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2. Ancient Remedies: Exploring Traditional Herbal Plants

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2.1 Introduction:

From the initial formation of human societies to the present, they have always had some interaction with their environments and made use of the elements within the environment for food and medicine. Learning which plants to use in order to prepare food and medicine has evolved from a process of trial and error, and over time man was able satiate his needs from the things around him. Almost every culture regards medicinal plants as a medical resource. Looking after the safety, quality or effectiveness of herbal medicine and preparation of herbal medicine for industrialized and developing society was quite recent. In the days to come, unleashing plant-based herbal drugs, by systematizing and deregulating the health of the active compounds in the herbal dosage forms, will usher in a new order in which human maladies will be dealt with holistically. The understanding of traditional knowledge and medicinal plants will be of great importance for the utilization and exploration of natura.

Alternative medicines are being used by about 60 percent of the world's population. These medicines are not only used by the rural masses for their primary health care in developing countries but are also used in developed countries where modern medicines dominate.

The Indian subcontinent is a vast repository of medicinal plants that are used in traditional medical treatments. The alternative medicines in the traditional systems are derived from herbs, minerals, and organic matter, whereas in the preparation of pharmaceutical herbal drugs only medicinal plants are used. The dependence of humans on plants as a source of medicine dates back into antiquity and constitutes

an important part of the health care delivery system in India. In India, about 70 percent of the rural population depends on the Ayurvedic system of medicine. The overwhelming majority of healers/practitioners of the traditional systems of medicine prepare their drugs by their own recipes and distribute to the patients. In the Western countries, nearly 40 per cent of people are using the herbal medicine for the treatment of different diseases. This interest in traditional medicines is growing rapidly due to the attention being given to it by the governmental agencies and different NGO's comprising of general public and researchers as well as the increased side effects, adverse drug reactions, and cost factor of the modern medicines. India is the largest producer of medicinal plants.

There are now around 250,000 registered medical practitioners of the Ayurvedic system, compared to approximately 700,000 of the modern medicine (Yadav et al., 2014). In India, around 20,000 medicinal plants have been documented; however, traditional practitioners use only 7,000–7,500 plants for curing different diseases. The proportion of use of plants in the different Indian systems of medicine is Ayurveda 2000, Siddha 1300, Unani 1000 Homeopathy 800, Tibetan 500, Modern 200 and folk 4500. Effective plant-based formulations are in use as traditional and folk medicine. The number of practitioners who are using the traditional medicinal system for health care is more than 1.5 million. More than 7800 manufacturing units are engaged in the production of natural health products and traditional plant-based formulations in India, which requires more than 2000 tons of medicinal plant raw material every year. Over 1500 herbals are sold as dietary supplements or ethnic traditional medicines.

2.2 Indian Traditional Medicine:

Ayurveda is an ancient health care system which evolved in India dates back to about 5000 years ago. As per the ancient literatures on Ayurveda, it was practiced during Vedic period of India. About 700 plants were described in Charaka Samhita and Sushruta Samhita during the 1st millennium BC.

This medical system is widely practiced in other parts of the world as a form of complementary medicine. Ayurvedic System of INDIA aims to preserve, promote and sustain good health and preventing diseases through healthy lifestyle practices. The literal meaning of Ayurveda is the "Science of life". It is estimated that about 7,500 plants are used in local health traditions in most rural and tribal villages in India. Herbal treatments are the most popular form of Traditional Medical System (Pandey et al., 2013).

The plant-based traditional medicine systems continue to play a crucial role in the health care system. The demand of herbal based medicine, health products, pharmaceuticals, food supplements, nutraceuticals, cosmetics are increasing worldwide. In the 21st century, natural products represent more than 50% of all drugs in clinical use. As many as 50% of the approved herbal drugs during the last 3 decades are either directly or indirectly from natural products including plants, microorganisms, fungi and animals. According to the reports of National Medicinal Plant Board (NMPB), the Indian herbal industry may like to go up in an order of Rs. 80 to 90 billion by 2020.

However, India is moving forward in popularizing of the Traditional Medical System of AYUSH (Ayurveda, Yoga, Unani, Siddha and Homeopathy) in health care sector through global networks. In spite of advanced in modern medical system, there are many new diseases are emerging in few decades. Looking to the emerging challenges in the healthcare system, there is a need to integrate the Ayurveda in medical system for the management and treatment of lifestyle-related diseases. Ayurveda can provide a drug-free society for curing the diseases and management of quality of life. To augment the traditional system of India, Government of India has established a National Level Policy for growth, promote and development of the Traditional System of Indian Medicine (Shakya et al., 2016).

2.2.1 Ayurveda:

Ayurveda means science of life and is the oldest known medical system for healthy living principles. The origin of its wisdom is from the ancient Indian scriptures (Vedas). The scriptures were written based on the inner realisation of the illumined Sages (Rishis). The first written text on Ayurveda (*Charaka Samhita*) is around 1st millennium B.C. The second text (Sushruta Samhita) is a century later and is about ayurvedic surgery. The third most important ayurvedic text *(Asthanga Hridayam)* is from 7th century A.D. and is a compilation of the two previous texts. Between 5th century B.C. and 5th century A.D. Ayurveda spread to all corners of the world – China, Tibet, Persia, Arabia, Egypt, Greece and Rome – and merged with local traditions and habits. This is the common ground for all new systems and natural medicine. Hence Ayurveda is called ‘the mother of all medical systems.’

Ayurveda is a simple and holistic approach to healing. It wants to know you and reveal the deeper causes of your health issues. It wants to get to the core of the problem and find out where the problem starts – in your diet, lifestyle, hereditary taint, negative thinking or emotional and energetic imbalance.

It gives your insight into the bigger picture of what's creating and affecting your mental and physical state. Ayurvedic practice above all is about conscious prevention and healthy living because it's always easier to cure an issue in the early stages rather than letting it develop and damage the tissues. 70% of most issues start from wrong diet. So successful Ayurvedic therapy above all depends on right diet and our willingness to change some of our present habits and stereotypes because they often create our health issues. Right attitude, strong willpower and determination to tackle our health issues is the foundation stone of success (Jaiswal and Williams, 2017).

A. Basic Principle of Ayurveda:

Ayurveda teaches that the universe is made up of five elements: Vayu (Air), Jala (Water), Aakash (Space or ether), Prithvi (Earth), and Teja (Fire). These elements, known as Pancha Mahabhoota in Ayurveda, combine in various ways to create the three fundamental humours of the human body. These humours—Vata dosha, Pitta dosha, and Kapha dosha—are collectively referred to as the "Tridoshas," and they regulate essential physiological functions, along with five sub-doshas associated with each principal dosha.

According to Ayurveda, the human body comprises Saptadhatus (seven tissues): Rasa (tissue fluids), Meda (fat and connective tissue), Rakta (blood), Asthi (bones), Majja (marrow), Mamsa (muscle), and Shukra (semen). It also includes three Malas (waste products): Purisha (faeces), Mutra (urine), and Sweda (sweat). Vata dosha is responsible for cellular transport, electrolyte balance, and waste elimination, with its effects heightened by dryness. Pitta dosha manages body temperature, optic nerve coordination, and the sensations of hunger and thirst, with heat exacerbating its effects. Kapha dosha, influenced by sweet and fatty foods, provides lubrication to the joints for optimal function.

The catabolism of the body is believed to be governed by Vata, metabolism by Pitta and anabolism by Kapha. To maintain good health, it is essential to keep a balance among the three doshas and other factors. An imbalance among them can lead to illness or disease. Ayurveda emphasizes that achieving a perfect balance between the natural elements and the Tridoshas is crucial for a healthy life, guided by the principles of divine wisdom. Ayurveda utilizes the "Pancha karma" method in its therapies. This therapy involves various processes aimed at rejuvenating the body, cleansing it, and promoting longevity. The term Pancha karma refers to five actions designed to eliminate toxins from body tissues.

These actions include Virechan (purgation using powders, pastes, or decoctions), Vaman (therapeutic emesis induced by specific medicines), Basti (enemas made from medicated oils), Rakta moksha (blood detoxification), and Nasya (administration of medicines such as decoctions, oils, and fumes through the nasal route). Essentially, Pancha karma consists of three main steps: Poorva karma (the preparatory phase for the therapy), Pradhan karma (the core therapeutic process), and Paschat karma (a regimen to restore the body's digestive and absorptive functions to their normal state).

In practice, Ayurveda encompasses eight disciplines known as "Ashtanga Ayurveda." These include Kayachikitsa (internal medicine), Bhootavidya (psychological disorders), Kaumar Bhritya (pediatric care), Rasayana (geriatrics), Vajikarana (aphrodisiacs and eugenics), Shalya (surgery), Shalakya (ear, nose, and throat as well as eye treatments), and Agada Tantra (toxicology).

With a rich knowledge of plants, minerals and animal-based products, and the above based principles of doctrine, Ayurveda has achieved its widespread acceptance globally (Jaiswal and Williams, 2017).

2.2.2 Siddha:

The Siddha system of medicine is founded on principles similar to those of Ayurveda, positing that the human body is made up of the five elements of the Universe, known as the pancha mahabhootas. In addition to these elements, the Siddha system asserts that an individual's physical, moral, and physiological well-being is influenced by 96 factors. These factors encompass aspects such as perception, speech, and pulse diagnosis. Perception is often a key determinant in treating psychosomatic conditions, utilizing minerals and metals, along with some plant products to a lesser extent. The Siddha system employs various preparations derived from plants and minerals, typically in powder form, which are created through a range of processes, including calcination.

According to Siddha medicine, various psychological and physiological functions of the body are linked to a combination of seven elements. The first is saram (plasma), which is responsible for growth, development, and nourishment. The second is cheneer (blood), which nourishes muscles, adds color, and enhances intellect. The third element is oun (muscle), which shapes the body. The fourth is kollzuppu (fatty tissue), which maintains oil balance and lubricates joints. The fifth is elumbu (bone), which provides structure, posture, and movement.

The sixth is moolai (brain), which is associated with strength. Finally, the seventh element is sukila (semen), which is responsible for reproduction. Similar to Ayurveda, Siddha medicine also classifies the physiological components of human beings into three categories: vatha (air), pitha (fire), and kapha (earth and water).

Siddha medicine is rooted in the belief that the human body and the universe are composed of five elements: earth, water, fire, air, and ether. These elements interact and balance to maintain health. The three Gunas of Siddha medicine are:

1. **Sattva:** Represents purity, clarity, and balance. It is associated with qualities like goodness, happiness, knowledge, and peace. When sattva is dominant, a person is calm, contented, and virtuous.
2. **Rajas:** Represents passion, activity, and restlessness. It is associated with qualities like desire, ambition, ego, and excitement. When rajas is dominant, a person may be energetic, creative, and ambitious, but also prone to anxiety, anger, and restlessness.
3. **Tamas:** Represents inertia, ignorance, and darkness. It is associated with qualities like laziness, negativity, greed, and delusion. When tamas is dominant, a person may be lethargic, depressed, and resistant to change.

The balance of these three gunas is believed to influence an individual's physical, mental, and emotional well-being. An ideal state is when sattva is dominant, but a healthy balance of all three gunas is also important (Jaiswal and Williams, 2017).

2.2.3 Unani:

The Unani system of medicine has its roots in Greece. This medical system was brought to India by Arab scholars and gained prominence when some Unani physicians sought refuge in India following the Mongol invasion of Persia. Since then, Unani medicine has firmly established itself in India and is officially recognized by the Indian government for clinical practice and research funding. Treatments often involve plant-based formulations, including oils, tinctures, powders, and ointments.

The Unani system believes strongly in the healing properties of nature. It considers health as a condition that is achieved when basic components of the body are in complete harmony, while their disbalance is a state of disease. The theoretical framework of Unani medicine is based on the philosophy of Hippocrates.

The most distinguishing feature of Unani medicine is the concept of Tabiat (madicatrix naturae). Galen defined Tabiat as the potential of the body that resists and opposes every derangement in the natural state of the body by causing appropriate changes. Comparable to a limited extent to the concept of "immunity" in modern medical science, it is governed by certain basic principles called Umoore Tabiyah, which include (i) Arkan (substances), (ii) Mizaj (temperament), (iii) Akhlat (humors), (iv) Rooh (vital spirit or pneuma), (v) Tabiat (potential for maintaining equilibrium), (vi) A'aza (organs), and (vii) Afaal (Parveen et al., 2020).

According to the Unani concept, everything in existence, including the human body, is made up of four fundamental elements: Naar (fire), Hawa (air), Ma (water), and Arz (earth). Each of these elements possesses distinct binary qualities: fire is characterized as hot and dry, air as hot and wet, water as cold and wet, and earth as cold and dry. These four elements also correspond to the four states of matter, where "air" represents gases, "water" signifies liquids, "earth" denotes solids, and "fire" symbolizes energy.

The interaction among these elements leads to various combinations, which ultimately form the Mizaj (temperament) of individuals. Consequently, every living being has its unique temperament, aligned with the functions it needs to perform. The human body is thought to maintain an optimal balance of these elements, resulting in an ideal temperament that supports its functions effectively. In Unani medicine, therapeutic approaches aim to restore the body's normal temperament to alleviate disease.

Hippocrates's humoral theory posits that the vital fluids in the body consist of four types of humor (Akhlat): Dum (blood), Balgham (phlegm), Safra (yellow bile), and Sauda (black bile), each with varying proportions of the four basic Arkan. Blood is described as hot and wet, phlegm as cold and wet, yellow bile as hot and dry, and black bile as cold and dry in temperament (Mizaj).

Each individual has a unique blend of these humors, which shapes their temperament. A predominance of blood, phlegm, yellow bile, or black bile results in a sanguine (Damvi), phlegmatic (Balghami), choleric (Safravi), or melancholic (Saudavi) temperament, respectively. The idea of humors is not exclusive to Unani medicine; it is also found in Ayurveda and Siddha, which predate Unani. However, this concept is presented in a more detailed and refined manner within the Unani system (Jaiswal and Williams, 2017).

2.2.4 Homeopathy:

Homeopathy was introduced in the mid-17th and 18th centuries. This practice is founded on concepts like "immunological memory" and the "memory of water," as well as the parallels between the pharmacological properties of a drug and the disease it aims to treat. Homeopathy employs remedies that induce symptoms akin to those of the illness, initially exacerbating the pathological condition before addressing it. For over a century, this system has been practiced in India, becoming a vital component of the country's traditional medicine. The Indian government recognizes homeopathy, and numerous institutions, research centres, and regulatory bodies support its advancement. In homeopathy, mother tinctures or aqueous extracts from various sources—such as plants, animal substances, venoms, and minerals—are diluted and succussed (a specific mixing technique) according to Pharmacopeial standards to create formulations with very low potencies (Jaiswal and Williams, 2017).

Medicinal plants and their formulation in ayurveda and homeopathy system of medicine (Joshi and Joshi, 2013; Poddar et al., 2020):

Table 2.1: Medicinal plants and their formulation in ayurveda and homeopathy system of medicine

Sr. No	Botanical Name	Common name	Family	Active Chemical constituents	Used for
1	*Allium cepa*	Onion	Amary-llidaceae	Allicin, quercetin, fisetin, other sulphurous compounds like diallyl disulphide and diallyl trisulphide	Mainly used for common cold, normalizes blood pressure, prevent diarrhoea, inhibits microbial infection, increases appetite, treats

Sr. No	Botanical Name	Common name	Family	Active Chemical constituents	Used for
					diabetes, inhibits cancer cell growth, stimulates respiratory tract, helpful in swollen feet, hair growth.
2	*Allium sativum*	Garlic	Amary-llidaceae	Allicin, alliin, diallyl disulfide, diallyl trisulfide, ajoene, S-allyl-cysteine.	Used as natural immunity booster, reduces high blood pressure, diabetes, cardiovascular diseases, and reduces stress, cure nerve problems, skin darkening purposes.
3	*Azadira-chta indica*	Neem	Lamiaceae	Azadirachtin, nimbin, nibidin, nimbidol, salanin, gedunin,, quercetin.	Used for the treatment of rheumatism, asthma, fever, worm infestations, bacterial infection, tuberculosis,

Sr. No	Botanical Name	Common name	Family	Active Chemical constituents	Used for
					diarrhoea, jaundice, dysentery, to promote healing, measles, smallpox, inflamed gums, urinary diseases.
4	*Andro-graphis paniculata*	Green Chiretta	Acanthaceae	Andrographolide	Used to treat diabetes, high blood pressure, ulcer, leprosy, bronchitis, colic, influenza, malaria, blood purifier, cold, constipation, fever, liver disorders, loss of appetite, urinary tract and lung infections, low sperm count.
5	*Aconitum napellus*	Monkswood	Ranunculaceae	Aconitin, isoaconitin, aconitic acid	Stress, anxiety fever due to

Sr. No	Botanical Name	Common name	Family	Active Chemical constituents	Used for
					typhoid, measles.
6	*Aloe barba-densis*	Aloe vera	Asphodelaceae	Aloin/ barbaloin, Aloe emodin, aloesin	Treatment of pimples, acne and mouth ulcers, laxative, wash for piles, burns, edema, pain, swellings and wounds, Juice used to increase menstrual flow and for eye disease, used in case of any type of skin problem.
7	*Berberis vulgaris*	Barberry	Berberidaceae	Berberin	Liver and kidney problems
8	*Bryonia alba*	Wild hop	Cucurbitaceae	Cucurbitacin, bryonin	Synovial inflammation, pneumonia and measles
9	*Bacopa monnieri*	Brahmi	Plantaginaceae	Brahmine, herpestine, nicotinine, bacosides A and B, saponins A, B and C, triterpenoid saponins, stigmastanol,	It contains antioxidants, protects against cell damage, prevents

Sr. No	Botanical Name	Common name	Family	Active Chemical constituents	Used for
				betulinic acid, D-mannitol etc.	Alzheimer's, Parkinson's disorders, reduces inflammation, cure diabetes, heart & kidney disease, boosts brain function, prevent anxiety, stress, lower blood pressure, inhibit tumour cells, epilepsy.
10	*Curcuma longa*	Turmeric	Zingiberaceae	Curcumin, tumeron, atlantone, zingiberene, cyclocurcumin, demethoxycurcumin, bisdemethoxy-curcumin	Used to cure burns, cuts, improves digestion, dissolves gallstone, relieves arthritis, prevents cancer, helps in Alzheimer, and inhibits bacteria, virus, acne,

Sr. No	Botanical Name	Common name	Family	Active Chemical constituents	Used for
					pimples, al fungi, and parasites, cures allergy, and pores.
11	*Cicer arietinum*	Chick Peas	Fabaceae	Alkaloids, carbohydrates, proteins, amino acids, fixed oils, phytosterols, phenolic compounds and tannins, flavonoids, glycosides, saponins, and amino acids.	Used for insufficient milk or sperm, kidney stones, urine problems, menstruation, treats bronchitis, sunstroke, snake bites, diabetes, hypertension, itchy skin, tumor, increases bone health, controls blood pressure, prevent cancer, develops memory and

Sr. No	Botanical Name	Common name	Family	Active Chemical constituents	Used for
					thinking power.
12	*Capsicum annuum*	Chili	Solanaceae	Capsaicin, capsosides, capsianosides	Used to cure toothache, treat arthritis, increase blood circulation and stimulate gastric activities.
13	*Camellia sinensis*	Green tea	Theaceae	Catechin	Helps in weight loss and metabolism, lowers blood sugar level, used in heart disease, oesophageal cancer, high cholesterol, Alzheimer's and Parkinson's disease, helps in depression, good sleep, tooth decay, to reduce wrinkles and signs of aging.

Sr. No	Botanical Name	Common name	Family	Active Chemical constituents	Used for
14	*Calotropis gigentica*	Crown flower	Asclepidaceae	Calotropin, calotoxin, lupeol from latex	Asthma, bronchitis, fever, jaundice.
15	*Catharan-thus roseus*	Periwinkle	Apocynaceae	Vinblastine, vincristine, catharanthine, vindoline, rosindin, limonene.	It is used to treat leukaemia, Hodgkin's lymphoma, and increases blood flow in brain, cures hypertension, dizziness, cranial traumas, menstrual irregularities, chronic constipation, dyspepsia, malaria, dengue, skin diseases, wasp stings, toothache, and diabetes.
16	*Glycyrr-hiza glabra*	Liquorice	Fabaceae	Glycyrrhizin, glycyrrhetinic acid, licochalcone A, glycyrrhizic acid	It improves the symptoms of eczema, sore throats, bad breath, dental plaque,

Sr. No	Botanical Name	Common name	Family	Active Chemical constituents	Used for
					indigestion, ulcer, hepatitis, kidney problems, liver injury, obesity, Parkinson's disease, stomach ulcer, and enlarged ovary with cysts, infections, cancer, tuberculosis, chronic fatigue.
17	*Ipomoea aquatica*	Water Spinach	Amaranthaceae	Flavonoids, amino acids, alkaloids, lipids, steroids, saponins, phenols, reducing sugars, tannins, β-carotene, glycosides, and minerals.	Helps to reduce cholesterol, treats jaundice and liver damages, anaemia, useful for indigestion, constipation, diabetes, prevents heart attack,

Sr. No	Botanical Name	Common name	Family	Active Chemical constituents	Used for
					lowers blood pressure, boosts immunity and treats ulcer, menstruation pain, fever, rejuvenates skin.
18	*Justicia adhatoda*	Malabar nut	Acanthaceae	Vasicine, kaempferol, quercetin, astragalin, daucosterol.	Different parts of the plants have been used in cough, cold, asthma, bronchitis, tuberculosis, allergy, wound healing, it prevents intestinal parasites, dysentery, helps in skin disease, scabies etc., treat chest congestion, breathing problems.
19	*Mentha piperita*	Mint	Lamiaceae	Menthol, menthone A, menthyl acetate, menthofuran,	Used in indigestion,

Sr. No	Botanical Name	Common name	Family	Active Chemical constituents	Used for
				limonene A, carvaone A,	diarrhoea, hyperacidity, anaemia, morning sickness, bad breath and gum problem, irritable bowel syndrome, tuberculosis, bronchitis, eczema, acne, anxiety, Crohn's disease, colitis, gallbladder, liver complaints.
	Ocimum sanctum	Holy basil	Lamiaceae	Linalol, eugenol, ocimene, cineol, thymol, camphor, rosmarinic acid, carvacrol, carophyllene, estragol	It is used for nausea, cold and flu, fever, indigestion, stress, anxiety, earache, bronchitis, malaria, diabetes, asthma, heart disease, snakebite

Sr. No	Botanical Name	Common name	Family	Active Chemical constituents	Used for
					antidote, hepatitis, tuberculosis, genitourinary disorders, migraine, acne, anti-aging purposes.
20	*Phyllan-thus emblica*	Indian gooseberry	Phyllanthaceae	Falvonoids, saponins, tannins, cardiac glycosides, alkaloids, anthraquinones, phlobotanins steroids, and carbohydrates	It is used for the treatment of jaundice, inflammation, diabetes, cough, asthma, bronchitis, dyspepsia, anaemia, cures colic, peptic ulcer, skin diseases, cardiac disorders, dizziness, snake bite, vomiting.
21	*Prunus dulcis*	Almonds	Rosaceae	Flavonoids, carotenoid, phenolics, tannins, lignans, anthocyanins,	Almond has memory improving activities, used for

Sr. No	Botanical Name	Common name	Family	Active Chemical constituents	Used for
				phytosterols, polyphenols, and fatty acids.	insomnia, headache, respiratory troubles, colic pain and peptic ulcer disease, constipation, enhances glow and fairness of skin, cures hair fall, itching, used in kidney stone, ladder, and strengthening of tooth.
22	*Pulsatilla nigricans*	Wind flower	Ranunculaceae	Anemonin, isoanemonin ($C_{10}H_8O_4$)	Fever, mumps, sore – throat
23	*Piper nigrum*	Black pepper	Piperaceae	Piperin, piperidin, β-carophyllene, limonene, α-pinene, β-pinene, piperoloids, chalcones.	Prevents asthma, arthritis, bronchitis, used in infection that causes diarrhoea, headache, stuffy nose, sinus infection,

Sr. No	Botanical Name	Common name	Family	Active Chemical constituents	Used for
					weight loss, menstrual pain, cancer, nerve pain, itchy skin, and people inhale pepper oil to prevent falls, to help quit smoking.
24	*Ricinus communis*	Castor bean	Euphorbiaceae	Ricin, ricinoleic acid, stearic acid, palmitic acid, oleic acid, ricinine	It is used for anal prolapsed, arthritis, constipation, facial palsy, strabismus, to treat headache, deafness, abscesses, in problems, bleeding, constipation, boils, piles warts, dandruff, and hair loss.
25	*Syzygium Aroma-ticum*	Clove	Myrtaceae	Eugenol, eugenyl acetate, β-carophyllene.	Reduces plaque on the teeth, excessive sweating of the palms,

Sr. No	Botanical Name	Common name	Family	Active Chemical constituents	Used for
					pain, blood sugar, bacterial infections, it helps dyspepsia, nasus in hangovers, diarrhoea, gas, vomiting, swelling, cholera, earache, mosquito repellent, bone stronger.
26	*Saraca asoca*	Ashoka	Fabaceae		Used in treating haemorrhagic, uterine pain, tumours, worm infestations, bacterial infections, skin problems, leucorrhoea, internal, menstrual cycle and

Sr. No	Botanical Name	Common name	Family	Active Chemical constituents	Used for
					uterine disorders, diabetes, diseases of the blood, enlargement of abdomen.
27	*Tinospora cordifolia*	Gilory	Menisper-maceae	Tinosporin, tinosporic acid, gilonin	Used to boost immunity, to treats heart related issues, infertility, swine flu, dengue, constipation, reduces stress, anxiety, tonsils, boosts memory, improve rheumatoid arthritis, the vision, reduces sign of aging, dark spots, pimples, fin lines.
28	*Trigonella foenum-graecum*	Fenugreek	Fabaceae	Trigonelline, galactomannan, diosgenin, sapogenin, hydroxyisoleucine.	Used to lower blood sugar, reduce menstrual

Sr. No	Botanical Name	Common name	Family	Active Chemical constituents	Used for
					cramps, sexual problems, used as antacid, treats dysentery, stomach disturbances, respiratory infections, fever, and hormonal disorders, induce labour pain, and induce lactation, hair growth.
29	*Withania somnifera*	Ashwang-andha	Solanaceae	Withanolides	Useful in curing the bronchial asthma, chronic fever, dysentery, arthritis, emetic syndrome, insect bites, gastric, cardiovascular, hepatic disorders, nervous exhaustion, insomnia,

Sr. No	Botanical Name	Common name	Family	Active Chemical constituents	Used for
					loose teeth, diabetes, male infertility, fibromyalgia, Parkinson's disease.
30	*Zingiber officinale*	Ginger	Zingiberaceae	Zingiberine, gingerol, flavones, coumarins.	Used to treat stomach upset, nausea, vomiting, nose bleeds, rheumatism, coughs, chest congestion, cholera, cold, diarrhoea, dropsy, stomach, and baldness, snakebite and toothache.

2.3 Home Garden Medicinal Plants:

A Home Garden Medicinal Plant refers to plants that are grown in home gardens for their therapeutic and medicinal properties. These plants have been used for centuries in traditional medicine systems like Ayurveda, Traditional Chinese Medicine, and folk remedies around the world to treat a variety of ailments.

By cultivating these plants at home, individuals have easy access to natural remedies for common health issues like colds, digestive problems, skin conditions, and stress. Examples of medicinal plants commonly found in home gardens include aloe vera (for burns and skin conditions), tulsi (holy basil) (for respiratory health and immunity), mint (for digestion and headaches), and turmeric (for inflammation and wound healing).

Having these plants readily available allows for a sustainable and cost-effective way to maintain health, reduce dependence on synthetic medications, and incorporate natural treatments into daily life.

A home garden with medicinal plants is a sustainable and accessible way to cultivate natural remedies for various health issues. These gardens have been part of traditional medicine for centuries, especially in cultures that rely on herbal remedies. They can be grown in any available space—whether in backyards, balconies, or even indoors—making them practical for urban or rural living (Chakraborty and Basu, 2018).

A. Important Medicinal Plants for a Home Garden: (Jana et al., 2015; Shukla et al., 2017)

1. Aloe Vera (*Aloe barbadensis*): Aloe vera is one of the most popular medicinal plants and is widely known for its soothing gel. The gel inside the leaves is used to treat burns, cuts, and skin irritations. It also has anti-inflammatory and moisturizing properties, making it useful in skincare.

2. Tulsi/ Holy Basil (*Ocimum sanctum*): Tulsi is revered in traditional Indian medicine for its numerous health benefits. It is used as a remedy for respiratory conditions like asthma and bronchitis, and also to boost immunity. Drinking Tulsi tea regularly is believed to help detoxify the body and reduce stress.

3. Turmeric (*Curcuma longa*): Turmeric contains the active compound curcumin, which has strong anti-inflammatory and antioxidant properties. It can be used in cooking to promote health or applied topically for skin conditions. Turmeric is known to support digestion, reduce inflammation, and aid in the healing of wounds.

4. Peppermint (*Mentha piperita*): Peppermint is known for its cooling and soothing properties. It can be consumed as tea to relieve digestive discomfort, including bloating and indigestion. The menthol in peppermint also helps alleviate headaches and can be applied topically to ease muscle aches.

5. Ginger (*Zingiber officinale*): Ginger is widely used to combat nausea, whether from motion sickness, pregnancy, or chemotherapy. It has anti-inflammatory properties and can aid in digestion. Ginger tea is a popular remedy for colds and sore throats, and it helps improve circulation.

6. Lemongrass (*Cymbopogon citratus*): Known for its citrusy aroma, lemongrass is used to alleviate anxiety and stress. It also has antibacterial and antifungal properties. Consuming lemongrass tea helps with digestion and detoxifies the body.

7. Thyme (*Thymus vulgaris*): Thyme is rich in antioxidants and has antimicrobial properties, making it beneficial for the immune system. Thyme tea is used to treat coughs, colds, and bronchitis, while its essential oil can be applied to the skin to treat acne and minor wounds.

8. China Rose (*Hibiscus rosa-sinensis*): It is an easy-to-grow home garden plant with numerous medicinal benefits. It is rich in antioxidants, supports heart health by lowering blood pressure, aids digestion, and boosts immunity with its high vitamin C content.

Hibiscus tea, made from the dried flowers, is a popular remedy for weight management and promoting skin health. The plant also has anti-inflammatory and antibacterial properties, making it useful for treating minor wounds and skin issues. Its beauty and health benefits make it an excellent addition to any garden.

9. Mango (*Mangifera indica*): The leaves, bark, and fruit of the mango have medicinal properties, such as aiding digestion, reducing inflammation, and helping control diabetes.

It is used in kidney stones, constipation, blood formation, diarrhoea, high blood pressure, cardiac problems, useful in sore eyes, inflammation, Alzheimer's, cancer, diabetes, gallstone, obesity loss.

10. Papaya (*Carica papaya*): Papaya is known for its enzyme papain, which aids digestion. The leaves and seeds are used to treat digestive issues and are known for their anti-inflammatory properties. It prevents dengue fever, cancer cell growth, facilitates digestion, menstrual pain, anti-malarial, and helps in IBS, used in skin problems, arthritis, dressing wounds and cure dyspepsia.

11. Banana (*Musa paradisiaca*): Bananas are rich in potassium and fiber, helping with digestion and heart health. Banana leaves are used in traditional medicine to soothe skin irritations. It cures depression, treats emotional sickness, increase blood and cures anaemia, reduces risk of blood pressure, menstrual cramp, helps to reduce morning sickness, constipation, ulcers, mosquito bites.

12. Lemon (*Citrus limon*): Lemon is packed with vitamin C and is used to boost immunity, aid digestion, and treat colds and sore throats. The peel contains oils with antiseptic properties. Lemon is active against bacteria, reduces inflammation, against fever, prevents scurvy, ulcer, urinary diseases, an antidote against poison, prevents bad breath, body odour, lowers blood pressure, vomiting, liver disorder, enhances immunity, for glowing skin.

B. How to Made a Home Medicinal Garden:

1. Choose the Right Plants: Select plants based on your climate, space, and personal medicinal needs. Start with easy-to-grow options like aloe vera, Tulsi, and peppermint etc.

2. Container Gardening: If you have limited space, use containers or pots to grow your medicinal plants. This also allows you to control the soil quality and move the plants indoors during harsh weather.

3. Sunlight and Water: Most medicinal plants require sunlight for at least 4-6 hours a day. Make sure to water them regularly but avoid overwatering, as some plants are prone to root rot.

4. Harvesting: Knowing when and how to harvest the medicinal parts of each plant (whether it be leaves, flowers, or roots) is essential for maximizing their benefits.

5. Storage: Once harvested, many medicinal plants can be dried and stored for future use. Ensure they are kept in a cool, dry place to retain their potency.

C. Advantages:

1. Natural Remedies at Your Fingertips: A home medicinal garden allows you to access fresh, natural remedies for common ailments like colds, headaches, and digestive issues.

2. Cost-Effective: Growing your own medicinal plants reduces the need to purchase over-the-counter medications, saving money in the long term.

3. Chemical-Free: By cultivating your own plants, you can control the growing environment, ensuring that they are free from harmful pesticides and chemicals often found in commercially grown herbs.

4. Sustainable: Home gardens contribute to sustainability by reducing the carbon footprint associated with transporting medicinal plants from farms to stores. They also promote biodiversity in your local environment.

5. Health Benefits: Aside from their medicinal uses, gardening itself is a relaxing and rewarding activity that reduces stress, promotes physical activity, and fosters a connection with nature.

2.4 Kitchen Garden Medicinal Plants: (Shukla et al., 2017)

A Kitchen Garden Medicinal Plant refers to plants that are cultivated in a kitchen garden primarily for their culinary uses, but that also offer significant medicinal benefits. These plants are typically herbs, vegetables, or spices that can be easily grown at home, either in outdoor gardens or in pots, and serve dual purposes—enhancing the flavour of meals while providing natural remedies for common ailments. A kitchen garden, also known as a home herb or vegetable garden, offers an excellent way to grow medicinal plants that serve dual purposes. These plants not only add flavor to meals but also provide a wide range of health benefits, making them an invaluable part of everyday life. With a little space and care, you can cultivate herbs, vegetables, and other medicinal plants right outside your kitchen or even indoors (Panda, 2015).

A. Key Medicinal Plants for a Kitchen Garden:

1. Coriander (*Coriandrum sativum*): Both the leaves and seeds of coriander are commonly used in cooking. Medicinally, it has antioxidant, anti-inflammatory, and antimicrobial properties. Coriander helps with digestion, promotes heart health, and can lower blood sugar levels. Its seeds are often used to treat stomach upset and aid digestion.

2. Mint (*Mentha piperita*): Mint, particularly peppermint and spearmint, is a favourite in many kitchen gardens for its refreshing flavour. Medicinally, mint aids in digestion, alleviates headaches, and helps relieve colds and flu symptoms. It is often used in tea to soothe nausea and indigestion, while its oil can be applied topically to ease muscle pain.

3. Basil (*Ocimum sanctum*): Basil is a fragrant herb that not only enhances dishes like pasta, salads, and sauces but also has medicinal benefits. Basil is rich in antioxidants and contains antibacterial and anti-inflammatory compounds.

It supports heart health, reduces oxidative stress, and boosts the immune system. Holy basil (Tulsi) in particular is known for its adaptogenic properties, which help the body cope with stress.

4. Rosemary (*Salvia rosmarinus*): Rosemary is another staple in Mediterranean cooking, often used to flavour meats, soups, and stews. Its medicinal properties include improving digestion, enhancing memory, and promoting hair growth. The antioxidant and anti-inflammatory properties of rosemary can help protect against chronic diseases, and its aroma is known to improve mood and concentration.

5. Thyme (*Thymus vulgaris*): Thyme is a hardy herb that thrives in kitchen gardens and is frequently used in cooking. Medicinally, thyme is valued for its antiseptic, antibacterial, and antifungal properties. Thyme tea is often consumed to alleviate coughs, bronchitis, and sore throats. Its essential oils can be used in cleaning or applied to minor cuts and infections to promote healing.

6. Parsley (*Petroselinum crispum*): Parsley is widely used as a garnish or an ingredient in various dishes. This herb is rich in vitamins A, C, and K, and is known to support kidney health, improve digestion, and reduce bloating. It also has anti-inflammatory and diuretic properties, making it useful for detoxifying the body and supporting overall health.

7. Fenugreek (*Trigonella foenum-graceum*): Fenugreek is a versatile plant used both for its seeds and leaves. Its seeds are often used in Indian cooking, while the leaves are eaten as a vegetable. Medicinally, fenugreek helps regulate blood sugar levels, improves digestion, and enhances lactation in nursing mothers. Fenugreek is also known for its anti-inflammatory and antioxidant properties.

8. Garlic (*Allium sativum*): Garlic is a powerful medicinal plant known for its immune-boosting properties. It has been used for centuries to treat infections, reduce blood pressure, and lower cholesterol levels. Garlic is also a potent antioxidant, which helps to protect the body from oxidative stress and inflammation. Adding raw or lightly cooked garlic to meals can provide these health benefits.

9. Turmeric (*Curcuma longa*): Turmeric is a popular medicinal plant in many kitchen gardens, especially in South Asian cuisine. Its active ingredient, curcumin, is a powerful anti-inflammatory and antioxidant. Turmeric is used to treat a variety of conditions, including joint pain, digestive disorders, and skin conditions. It can be used fresh in cooking or as a dried powder in teas and tonics.

10. Chili Peppers (*Capsicum annuum*): Chili peppers are not only a spicy addition to many dishes but also provide health benefits. Capsaicin, the compound responsible for the heat in chili peppers, is known to boost metabolism, reduce pain, and improve circulation. It also has anti-inflammatory properties and can aid in the treatment of arthritis and nerve pain.

11. Lemongrass (*Cymbopogon citratus*): Lemongrass is a tall, grassy herb commonly used in Asian cuisine. It has a fresh, lemony flavour and aroma. Medicinally, lemongrass has antifungal, antimicrobial, and anti-inflammatory properties. It can help with digestion, relieve stress, and reduce fever. Lemongrass tea is popular for its calming effects and ability to detoxify the body.

13. Chick Peas (*Cicer arietinum*): Known for its nutrient-dense seeds, chickpea is rich in protein and can be used in various dishes, like hummus and curries. It Used for kidney stones, urine problems, menstruation, treats bronchitis, sunstroke, snake bites, diabetes, hypertension, itchy skin, tumour, increases bone health, controls blood pressure, prevent cancer, develops memory and thinking power.

14. Curry Plant (*Murraya koenigii*): The curry plant has a distinct aroma similar to curry powder and is used to flavour foods. Medicinally, it's known for its anti-inflammatory properties. It treats diabetes, anaemia, eye related problems, improves vision, fights against infection and germs, burns excess fat. It is useful in digestion, constipation, diarrhoea, dysentery, piles, nausea, bloating. It prevents cancer, toothache, improves memory, skin, hair, respiratory problems.

15. Marigold (*Tagetes erecta*): Marigolds are often grown as ornamental plants but also possess medicinal properties. They have anti-inflammatory, antiseptic, and wound-healing capabilities. They also repel garden pests. It detoxifies the digestive system, heals viral inflammations, treats urinary, liver, gallbladder ailments, cure sore throats, toothaches, measles, mumps, heals cuts, scrapes, treats sunburn, diaper rash, insomnia.

B. How to Made a Kitchen Garden for Medicinal Plants:

1. Choose the Right Location: Select a spot that receives plenty of sunlight—most medicinal plants need at least 6 hours of direct sunlight a day. If space is limited, consider using containers or vertical gardening techniques.

2. Start Small: Begin with a few key medicinal plants that you use frequently, such as basil, mint, or parsley. As you gain experience, you can expand to include a wider variety of plants.

3. Good Soil: Ensure that your kitchen garden has well-drained, nutrient-rich soil. You can enhance your soil quality by adding compost or organic matter, which will promote healthy plant growth.

4. Regular Watering: Keep your plants well-watered, but avoid overwatering. Most medicinal plants prefer moist but not waterlogged soil.

5. Harvesting: Learn the best time to harvest each plant to maximize its medicinal properties. For example, herbs are typically best harvested in the morning after the dew has dried, but before the sun becomes too intense.

6. Pest Control: Use natural pest control methods, such as companion planting or homemade insecticidal soap, to keep your garden chemical-free.

7. Ongoing Care: Regularly prune your plants to encourage new growth and prevent them from becoming too woody or overgrown. This will ensure a continuous supply of fresh, potent herbs and vegetables.

C. Advantages:

1. Freshness and Convenience: Having a kitchen garden allows you to harvest fresh herbs and vegetables right when you need them. This ensures maximum flavour and potency, as medicinal plants are most effective when used fresh.

2. Dual-Purpose Plants: Many kitchen garden plants serve both culinary and medicinal purposes. This dual functionality makes them especially valuable in promoting health while enhancing meals.

3. Cost-Effective: Growing medicinal plants in your kitchen garden reduces the need to buy herbs, spices, or over-the-counter medications. With minimal effort, you can grow your own remedies for common health issues like colds, indigestion, or stress.

4. Eco-Friendly: Growing your own medicinal herbs reduces the carbon footprint associated with transporting store-bought herbs and medicines. It also allows for organic gardening practices, ensuring that no harmful chemicals are used.

5. Boosts Health and Well-Being: Consuming homegrown medicinal plants in your meals helps boost your immune system, improve digestion, and reduce inflammation. In addition, the act of gardening itself promotes mental health by reducing stress and improving mood.

6. Sustainable: A kitchen garden encourages sustainability. You can compost kitchen waste to fertilize your garden, use natural pest control methods, and harvest seeds for future planting. This reduces reliance on commercially grown plants that may be treated with pesticides or other chemicals.

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