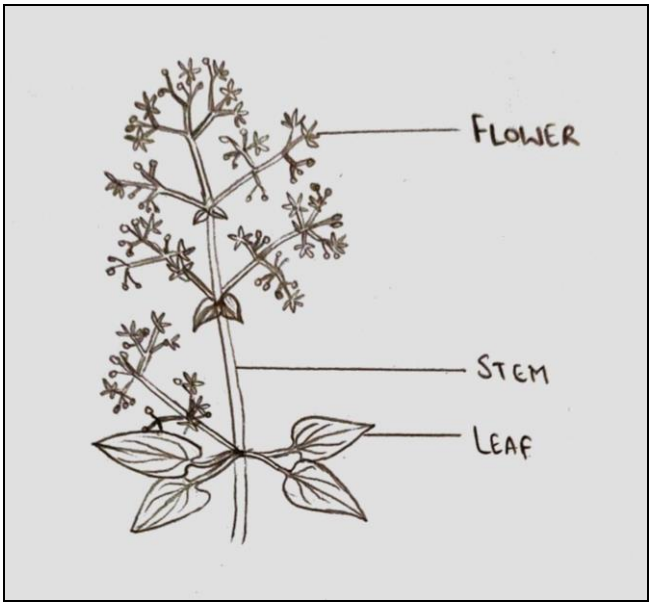

Fig 4: Twig of *Rubia cordifolia.*

Paris polyphylla (Fig.5) **(**Himalayan Paris, Apuk or Stuwa) is a rhizomatous creeping forest plant with whorled leaves having a long petiole. It has erected and creeping stems ranging in length from 10-100 cm. Globular fruits with scarlet seeds make up the fruits. Flowers appear singly at the tips of branches. They are primarily found in Himalayan states such as Arunachal Pradesh, Manipur, Mizoram, Nagaland, Sikkim, Uttarakhand, and parts of Himachal Pradesh and Jammu Kashmir [22]. It is worshipped by people or local inhabitants in both India and Nepal and has been used traditionally since ancient times [23]. They regard it as a magical herb capable of curing a variety of ailments and hold it in high regard [24]. Its active principles include saponins, glycosides, sterols, quercetin, luteolin, kaempferol, and daucosterol [25]. In Himalayan regions, it is used as an analgesic, antibacterial, antispasmodic, and antitussive, for poisonous bites, burns, and cuts, as well as a depurative and detoxifier. They are used to treat Alzheimer's disease, gastritis, dysentery, fever, intestinal wounds, narcotics, poisoning, insomnia, ulcer, typhoid, and wounds [26]. They are used to treat a variety of cancers, including lung, oesophagal, human breast, and gastric cancer. They are antifungal and antibacterial, as well as antioxidants [27].

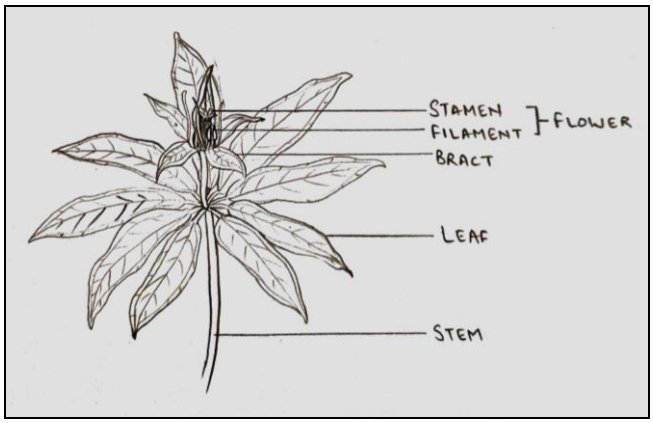

Fig 5: Twig of *Paris polyphylla.*

3. Western India

Elaeocarpus ganitrus (Fig.6) **(**Rudraksh or Shivaksha) is an evergreen tree with simple, glabrous, lanceolate, acute leaves. Its flowers are white or yellow with fringed petals that bloom around April-May. Its fruits are round to oval, small, blue, or violet, with acidic taste [28]. Rudraksh is primarily found in the Himalayas. It can be found in Madhya Pradesh, Bombay, Rajasthan, Assam, Nepal, and Bihar [29]. The word rudraksha comes from Sanskrit where 'Rudra' refers to Lord Shiva, and 'Aksha' refers to a teardrop. According to mythology, the Rudraksh plant was created from Lord Shiva's teardrops, as written in the Shiv Puran, Padma Puran, and Shrimad Bhagwat [30]. Rudraksh is also known as the King of the Ayurveda system. They contain phytosterols, fats, alkaloids, flavonoids, carbs, proteins, and tannins. They also have ethanol and chloroform. It has a wide range of applications in the treatment of various diseases. Rudraksh can be used to improve memory, treat brain diseases such as brain fever, and it also has anti-epileptic properties. It cleanses the blood and removes all impurities; it also has antihypertensive properties. Rudraksha has anti-inflammatory properties. Acute inflammatory disorders can be treated with chloroform, ethanol, and benzene. Antimicrobial and antioxidant characteristics make it a great choice. It is used in the treatment of ulcers including peptic ulcers. In addition, it possesses sedative and cytotoxic effects [31].

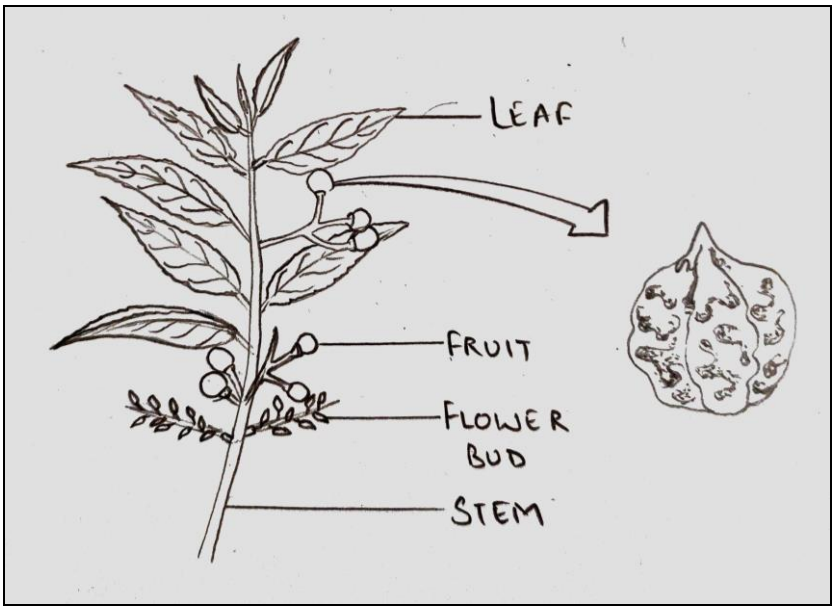

Fig 6: Twig of *Elaeocarpus ganitrus.*

Datura innoxia (Fig.7) **(**Commonly called Dhatura) a perennial herbaceous annual that grows up to 1 metre in height and has a 2-metre wide-spreading crown. Short and silky grey hairs cover the stems, giving the plant a greyish appearance. Simple, elliptic leaves with whole edges and pinnate venations placed alternately along the stems. It produces white flowers with green veins. Fruits are 5cm in diameter with almost equal-length spines, and the capsule contains brown seeds. It has widespread occurrence in India, mostly in Assam, Bihar, Meghalaya, Odisha, Rajasthan, and Uttar Pradesh states [32]. Its flowers and fruits are regarded sacred and are used in Shiva's ceremonies and devotion. Dhatura garlands are presented to the god Shiva. It can be used as a decorative plant. Dhatura seeds are analgesic, anthelmintic, anti-inflammatory, and are used in treatments for stomach and intestinal pain caused by worm infestation, toothaches, and fever caused by inflammation [36]. To treat dandruff and falling hairs, the fruit's juice is rubbed to the scalp. It has analgesic, antispasmodic, psychedelic, hypnotic, and narcotic properties, among others [37]. It can be used to treat mania, diarrhoea, piles, ulcers, and asthma [35].

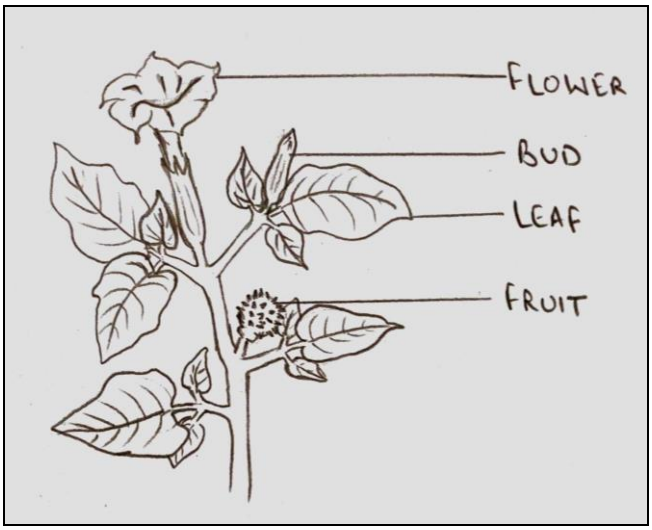

Fig 7: Twig of *Datura innoxia.*

Lawsonia inermis (Fig.8) (Hena, Mehndi, chinah or mailanchi) can be a tall shrub or small tree growing up to 2-7 metres in height. It's glabrous and has spine-tipped branchlets, and it's multi-branched. Sub-sessile, oval, longer and wider in the middle, and with depressed veins on the dorsal side, leaves grow opposite each other on the stem [40]. Flowers contain four sepals, a two-millimetre calyx tube with three-millimetre spread lobes, oblong petals with white or red stamens, and a four-celled, erect ovary. Fruits are little brownish capsules with a diameter of 4-8mm and four splits that open randomly [40]. It is typically found in Asia, Africa, and Australia. It is grown in Punjab, Haryana, M.P., Gujarat, and Rajasthan in India [41]. Dandruff, eczema, scabies, fungal infections, and wounds can all be treated with henna directly on the affected region [44]. Henna is used in the creation of cosmetics, hair colours, and hair care products, as well as as a dye for nails, hair, and clothing. Henna is also used as a temporary "tattoo" on the skin. It is antipyretic and nervine, and it relaxes the nervous system [43]. Assists in the relief of arthritis pain and headaches [45]. When chewed in the form of washed and dried leaves, it promotes gum health.

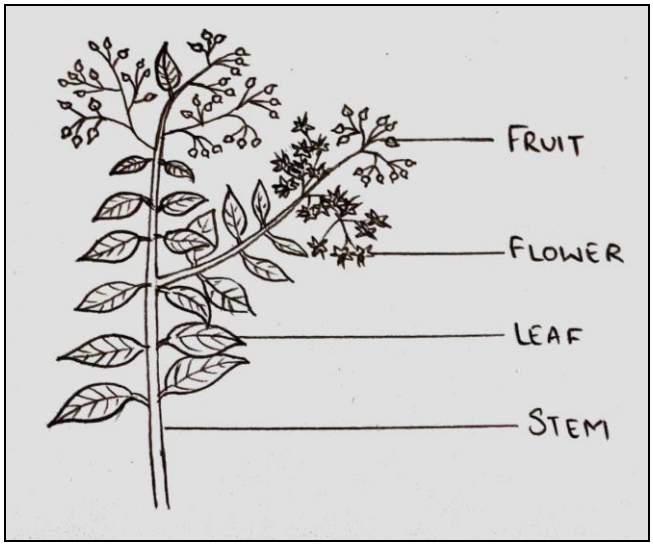

Fig 8: Twig of *Lawsonia inermis.*

Phyllanthus emblica (Fig.9) (Amla), it's a modest to medium-sized tree which bears simple, subsessile, pale green leaves, and resemble pinnate leaves. The flowers are greenish yellow.

Fruits are edible, spherical, smooth, and have six vertical stripes or furrows on the surface [46]. Hand-harvested berries are sour and bitter. The tree is native to India and is indigenous to the country. Gujarat and Rajasthan are the two states where they can be found. It is grown in M.P. in India. Protein, saponins, alkaloids, carbohydrates, tannins, sterols, and emblicanin are the most active constituents in this plant [47, 49]. Its fresh fruits as well as dried fruits are utilised in traditional Indian medicine. All components of the plant, including the root, bark, leaves, flowers, fruit, and seed, are greatly used in Ayurvedic medicine and herbal formulations. Amla fruit has a sour and astringent flavour, with secondary flavours of sweet, bitter, and pungent, according to Ayurveda [48]. It has light and dry properties, a sweet post digestive impact, and cooling energy. Indian gooseberry is a popular element in Ayurvedic polyherbal formulations, and it's the main ingredient of an ancient herbal rasayana called Chyawanprash [47]. According to Buddhist tradition, the great Indian monarch Ashoka gave half an amalaka fruit to the Buddhist sangha as his parting gift. The Ashokavadana describes this in terms like this: "A great giver, the lord of men, the illustrious Maurya Ashoka, has gone from being master of Jambudvipa (the continent) to being lord of half a myrobalan [48].

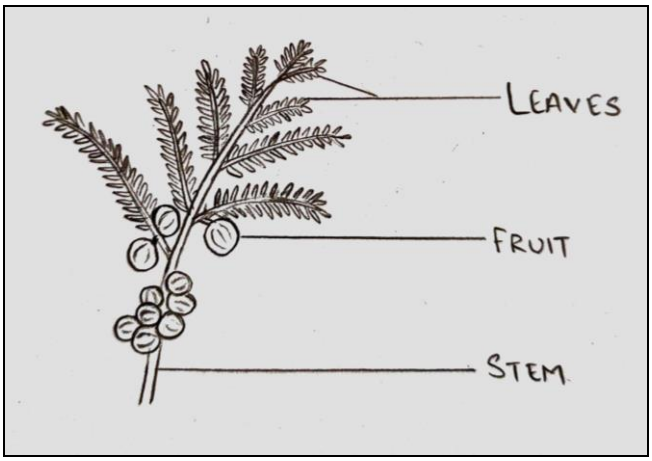

Fig 9: Branch of *Phyllanthus emblica.*

Tridax procumbens (Fig.10) (Coatbuttons, Ghamra), is most recognised for being a common weed and nuisance plant. The leaves are serrated and arrowhead-shaped in form. Daisies-like yellow-centred white or yellow blooms with three-toothed ray florets bloom on the plant. Its fruit is a rigid achene with a plume-like white pappus on one end and stiff hairs on the other. It is endemic to the tropical Americas, but it has spread throughout the world to tropical, subtropical, and mild temperate climates [50]. Tridax procumbens has great significance in Indian folk medicine for wound healing, anticoagulation, antifungal, and insect repellant [51]. Tribals from the surrounding areas worship it on various occasions, particularly religious celebrations held by women [52]. Flavonoids, benzoic acid derivatives, and lignans are the main active ingredients. Tridax procumbens has been used in India for centuries as a wound healer, anticoagulant, antifungal, and insect repellant. The juice obtained from the leaves is administered directly on wounds and its leaf extracts were utilised in folk medicine to treat infectious skin problems [53]. It is prescribed for liver problems, hepatoprotection, gastritis, and heartburn in Ayurvedic medicine. In some parts of India, indigenous healers utilise Tridax procumbens to cure boils, blisters, and cuts.

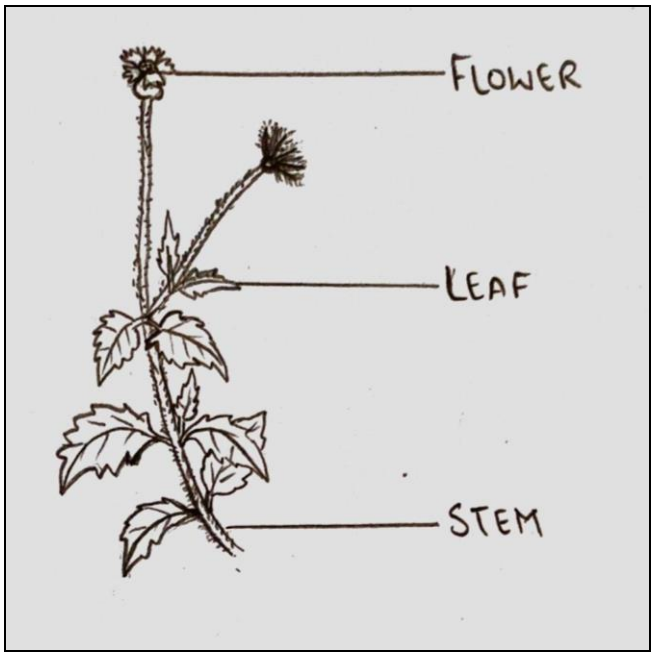

Fig 10: Branch of *Tridax procumbens.*

4. Northern India

Eugenia caryophyllus (Fig.11) (Clove or loung), has big leaves that are evergreen. Flower buds are pale in colour and have crimson blooms clustered in terminal clusters. The clove fruit, with a lengthy calyx terminating in four sepals and four unopened petals, is the most important part of the plant [55]. It is widely used as a spice in all countries; thus, it has a global distribution. It has a high religious value and is worshipped, with fruits or cloves being prayed for by people from the Islamic region and in India's upper regions. Essential oils, glycosides, tannins, steroids, alkaloids, and phenolic compounds are active components [58]. Clove essential oil is used as an anodyne (analgesic) in traditional medicine, mostly for post-digestive dental emergencies and other illnesses [56]. Aromatherapy makes use of essential oil. Toothache pain and other types of pain can be relieved with clove oil containing eugenol [57]. In one study, eugenol coupled with zinc oxide was found to be effective as an analgesic for alveolar osteitis. Studies to see how efficient it is as a mosquito repellent and for reducing fever. Studies suggest that toothpaste or mouth rinse with clove and other compounds reduces plaque on the teeth. Further one can minimise needle stick discomfort, by putting a ground cloves gel for 5 minutes before being stuck with a needle.

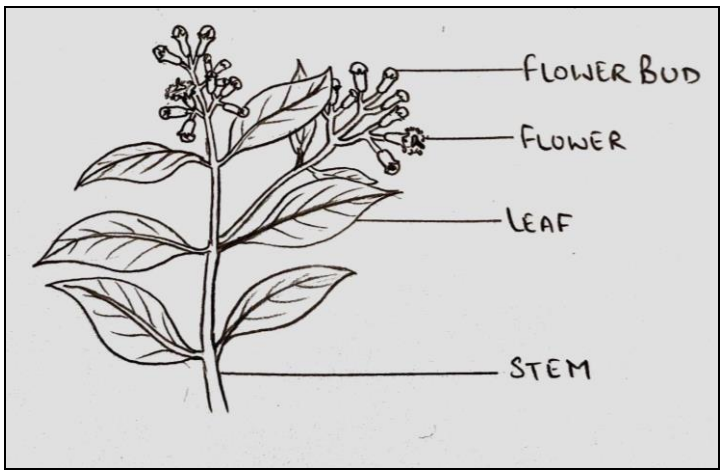

Fig 11: Twig of *Eugenia caryophyllus.*

Santalum album (Fig.12) (sandalwood or Chandan) can be found in coastal dry forests up to 700 metres above sea level. It prefers sandy or well-drained stony red soils, but it will thrive in a variety of soil types. The blossoms are white when the tree is young, but they turn red or orange as it matures. After around ten years, the tree's trunk begins to produce its aroma. Southern India and Southeast Asia are its native habitats [59]. Its aromatic and therapeutic characteristics are highly valued in several cultures. According to literature, in India S. album has been used for over two thousand years. It is used in religious ceremonies as both wood and oil. It's also used as a construction material in temples and other places [60]. Glycosides, tannins, steroids, alkaloids, phenolic compounds, and sesquiterpenes are the most active constituents. Sandalwood oil has long been used to cure colds, bronchitis, skin conditions, heart problems, general weakness, and fever. Infections of the urinary tract, mouth and pharynx irritation, liver and gallbladder problems, and other ailments can also be treated. In addition, several portions of the plant have been demonstrated to exhibit antibacterial and antioxidant activities *in vitro* and *in vivo*, which could be related to sesquiterpenoids such as shikimic acid. [61, 62, 63]

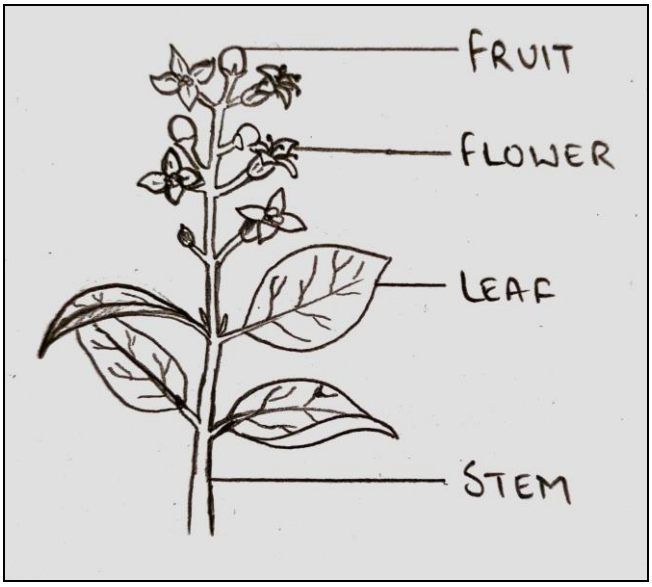

Fig 12: Twig of *Santalum album.*

Aegle marmelos (Fig.13) *are* commonly called Stone apples, Golden apples, Japanese bitter orange or Bael. It has a pale brown or grey bark with long straight spines that is smooth or coarsely fissured and flaking. Each leaflet is 2–6 cm and is trifoliate and alternating. Flowers are 1.5 to 2 cm in diameter, pale green or yellowish, sweetly perfumed, bisexual, and borne in short, unbranched clusters [64]. It is found all over India including Jammu and Kashmir, Himachal Pradesh, Punjab, Rajasthan, Uttar Pradesh, Madhya Pradesh, Maharashtra, Karnataka, Kerala, Tamil Nadu, Andhra Pradesh, Bihar, and West Bengal [65]. In Hindu scriptures, the bael tree has a significant religious significance [66]. The goodness of this botanical wonder was specifically mentioned in the Rig Veda, and it is also thought to be the house of Goddess Lakshmi, who is associated with wealth and success [65]. Protein, saponins, alkaloids, and carbohydrates are the most active constituents. Furocoumarins and Xanthotoxol are two others [67]. Orange viscous oil has been separated as aeglemarmelosine. In traditional medicine, Bael fruits are used for treating chronic diarrhoea, dysentery, respiratory ailments, peptic ulcers, and applied as a laxative. Free radical scavenging, antioxidant, antibacterial, lipid peroxidation inhibition, antiviral, gastroprotective, anti-diarrheal, hepatoprotective, cardioprotective, radioprotective, anti-ulcerative colitis, and antidiabetic activities are among the therapeutic benefits [67].

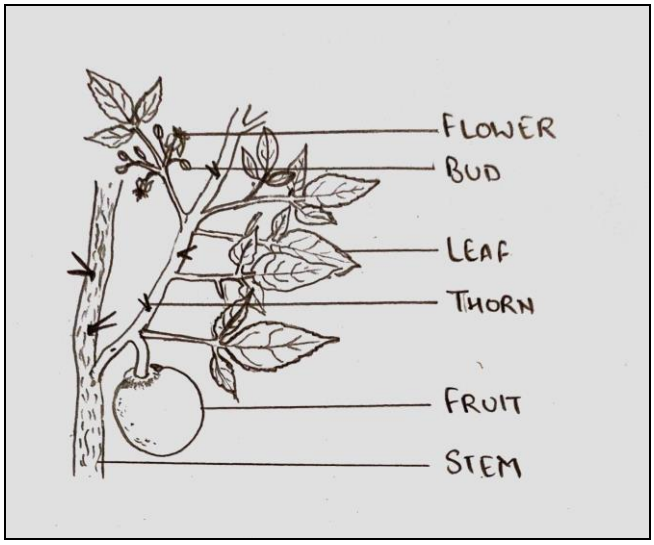

Fig 13: Branch of *Aegle marmelos.*

Crocus sativus (Fig.14) (Saffron or Kesar) is an autumn flowering plant. The leaves, bracts, bracteole, and flowering stalk are all held in the corm [68]. The corm underground protects them. In India, Himachal Pradesh and Jammu & Kashmir are the most common locations where it is found. Many people believe that saffron's colours represent optimism and contain colours from Mars, Jupiter, and the Sun, all of which are associated with wisdom and divinity. Crocin, safranal, picrocrocin, and cyclohexane are the most active constituents [69]. For baldness, some people apply saffron directly to the scalp (alopecia). Saffron has a wide range of plant chemicals that function as antioxidants, protecting the cells from free radicals and oxidative stress [70]. A variety of cancer cells like bone marrow, skin, breast, lung, cervix, and prostate cancer cells all are affected by this impact. As per studies, it has been proven that saffron have aphrodisiac qualities, especially in persons taking antidepressants. Saffron has been demonstrated to suppress appetite and minimise snacking [71]. As a result, these habits may assist one in losing weight.

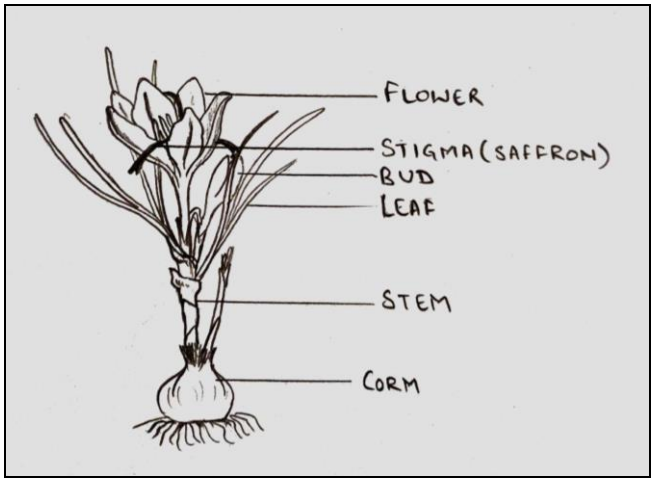

Fig 14: Habit of *Crocus sativus.*

Elettaria cardamomum (Fig.15) is commonly called Elaichi and Green cardamom. It's a spicy, aromatic perennial herb native to areas of India. The linear-lanceolate leaves alternate in two ranks, with a long-pointed tip. Flowers range in colour from white to lilac to pastel violet and are produced in a loose spike. Three-sided green-yellow pods with black and brown seeds make up the fruit [72]. It is distributed over Kashmir, Uttrakhand and the Northern part of Himachal Pradesh. Lord Shiva and Goddess Parvati are worshipped and presented with cardamom. Religious literature and scriptures have also mentioned it. Cineole, alkaloids, terpenes, tannins, and flavonoids are the major components [73]. Cardamom or Elaichi powder, mixed with gentle coconut water twice or three times a day, will help with urinary blockage and powdered seeds, mixed with honey, is taken three times a day for vomiting, indigestion, and loss of appetite. Cardamom powder and gentle coconut water are administered to the patient to treat vomiting and morning sickness. Bad breath, or halitosis, can be eliminated by chewing the seeds daily. Cardamom powder has anti-pitha properties and helps to cool the body. Recent investigations conducted by Sengupta *et al*. at Kolkata's Chittaranjan National Cancer Institute have found that dietary cardamom has a 48 per cent success rate in preventing colorectal cancer.

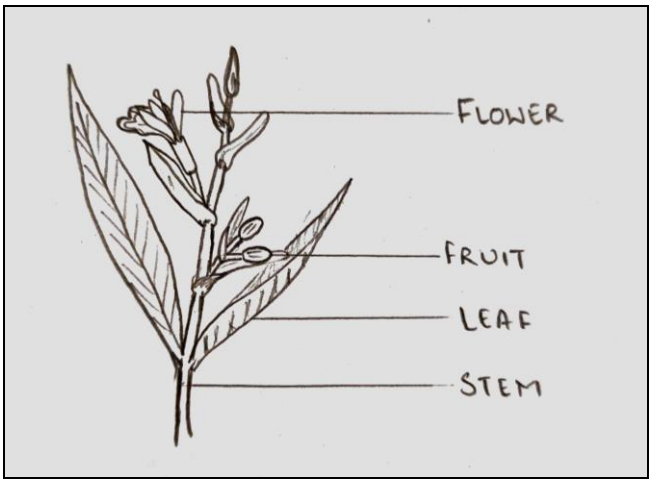

Fig 15: Twig of *Elettaria cardamomum.*

5. Southern India

Rauwolfia serpentina (Fig.16) is commonly known as Snakeroot, Sarpagandha and Nakuli. It's a perennial erect herb. Leaves are lanceolate, elliptic, and 7-8 cm long, with Erect, glabrous stems [77]. Flowers are lanceolate in shape, pinkish in colour, and abundant. When ripe, the fruits are drupes that are obliquely oval and purple black. These are primarily found in the states of Maharashtra, Karnataka, Kerala, Tamil Nadu, and Odisha in southern India. Assam and Meghalaya are also home to this species [76]. It was mentioned in religious books, beliefs and traditions. It's utilised for a variety of occasions, and flower powder is employed in rangoli. People in South India worship it as well. Protein, saponins, alkaloids, carbohydrates, and amygdalin are the most active constituents [78]. Rauwolfia serpentina is a source of reserpine, a phytochemical that has been used to treat systolic hypertension [80]. Rauwolfia has been researched for the treatment of mental illnesses such as schizophrenia and bipolar disorder, as well as epilepsy and seizures, insomnia, and sleep disorders [81]. Rauwolfia was reported to be beneficial in the treatment of anxiety in one research. It was also found to be beneficial in the treatment of delirium tremens in patients who were addicted to alcohol or drugs in another investigation.

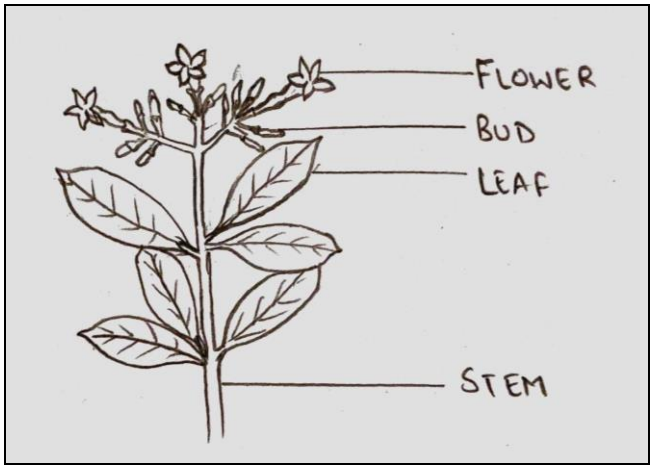

Fig 16: Twig of *Rauwolfia serpentina.*

Aloe vera (Fig.17) is commonly known as the First Aid plant. Aloe vera is extremely short-stemmed or stemless plant which grows to 60–100 cm in height. Green to grey-green leaves is thick and meaty [82]. The flowers bloom in the summer on a spike that can reach a height of 90 cm. It is an evergreen perennial that exists all over the world from the Arabian Peninsula to tropical, semi-tropical, and desert areas. The ancient 'Plant of Immortality, which remedies many medical problems, is planted, and revered in practically every home in Kerala's western region. It is one of the most popular and commonly used treatments in the world [83]. People believe it washes and purifies the soul; hence it is widely utilised. Salicylic acid, beta carotene, vitamin C, vitamin E, lignin, and saponins are the active ingredients [84]. A variety of consumer products, like beverages, cosmetics, burn and sunburn ointments and skin lotions contain it. The gel includes the majority of the plant's beneficial elements, including vitamins, minerals, amino acids, and antioxidants [85]. Most typical utilization of *Aloe vera* is in topical medicine, meaning it cannot be consumed, rather applied on the skin.

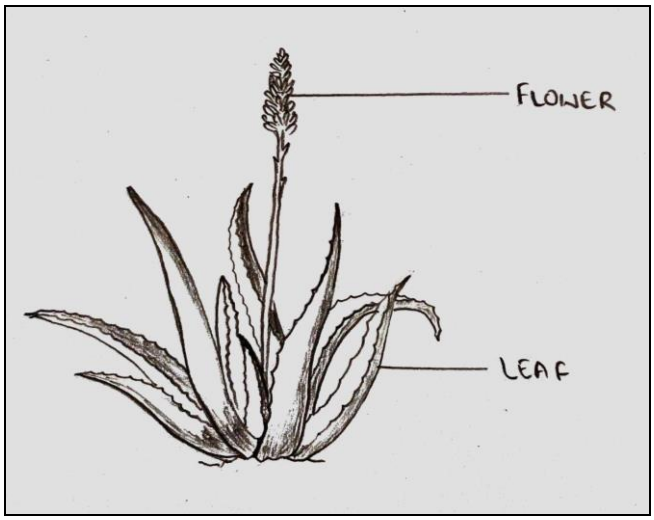

Fig 17: Habit of *Aloe vera.*

Nelumbo nucifera (Fig.18) (lotus) has roots put in the pond or riverbed soil. They have gleaming dark green leaves that float on the surface of the water or are lifted high above it. The flowers are frequently found a few centimetres above the

leaves on robust stems. Petioles (leaf stalks) can be up to 200 cm long [86]. It's native distribution ranges from central to northern India. It is regarded as a sign of purity, divine beauty, rebirth, and illumination. In South India, it is revered and presented to Lord Shiva as a token of reverence [87]. The flavonol, miquelianin, as well as nuciferine and aporphine, are found in the plant. Leaves, stalks, rhizomes, roots, buds, flowers, anthers, stamens, and fruits of the lotus plant have all been used as herbal medicines to treat cancer, depression, diarrhoea, heart issues, hypertension, and insomnia [88]. Lotus is employed in traditional medicine across the world for its incredible health benefits [87]. It's used to treat sunstroke, diarrhoea, dysentery, haemorrhoids, dizziness, blood vomiting, uterine bleeding issues, and infertility. Improves skin condition, reduces burning sensations, protects from infections like cough, hypertension, fever, urinary difficulties, hematemesis, epistaxis, hemoptysis, hematuria, and metrorrhagia, among other things [89]. Lotus has been shown to have psychopharmacological, aphrodisiac, antidiarrheal, antioxidant, hypoglycemic, anti-inflammatory, immunomodulatory, antipyretic, and lipolytic properties in numerous pharmacological trials [90].

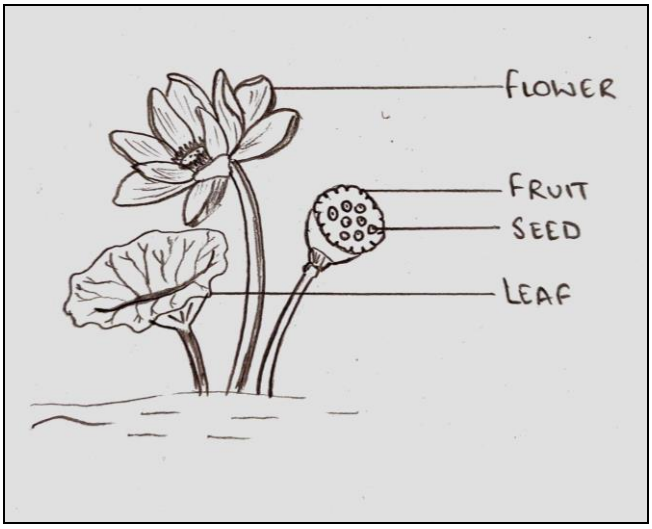

Fig 18: Habit of *Nelumbo nucifera.*

Cannabis sativa (Fig.19) (Hemp) is a short-day unisexual flowering plant, its flowers are either male or female. The male plants (staminate flowers) are taller and more robust than female plants (pistillate flowers) [91]. The female plant's flowers are organised in raceme inflorescence, and each inflorescence can generate hundreds of seeds. In case of male plants, male flowers lose their pollen and perish several weeks before the seeds ripen on female plants. It is distributed in India mainly in Kerala, Karnataka, Tamil Nadu, and some other states. People worship it at various festivals and as a gesture of respect to Lord Shiva [92]. Cannabinoids are the most active constituents, with 9-tetrahydrocannabinol being the most important, also Marinol and cesamet are present [93]. Marinol (dronabinol) is a medication that is used to relieve nausea and vomiting produced by chemotherapy medicines used to treat cancer, as well as to stimulate appetite in AIDS patients. Cesamet (nabilone) is a medication that is used to relieve nausea and vomiting produced by cancer therapy chemotherapeutic drugs [94]. Medical marijuana is commonly used to alleviate severe or long-term pain, painful muscular spasms, nausea and vomiting caused by chemotherapy (cancer treatments). Patients can use medical marijuana for a variety of medical ailments, which differ by state regulation, such as Amyotrophic lateral sclerosis disease and multiple sclerosis with inflammatory bowel illness [95].

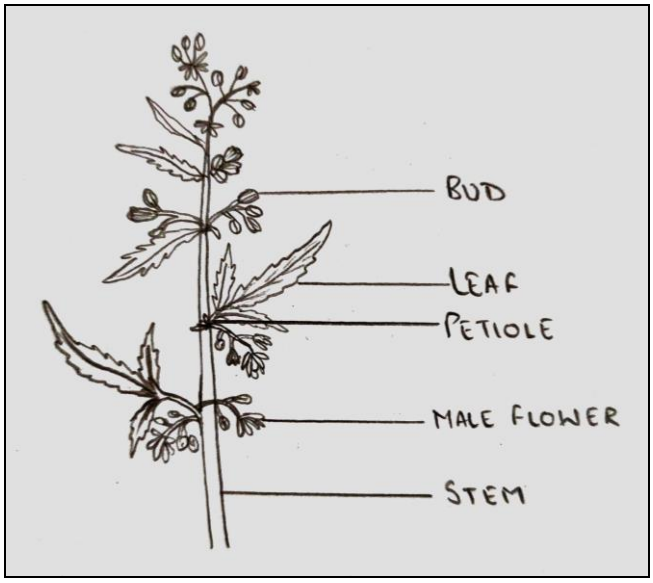

Fig 19: Branch of *Cannabis sativa.*

Cocos nucifera (Fig.20) is commonly known as coconut or Nariyal. *Cocos nucifera* is a big palm that can reach a height of 30 metres (98 feet). It has pinnate leaves that are 4–6 metres (13–20 feet) long and pinnae that are 60–90 cm (2–3 feet) long. Generally, old leaves peel away cleanly, leaving the stem smooth [96]. A tall coconut palm tree usually produces less than 30 fruits every year but can produce up to 75 fruits per year in fertile soil. In India, it is distributed over Kerala, Karnataka, Tamil Nadu, Andhra Pradesh, and the Islands of Lakshadweep [97]. In Hindu culture, a coconut is a necessary component of rituals. It is frequently embellished with brilliant metal foils and other lucky symbols. It is offered to a Hindu god or goddess during worship [98]. Narali Purnima is observed on a full moon day, which marks the conclusion of India's monsoon season. Protein, saponins, alkaloids, and carbohydrates are the principal active constituents, whereas tocopherol, alcohol palmitoyl, cycloartenol, and -sitosterol have been discovered as possible bio-components responsible for antimicrobial activity [99] (Lima *et al*., 2015). Arthritis and other inflammatory illnesses are treated using aqueous crude extracts of *C. nucifera* husk fibre [100]. Because of its usefulness as a producer of so many beneficial items, the coconut palm has been dubbed the "tree of life."

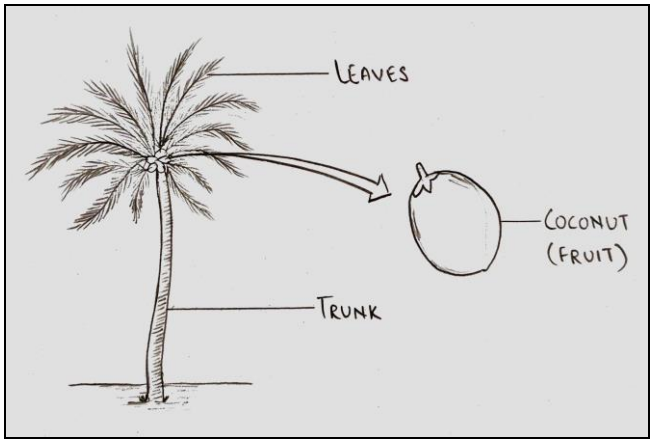

Fig 20: Habit of *Cocos nucifera* and its fruit (enlarged).

6. Conclusion

The usage of these plants as medicine has been passed down through the generations and is an important aspect of India's healthcare system. These herbs and plants are adored by diverse religions and in distinct parts of India. Because they are strong in therapeutic secondary metabolites and oils, many sacred species are the richest source of pharmaceuticals in traditional and modern medicine. These plants are not only employed in religious events, they are also used for therapeutic purposes by ordinary people.

7. References

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