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Plant-Based Immunity: Traditional Practices and Medicinal Benefits

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ABSTRACT

Plants have always made significant contributions to life on Earth. Every form of life is dependent on plants, but humans, in particular, have utilized them extensively—not only for basic needs such as food, clothing, and shelter, but also for a wide range of other purposes. Among these, the medicinal properties of plants have been especially valuable. Even today, traditional medicinal practices continue to rely on various plant species for their healing benefits. During the recent COVID-19 pandemic, the potential of certain medicinal plants to boost the immune system was brought into renewed focus. As a result, interest in these traditional remedies has surged, prompting researchers and communities alike to explore their therapeutic potential. This review highlights the importance of medicinal plants, particularly in the context of the COVID-19 period, and identifies seven key medicinal plants that have been traditionally recommended for their immune-boosting properties. These recommendations are based on their medical value and the bioactive compounds present in different parts of the plants.

Keywords: Herbal medicine, Phytochemistry, Traditional medicine, Ethnobotany, Folk remedies, Pharmacological properties.

INTRODUCTION

What is immunity? Immunity refers to the ability of the body to resist or fight against illness and disease. It involves the body's immune system, which is a complex network of cells, tissues, and organs that work together to defend against harmful pathogens. When microbes such as bacteria or viruses enter the body, they attack and multiply, leading to an infection[1].

The immune functions by recognizing these invading pathogens and launching an immune response to eliminate them. However, the immune system can be weakened by repeated exposure to infections or by unhealthy habits such as smoking, excessive alcohol consumption, poor diet, and lack of sleep. A weak immune system makes the body more susceptible to infection and can even lead to fatal consequences. Therefore, maintaining a well-functioning immune system is essential for overall health and survival.

To support this, immune boosters are necessary, a wide range of synthetic and natural immune boosters are now available[2]. However, long before the development of modern medicine, natural immune boosters—especially those derived from plants—were used as the primary source of healing and health maintenance.

Plants have been the backbone of life on Earth since ancient times. Human dependence on plants is deeply rooted not only in meeting basic needs such as food, clothing, and shelter, but also in providing medicinal benefits. In India, plants with medicinal value have historically been regarded as sacred. They were worshipped and preserved due to their healing properties, signifying their importance in daily life[3].

The use of medicinal plants is well documented in ancient Hindu scriptures such as the *Rigveda* (4500–1600 BCE), *Charaka Samhita* (1000–800 BCE), and *Sushruta Samhita* (800–700 BCE). These texts provide extensive knowledge about herbal medicine and traditional healing practices. In fact, our ancestors associated divinity with certain plants to ensure their conservation, classifying them as sacred due to their miraculous medicinal properties. Practices such as tree worship originated in the Vedic age, where sacred groves were venerated under the belief that deities resided within them[4].Even today, traditional systems of medicine such as **Ayurveda**, **Siddha**, and **Unani** rely on the therapeutic properties of these plants. This study focuses on seven traditional medicinal plants known for their immune-boosting abilities and therapeutic potential.

MATERIALS AND METHODOLOGY

This review considers **seven medicinal plants** with recognized therapeutic and immune-boosting properties. The selected plants include:

1. Chinese chaste tree
2. Black peppercorn
3. Neem
4. Garlic
5. Greater galangal
6. Turmeric
7. Liquorice

Information regarding the following attributes of each plant was collected over a period of two months from various sources, including academic texts, scientific journals, and credible online search engines:

- **Botanical name**
- **Family**
- **Common names**
- **Nutritional and medicinal values**
- **Phytochemical contents**
- **Medicinal uses/Other uses**
- **Folkloric preparation**
- **Pictorial representation of the plant**

The collected data has been analyzed and compiled in the following sections of this study to better understand the medicinal significance and immune-boosting potential of each plant.

Objectives of this Study

1. To explore the basic mechanisms and components of the human immune response.
2. To examine Contemporary approaches and agents used for immune enhancement.
3. To study the Cultural and historical relevance of medicinal plants in India.
4. To document historical reference related to sacred groves and religious significance of specific plants.

CHINESE CHASTE TREE[5,6,7,8,9]

BOTANICAL NAME: *Vitex negundo* Linn.

FAMILY: Verbenaceae

HABITAT: Found throughout India in the warmer zones, ascending up to 900 meters in the north-western Himalayas.

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Plate 1: CHINESE CHASTE TREE

COMMON NAMES:

English: Five-leaved Chaste Tree (Plate. 1)

Ayurvedic: Nirgundi, Shephalika, Sindhuka, Sindhuvara, Suvaha, Sugandhika, Nila, Nilanirgundi, Shvetanirgundi (white-flowered variety). The blue-flowered variety is known as Nirgundi or Shephali.

Unani: Sambhalu, Fanjanlisht

Siddha/Tamil: Nochi, Nalla Nochi, Vellai Nochchi, Nirkundi

VALUES:

Seeds: Used in Unani medicine for spermatorrhoea and to promote spermiogenesis. In Ayurveda, used as a rejuvenating tonic to retard aging and promote virility.

Leaves: Possess anti-inflammatory and analgesic properties. Effective in removing fetid discharges and worms from ulcers.

Flowers: Astringent, febrifuge, and anti-diarrhoeic; prescribed for liver complaints.

Oil: Applied externally on sinus infections and scrofulous sores.

Pharmacopoeial Use: The Ayurvedic Pharmacopoeia of India recommends leaves and roots for treating excessive vaginal discharge, oedema, skin diseases, pruritis, helminthiasis, rheumatism, and puerperal fever. Leaf extracts in rats have shown anti-inflammatory, analgesic, antihistaminic, membrane-stabilizing, and antioxidant properties. Methanolic leaf extract displayed significant antihistaminic activity[10, 11]. Flavone vitexicarpin (I) isolated from leaves exhibited broad cytotoxicity in a human cancer cell line panel. Alcoholic root extract showed 40–60% anti-implantation activity in rats without anti-ovulatory effects.

CONTENTS:

Leaves: Contain iridoid glycosides, isomeric flavanones, flavonoids, casticin, luteolin-7-glucoside, and an alpha-D-glucoside of a tetrahydroxy monomethoxy flavone.

Roots: Contain hentriacontane, beta-sitosterol, its acetate, stigmasterol, betulinic acid, ursolic acid, n-hentriacontanol, and p-hydroxybenzoic acid.

Seeds: Contain p-hydroxybenzoic acid, 5-oxyisophthalic acid, glucose, vitextriterpene (a triterpene), and other anti-inflammatory triterpenoids and flavonoids. The flavanone 5,7,3'-trihydroxy-6,8,4'-trimethoxyflavone has shown anti-androgenic activity in adult mice and dogs.

DOSAGE:

Leaf juice: 10–15 ml (API, Vol. III)

Root juice: 10–12 ml (API, Vol. IV)

MEDICINAL USES:

- Leaf decoction used externally for cleaning ulcers and internally for treating flatulence. Also employed as a galactagogue and emmenagogue.
- Decoction of bark, shoots, and leaves acts as an antigastralgic.
- Leaves used in aromatic baths and as an insect repellent.
- Vapor baths made from the plant are used to treat febrile, catarrhal, and rheumatic conditions.
- Warm leaf decoctions are used in baths for women in the puerperal period and for newborn children.
- Seeds are boiled in water for oral consumption to neutralize toxins from bites of poisonous animals.
- Infusions of seeds used for disinfecting wounds and ulcers; also infused in wine for treating dropsy.
- Pounded leaves applied on the forehead and temples to relieve headaches.
- Leaf decoction used for fever, headache, toothache, cough, and asthma.
- Root used as a tonic, febrifuge, and expectorant.
- Fruit functions as a nervine, cephalic, and emmenagogue.
- Root bark tincture used for piles (as a demulcent) and for dysentery.
- Root also employed for dyspepsia, colic, rheumatism, worms, boils, and leprosy.
- Flowers used to treat diarrhoea, cholera, fever, liver diseases, and as a cardiac tonic.
- Powdered flowers and stalks are helpful for bleeding from the stomach and intestines.
- Fruits are useful for headaches, catarrh, and watery eyes. Dried fruits act as a vermifuge.
- Seeds are used in cooling medicines for skin diseases, leprosy, and inflammation of the mouth.
- Oil prepared from juice is applied for sinus infections, scrofulous sores, glandular swellings, and tubercular swellings in the neck. Also applied to sloughing wounds and ulcers.
- Leaves are effective in reducing inflammatory and rheumatic swellings, including testicular swelling from gonorrhoeal epididymitis and orchitis.
- A poultice of leaves is applied to sprains, contusions, and leech bites.
- Leaves heated in an earthen pot and applied to bruises and wounds.
- Heated leaves are also applied with oil for external wound treatment.
- A pillow stuffed with leaves may be placed under the head for relief from catarrh and headaches. Dried leaves, when smoked, offer similar relief.
- Decoction of leaves combined with long pepper used to treat catarrhal fever with head congestion and dull hearing.
- Leaf juice removes fetid discharges and worms from ulcers.
- Leaf plaster applied to enlarged spleens.

- In Ayurveda and Unani, leaves and seeds are widely used for rheumatism and joint inflammation.
- Leaf decoction taken internally as a diuretic.

USES IN OTHER COUNTRIES:

Bangladesh: Used for headaches, weakness, vomiting, malaria, and black fever.

Indo-China: Root decoction used for intermittent fevers.

SriLanka: Used for eye diseases, toothaches, rheumatism; also functions as a tonic, carminative, and vermifuge.

FOLKLORIC PREPARATIONS:

1. Fever and Toothache: Boil 6 tsp of chopped leaves in 2 glasses of water for 15 minutes, strain, and cool. Divide into 3 parts and take one part every 3–4 hours. Bruised leaves may also be applied to the forehead.

2. Asthma and Cough: Take ¼ of the same decoction three times daily.

3. Aromatic Bath or Sponge Bathing: Boil 4 handfuls of leaves in a pot of water for 5 minutes. Use the warm decoction for sponge baths.

OTHER USES:

Insecticide: Leaves are placed between pages of books and in folds of silk or woolen garments to protect against insect damage.

Dyeing: Ashes are used as an alkali in the dyeing process.

RECENT FINDING:

Lagundi (another name for *Vitexnegundo*) has been proven effective as an analgesic and antitussive. It is commonly prepared as a pleasant-tasting cough syrup and is considered a potential alternative to dextromethorphan in public health systems[11, 12].

BLACK PEPPERCORNS[13,14,15,16]

BOTANICAL NAME:*Pipernigrum* Linn.

FAMILY: Piperaceae

HABITAT: Native to the Indo-Malaysian region. It is widely cultivated in the Western Ghats, Karnataka, Maharashtra, Assam, and Kerala.

Plate 2: BLACK PEPPER

COMMON NAMES:

English: Black Pepper (Plate. 2)

Ayurvedic: Maricha, Vellaja, Uushna, Suvrrita, Krishnaa

Siddha/Tamil: Milagu, Milaguver (root)

VALUES:

Stimulant, carminative, diuretic, anticholerin, sialagogue, bechic, and antiasthmatic. Used in fevers, dyspepsia, flatulence, and indigestion. Acts as a mucous membrane and gastrointestinal stimulant. Applied externally as a rubefacient and skin stimulant. Used as a gargle for sore throat. Combined with ginger and *Piperlongum* in the treatment of viral hepatitis. The aqueous extract of roasted black pepper slows cholinomimetic effects on rat abdominal muscle.

CONTENTS:

The fruit yields: Piperine, piperidine, amides, piperylene, piperoleins A and B, and N-isobutyl–cicosa–trans–2 trans–4–dienamide.Contains essential oils such as piperine (providing pungency) and monoterpenes like sabinene, pinene, terpinene, limonene, and myrcene, responsible for its aroma[17].

DOSAGE:

Fruit: 500 mg to 1 g (as per CCRAS)

MEDICINALUSES:

- Peppercorns are used traditionally for anti-inflammatory, carminative effects.
- Enhances gut motility and digestion by promoting gastrointestinal enzyme secretions.
- Piperine enhances bioavailability of selenium, vitamins B-complex, beta-carotene, and other nutrients.
- Rich in potassium, calcium, zinc, manganese, iron, and magnesium.
  - Potassium: Regulates heart rate and blood pressure.

- Manganese: Acts as a co-factor for antioxidant enzymes like superoxide dismutase.
- Iron: Vital for respiration and blood cell formation.
- Contains B-complex vitamins: pyridoxine, riboflavin, thiamine, and niacin.

- Source of antioxidant vitamins (vitamin C, vitamin A) and flavonoids like carotenes, cryptoxanthin, zeaxanthin, and lycopene.
- Protects the body from oxidative stress, cancer, and degenerative diseases.
- Prevents neurological disorders and protect the eye from UV-radiation.

FOLKLORIC PREPARATION:

Cough and Cold: A traditional remedy involves boiling crushed black pepper with tulsi leaves and a pinch of turmeric in water. The decoction is consumed warm to relieve cough and nasal congestion.

Indigestion: Roasted pepper powder is mixed with buttermilk or warm water and taken after meals to aid digestion and relieve flatulence.

Sore Throat: Gargling with a mixture of black pepper and rock salt in warm water soothes throat inflammation.

Fever and Chills: A traditional combination of black pepper, dry ginger, and long pepper (Trikatu) is used with honey to reduce fevers and improve metabolism.

Toothache: Ground black pepper with a few drops of clove oil is applied on the affected tooth to relieve pain.

Enhancing Appetite: Powdered pepper is added to fresh lime juice and salt and taken before meals to stimulate appetite.

OTHER USES:

Culinary Uses: Black pepper is one of the most commonly used spices worldwide. It enhances the flavor of food and acts as a natural preservative due to its antimicrobial properties.

Cosmetic Applications: The essential oil of black pepper is used in aromatherapy and skincare products for its warming and stimulating effects. It helps in improving blood circulation, reducing inflammation, and relieving muscular pain.

Traditional Veterinary Use: In some rural practices, black pepper is used in the treatment of digestive and respiratory ailments in livestock.

Insect Repellent: Crushed black pepper or its extracts are sometimes used as a natural deterrent against insects and pests in household storage.

Textile Preservation: In traditional methods, pepper was sometimes placed between folds of silk or woolen garments to protect them from insect damage.

Health Supplement Industry: Piperine, the active compound in black pepper, is now widely used in nutraceutical formulations to enhance the bioavailability of nutrients and herbal medicines.

RECENT FINDING:

Bioavailability Enhancer: Piperine has been proven to enhance the absorption of several nutrients and drugs, such as curcumin, vitamins (like B6 and C), and beta-carotene, making them more effective in the body.

Anticancer Potential: Recent studies have shown that piperine possesses anticancer activity by inhibiting cancer cell growth, inducing apoptosis (cell death), and preventing metastasis, particularly in breast and colon cancer models.

Neuroprotective Effects: Piperine shows promising effects in protecting brain cells and improving cognitive functions. Research suggests potential benefits in neurodegenerative disorders like Alzheimer's and Parkinson's disease.

Antidiabetic Properties: Animal studies have demonstrated that black pepper can reduce blood glucose levels, improve insulin sensitivity, and regulate lipid profiles.

Antibacterial and Antifungal Activity: Extracts of black pepper exhibit strong activity against common bacterial and fungal strains, making it useful in natural antimicrobial formulations.

Anti-obesity Effects: Piperine has shown potential in reducing fat accumulation and improving metabolism, suggesting its use in weight management.

Respiratory Health and Immunity: During respiratory infections, including COVID-19, black pepper was part of various traditional remedies for its immune-boosting and decongestant effects.

NEEM TREE[18,19,20,21,22]

BOTANICAL NAME: *Azadirachta indica* **Synonym**: *Meliaazadirachta* Linn.

FAMILY: Meliaceae

HABITAT: Native to Burma. Widely distributed throughout India.

Plate 3: NEEM

COMMON NAMES:

English: Neem tree(Plate.3), Margosa tree

Ayurvedic: Nimba, Nimbaka, Arishta, Arishtaphala, Pichumarda, Pichumanda, Pichumandaka, Tiktaka, Sutiktak, Paaribhadra

Unani: Aazaad-Darakht-e-Hindi

Siddha/**Tamil**: Vemmu, Veppu, Veppan, Arulundi

VALUES:

Leaves and **bark**: Antimicrobial, antifungal, anthelmintic, insecticidal, antiviral, antipyretic, anti-malarial, antiperiodic, anti-inflammatory, antifertility, spermicidal and hypoglycaemic properties.

Uses: Treats gum inflammation, gingivitis, periodontitis, sores, boils, spleen enlargement, malarial fever, postpartum fever, measles, smallpox, scalp infections, and skin diseases.

Oil: Contraceptive (intravaginal), treats vaginal infections, mosquito repellent, spermicidal, exhibits antiviral action against HIV.

Note: Toxic in high doses; causes mitochondrial injury in mice.

CONTENTS:

Neem contains a wide range of active constituents including:

- Tetranortriterpenoids (e.g., azadirachtin, nimbin, nimbidin)
- Essential oils
- Limonoids
- Polyphenols

DOSAGE:

Dried Leaf Powder: 1–3 g; **Leaf Decoction**: 10–20 g; **Stem Bark Powder**: 2–4 g; **Bark Decoction** (external use): 50–100 ml; **Leaf Juice**: 10–20 ml; **Oil**: 5–10 drops (According to API Vol. II and CCRAS)

MEDICINAL USES:

- Leaves and flowers are edible and used in traditional preparations.
- Used for: Infections, fever, ulcers, intestinal worms, inflammation, malaria, skin diseases, control diabetes, relieve gums and dental issues.

FOLKLORIC PREPARATIONS:

- Leaf poultice applied on swollen glands, bruises, and sprains
- Fresh leaf tea consumed for malaria
- Bark and root bark decoction used for jaundice and intestinal worms
- Fruit pulp used for treating hemorrhoids
- Leaves soaked in water used as a bathing solution or postcoital contraceptive
- Used for scabies, leprosy, eye disorders, skin ulcers
- Spermicide made from neem is traditionally used and commercially sold in India

OTHER USES:

Neem is widely used in agriculture as a natural pesticide and insect repellent. Neem oil is used in cosmetics, soaps, and hair products for its antibacterial and antifungal properties. Neem leaves are used in grain storage to prevent pest infestation.

RECENT FINDINGS:

Antidiabetic research: Aqueous leaf extracts reduce blood glucose in glucose-fed and adrenaline-induced hyperglycemic rats.

Antiulcer and **Anti-inflammatory**: Experimental studies confirm these activities in neem leaf extracts.

Antimalarial action: Methanolic extract of bark effective against Plasmodium falciparum.

Antiviral studies: Neem oil has shown inhibitory activity against HIV in vitro.

Spermicidal effect: Volatile components of neem oil exhibit significant spermicidal action at low concentrations.

GARLIC[23,24,25,26,27]
BOTANICALNAME: *Allium sativum* Linn.

FAMILY: Liliaceae / Alliaceae

HABITAT: Garlic is native to Central Asia and is now widely cultivated throughout India.


Plate 4: GARLIC

COMMON NAMES:

English: Garlic (Plate.4)

Ayurvedic: Lashuna, Rasona, Yavaneshta, Ugragandha, Mahaushadh, Arishta

Unani: Seer, Lahsun

Siddha/**Tamil**: Ullippoondu, Vellaippondu

VALUES:

Garlic exhibits a wide range of medicinal properties: Antibiotic (bacteriostatic), antifungal; anthelmintic, antithrombotic; Hypotensive, hypoglycaemic, and hypocholesterolemic properties. Helpful in respiratory tract infections and catarrhal conditions. Considered supportive for managing high blood lipids and age-related vascular changes.

Garlic has been recognized in systems like Ayurveda, WHO, ESCOP and in the Germen commission E monograph for its beneficial effects. It is also traditionally used as a brain tonic in epilepsy and certain mental disorders.

CONTENTS:

Garlic cloves are rich in sulfur-containing compounds. Alliin is the inactive compound present in whole garlic. When crushed, alliin is converted by the enzyme alliinase into allicin, the principal bioactive compound. Allicin breaks down into other sulfur compounds like ajoene, diallyl disulfide, trisulfide, and vinyldithiin, each contributing to various biological effects- Allicin: antibiotic and hypoglycaemic activity; Ajoene: inhibits gastric lipase (fat digestion), has antimicrobial properties; Diallyl sulfides: inhibit platelet aggregation and possess anticarcinogenic activity; Higher polysulfides (diallyltetra- to heptasulfides): act as antioxidants.

DOSAGE:

Bulb: 3 g per day (According to API Vol. III)

MEDICINAL USES:

- **Culinary**: Garlic is a popular spice and condiment used to enhance the flavor of dishes across cultures.
- **Traditional and Medicinal:** Cardiovascular health: Used to manage hypertension and reduce cholesterol.
- **Respiratory relief**: Juice and decoctions help with colds, sore throat, asthma, bronchitis, and nasal congestion.
- **Antiseptic and healing**: Fresh juice applied to wounds, bruises, sprains, and ringworm.
- **Digestive aid:** Used as carminative, expectorant, vermifuge, and to ease gastrointestinal spasms.
- **Menstrual Cramps and Hair Care:** Juice of garlic is sometimes used in traditional remedies to relieve menstrual cramps due to its anti-inflammatory and circulation-boosting effects. Applied to the scalp, it may help stimulate hair growth and treat dandruff, due to its antimicrobial properties.
- **Tonsillitis and Tuberculosis (Supportive Use):** Garlic is used in traditional medicine as a supportive remedy for tonsillitis and tuberculosis because of its natural antibiotic and immune-enhancing compounds like allicin.
- **Earaches and Deafness (Traditional Use):** In some cultures, warm garlic oil is used to ease earaches and even minor hearing issues, due to its antibacterial and pain-relieving effects.

FOLKLORIC PREPARATIONS:

- Crushed cloves are applied externally for pain, toothache, insect bites, and headaches.
- Garlic decoctions or infusions used for fever, worm infestation, gastritis pain and colds.
- Steam inhalation with garlic and vinegar is a home remedy for nasal congestion.
- In some regions, garlic juice is applied to the scalp to prevent premature graying.
- Fresh raw juice applied to wounds and fungal infections (e.g., ringworm)

OTHER USES:

1. Pest Repellent

- **Garlic extract** is used in organic farming and home remedies as a **natural pest deterrent**.

2. Heart Health & Immune Support

- Garlic is widely included in supplements for **cardiovascular health** (e.g., lowering blood pressure and cholesterol).
- It supports **immune function** and is believed to help prevent infections.

3. Blended in Traditional Herbal Formulas

- In **Ayurveda**, **Traditional Chinese Medicine (TCM)**, and other systems, garlic is often combined with other herbs for **broad-spectrum therapeutic effects**, such as detoxification or enhancing overall vitality.

RECENT FINDINGS:

Cardiovascular effects: Clinical studies confirm garlic's ability to reduce platelet aggregation and improve blood circulation.

Hypolipidemic action: Demonstrated in trials where garlic tablets significantly lowered blood lipid levels.

Antioxidant effects: Sulfur compounds in garlic help scavenge free radicals

Antimicrobial efficacy: Proven against various bacterial and fungal infections

Gastrointestinal effects: Ajoene and related compounds influence lipid digestion and may assist in weight control.

GREATERGALANGAL[28,29,30]

BOTANICAL NAME: *Alpinia galangaI* Linn.

FAMILY: Zingiberaceae

HABITAT: Greater Galangal is a native of Indonesia and Southeast Asia but is cultivated in various parts of India, especially in Kerala, West Bengal, and Assam. It prefers warm and humid climates and is often grown in home gardens and forest edges.

COMMON NAMES:

English: GreIater Galangal (Plate.5)

Tamil: Perarattai

Sanskrit: Mahabharangam

Hindi: Kulanjan

Plate 5: GREATER GALANGAL

VALUES

Galangal rhizome has aromatic, stimulant, and carminative properties. It is valued in traditional medicine as a digestive aid and tonic.

CONTENT: Contains flavonoids, galangol, camphor, eugenol, essential oils, methyl cinnamate, and diarylheptanoids.

Useful Parts: Rhizomes (fresh and dried)

DOSAGE: Powdered rhizome: 1–3 grams (API Vol.I); Decoction: 15–30 ml (Dosage may vary based on formulation and individual needs.)

MEDICINAL USES

- Used as a digestive stimulant and appetite enhancer.
- Effective in treating flatulence, colicky, and indigestion.
- Relieves bronchial asthma, cough, and throat infections.
- Exhibits anti-inflammatory, antibacterial, and antioxidant properties.
- Traditionally used to alleviate rheumatic pain and nausea.

FOLKLORIC PREPARATIONS

- Rhizome decoction consumed for cold, stomach pain, and respiratory issues.
- Paste of fresh rhizome applied to joints to relieve pain and swelling.
- Powder mixed with honey taken to soothe throat irritation.
- Rhizome used in medicated steam baths for arthritis and body pain.

OTHER USES:

Used as a spice in Southeast Asian cuisine. Extracts used in cosmetic products and herbal tonics. Valued in Ayurvedic formulations for rejuvenation and vitality.

RECENT FINDINGS

Shows antitumor potential via flavonoid content. Possesses broad-spectrum antimicrobial activity. Neuroprotective and antidiabetic effects observed in animal models. Promotes gastrointestinal health and reduces ulcer severity.

TURMERIC[31,32,33,34,35,36]

BOTANICAL NAME: *Curcuma longa* Linn.

FAMILY: Zingiberaceae

HABITAT: Native to India, turmeric is widely cultivated in tropical regions including Tamil Nadu, Andhra Pradesh, and Maharashtra. It thrives in warm, humid conditions and well-drained loamy soils.

COMMON NAMES

English: Turmeric (Plate. 6)

Tamil: Manjal

Sanskrit: Haridra

Hindi: Haldi

VALUES:

Anti-inflammatory, cholagogue, hepatoprotective, blood-purifier, antioxidant, detoxifier, and regenerator of liver tissue, antiasthmatic, anti-tumor, anticutaneous, antiprotozoal, stomachic, carminative. Reduces high plasma cholesterol. The antiplatelet activity offers protection to the heart and vessels. Also protects against DNA damage in lymphocyte. **Key** - In dyspeptic stomachache conditions application (German Commission, ESCOP, WHO) as an anti-inflammatory.

Plate 6: TURMERIC

Useful Parts: Rhizomes (dried and fresh).

CONTENTS

The rhizome of turmeric contains:

- Curcuminoids: A mixture known as curcumin, which includes phenolic diarylheptanoids such as curcumin and monodesmethoxycurcumin.
- Volatile oil (3–5%): About 60% turmerones (sesquiterpene ketones)
- Other compounds: Bitter principles, sugars, starch, resin

Pharmacological Actions:

- Antioxidant activity of curcumin equals that of Vitamin C, Vitamin E, BHA, and BHT.
- Both curcumin and volatile oil show anti-inflammatory effects similar to cortisone and phenylbutazone.
- Curcumin prevents release of inflammatory mediators and depletes substance P (pain neurotransmitter).
- Helps reduce cholesterol by limiting absorption and increasing bile acid production and excretion (choleretic action).
- Prevents increase in SGOT and SGPT liver enzymes, confirming hepatoprotective properties.
- Curlone (from dried rhizome) is effective against hepatitis.
- Increases mucin in the stomach; protects against ulcers due to stress, alcohol, or drugs.
- Ethanolic extract lowers blood sugar in alloxan-induced diabetic rats.
- Piperine (from black/long pepper) significantly improves curcumin absorption and bioavailability.

Chemical Constituents: Curcumin (primary active), essential oils, demethoxycurcumin, bisdemethoxycurcumin, zingiberene, turmerone.

Dosage: Cured Powder: 1–3 grams (API Vol.I); Turmeric milk: 5–10 grams in 150 ml milk; Curcumin extract: As per formulation (typically 500 mg)

MEDICINAL USES

- Acts as a potent anti-inflammatory and antioxidant.
- Used for wound healing, skin diseases, and arthritis.
- Supports liver function and digestion.

- Useful in managing diabetes, cancer, and cardiovascular conditions.
- Enhances immunity and reduces oxidative stress.

FOLKLORIC PREPARATIONS

- **Rhizome decoction tea:** Used for fevers, dysentery, abdominal pain, flatulence, spasms, and arthritis.
- **With coconut oil:** Acts as stomachic and vulnerary (healing agent).
- **Juice of fresh rhizome:** Taken internally as an anthelmintic, for menstrual irregularities and painful swellings.
- **Crushed rhizome**: Applied as antiseptic on wounds.
- **External application**: For insect bites, ringworm, and bleeding.
- **1:20 decoction**: Used in catarrhal and purulent ophthalmia.
- **India**: Used for leprosy, liver issues, swelling, wounds, whooping cough, pimples; turmeric milk used for colds and coughs.
- **Hotpaste**: Made with turmeric, lime, and saltpeter for sprains and bruises.
- **Powder/paste**: Applied during smallpox/chickenpox to promote scabbing.
- **Flower paste**: Treats ringworm and parasitic skin infections.
- **Ointments**: Used for neuralgia and rheumatism.
- **Intermittent fevers, dyspepsia, flatulence**: Treated with rhizome.
- **Ayurveda**: Stomach and liver tonic, blood purifier.
- **Malaysia**: Carminative (anti-flatulence) remedy.
- **China**: Used for colic, amenorrhea, and congestion.
- **Fumes**: Inhaled during catarrh and severe colds.
- **Flatulence in children**: Garlic/onions used alongside turmeric.
- **Generaluses**: Carminative, antispasmodic, and treatment for diarrhea and dysentery.

OTHERUSES

Dye: A renowned natural dye for silk, wool, and cotton; rhizomes used in the Philippines for dyeing mats.

Dessert: In Japan, made into flour like cassava or arrowroot for desserts.

Cosmetics: Used traditionally in Sudan for cosmetic purposes.

RECENT FINDINGS

Curcumin found effective in inhibiting cancer cell growth. Demonstrated antiviral properties against multiple viral strains. Nanocurcumin formulations show improved absorption and clinical outcomes. Beneficial in neurodegenerative disorders and metabolic syndrome. Used in oral gels for gingivitis and mucosal inflammation.

LIQUORICE[37,38,39,40,41]

BOTANICAL NAME: *Glycyrrhiza glabra* Linn.

FAMILY: Fabaceae

HABITAT: Liquorice is native to Southern Europe and Western Asia. In India, it is cultivated in Punjab and Kashmir. It prefers sandy loam soil and moderate climate.

COMMON NAMES

English: Liquorice / Licorice (Plate. 7)

Tamil: Athimadhuram

Sanskrit: Yashtimadhu

Hindi: Mulhatti

Plate 7: LIQUORICE

VALUES:

Liquorice is a versatile medicinal herb with a broad range of therapeutic properties:

- Demulcent, Expectorant, Antiallergic, Anti-inflammatory
- Spasmolytic, Mild Laxative, Antistress, Antidepressant
- Antiulcer, Liver-protective, Estrogenic, Emmenagogue, Antidiabetic

It is used for:

- Respiratory ailments: Bronchitis, dry cough, respiratory infections, catarrh, tuberculosis
- Digestive & ulcer issues: Gastric and duodenal ulcers, inflamed stomach, mouth ulcers, abdominal pain
- Genitourinary disorders: Urinary tract infections
- Hormonal & stress-related conditions: Adrenocortical insufficiency

CONTENTS

- Primary Active:

✓ Glycyrrhizin (2–9%): A triterpene saponin with low hemolytic index

✓ Glycyrrhetinic (Glycyrrhetic) acid (0.5–0.9%): The aglycone of glycyrrhizin

- Other Actives:

✓ Isoflavonoids, chalcones, coumarins

- ✓ Triterpenoids and sterols
- ✓ Lignans, amino acids, amines, gums
- ✓ Volatile oils

Useful Parts: Roots (dried)

DOSAGE: Root Powder: 1–3 grams (API Vol. I); Decoction: 20–30 ml; Syrup and extract: As per formulation.

Cautions:

- Glycyrrhizin may cause fluid retention and hypokalemia if used in excess or long-term.
- Patients should follow a high potassium, low sodium diet.
- Extra care for elderly and patients with hypertension, cardiac, renal, or liver issues.

Special Extract:

- DGL (Deglycyrrhizinated Licorice) is used for peptic ulcer treatment.
- Glycyrrhizin-containing oral preparations: Used for viral infections, viral hepatitis, common cold
- Topical preparations with glycyrrhetinic acid: Effective in herpes, eczema, psoriasis
- In Japan: Injectable combination of glycyrrhizin, cysteine, and glycine is used to treat acute and chronic hepatitis.

MEDICINAL USES

- Effective in treating cough, sore throat, and bronchitis.
- Used as a mild laxative, hepatoprotective, and antiulcer agent.
- Supports adrenal function and hormonal balance.
- Helps manage gastric irritation, inflammation, and skin diseases.
- Possesses antimicrobial, anti-allergic, and immune-modulating effects.

FOLKLORIC PREPARATIONS

- Root decoction used as a gargle for throat infections.
- Syrup prepared with honey and ginger given for cold and asthma.
- Paste applied externally to reduce skin inflammation and rashes.
- Mixed with milk or ghee to boost stamina and reduce fatigue.
- Included in Unani and Siddha tonics for hormone balance.

OTHER USES

Used in confectionery, cough drops, and herbal teas.Used as a flavoring agent in tobacco and pharmaceuticals.Used in cosmetic formulations for skin brightening.

RECENT FINDINGS

Glycyrrhizin exhibits strong antiviral action including against SARS-CoV. Hepatoprotective effect proven in patients with chronic hepatitis. Shows anti-inflammatory action useful in eczema and dermatitis. Aids in weight management and reduces fat accumulation. Flavonoids promote gastric healing and mucosal defense.

SUMMARY

Botanical Name	Family	Common Name	Pharmacopoeial Uses	Key Properties	Useful Parts	Typical Dosage
Vitex negundo	Verbenaceae	Chinese Chaste Tree	Leaves & roots for vaginal discharge, oedema, skin diseases, rheumatism; anti-inflammatory, analgesic, antioxidant activities	Anti-inflammatory, analgesic, expectorant, cytotoxic, antitussive	Leaves, roots, seeds, flowers	Varies by part and traditional use
Piper nigrum	Piperaceae	Black Peppercorn	Fruit as stimulant, carminative, diuretic, antiasthmatic, anticholerin; external rubefacient	Carminative, antioxidant, neuroprotective, bioavailability enhancer, antidiabetic	Fruit	Culinary & decoction use; ~1–2 g in remedies
Azadirachta indica	Meliaceae	Neem	Leaves & bark for antimicrobial, antiviral, antifungal, antimalarial, antifertility, hypoglycemic effects	Antimicrobial, antidiabetic, antifungal, hepatoprotective, contraceptive	Leaves, bark, oil	Leaf Powder: 1–3 g; Decoction: 10–20 g; Oil: 5–10 drops
Allium sativum	Liliaceae / Alliaceae	Garlic	Used for hypertension, hyperlipidemia, infections, epilepsy, mental disorders	Antimicrobial, hypolipidemic, antioxidant, cardioprotective	Bulb	3 g/day
Alpinia galanga	Zingiberaceae	Greater Galangal	Used for digestive issues, respiratory ailments, rheumatic pain; tonic and stimulant	Carminative, stimulant, antioxidant, antimicrobial	Rhizome	Powder: 1–3 g/day; Decoction: 15–30 ml/day
Curcuma longa	Zingiberaceae	Turmeric	Anti-inflammatory, digestive, liver health; used in inflammatory & dyspeptic conditions	Anti-inflammatory, antioxidant, hepatoprotective, anticancer	Rhizome	Powder: 1–3 g/day; Milk: 5–10 g; Extract: ~500 mg
Glycyrrhiza glabra	Fabaceae (Leguminosae)	Liquorice	Used for respiratory infections, ulcers, hormonal imbalance; stress-related & inflammatory conditions	Demulcent, antiulcer, antiviral, hepatoprotective, adaptogen	Root	Powder: 1–3 g/day; Decoction: 20–30 ml

CONCLUSION

From the plants studied in this review, we conclude that traditional medicinal plants have long served as valuable sources of therapeutic benefits. Their extensive historical use supports their authenticity and highlights their significance as natural treasures that contribute profoundly to human health. The plant kingdom has consistently offered widespread and effective remedies for a variety of ailments and diseases. Furthermore, it continues to play a vital role in enhancing the overall well-being of human society. The plants discussed in this project clearly demonstrate the vast medicinal potential of traditional botanical resources. Unlocking the full therapeutic value of each of these plants requires a high level of scientific rigor and research. Yet, the fact that many of them have been used for centuries—often with remarkable efficacy—underscores the deep knowledge embedded in traditional systems of medicine. Among the seven medicinal plants reviewed, each holds immense promise for improving health outcomes. This reinforces the importance of not only preserving these plants but also investing in further research to fully understand and harness their benefits. In conclusion, the conservation and continued study of medicinal plants are essential for both current and future healthcare advancements.

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