

REVIEW

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Exploring Ayurveda: principles and their application in modern medicine

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Abstract

Background The integration of Ayurveda, Yoga, Unani, Siddha, and Homeopathy (AYUSH) with modern medicine aims to provide a more personalized and effective approach to healthcare. Ayurveda is a traditional medicine system in India that emphasizes the balance between mind, body, and spirit. It is based on the belief that every individual is unique and requires personalized treatment. The fundamental principles of Ayurveda revolve around maintaining equilibrium among three doshas: Vata (air and space), Pitta (fire and water), and Kapha (earth and water). Imbalances in these doshas are believed to cause diseases.

Main body of the abstract The integration of Ayurveda with modern medicine seeks to utilize the best of both systems, focusing on using natural remedies and treatments that have been used for centuries in Ayurveda. The integration involves combining the strengths of both systems, including the use of Ayurvedic principles in modern medicine and the incorporation of modern medicine into Ayurvedic practices. Several studies have explored the efficacy of Ayurvedic treatments for various diseases, and the integration of Ayurvedic principles into modern medicine can provide a more comprehensive approach to patient care.

Short conclusion Ayurveda is a traditional medical system deeply rooted in Indian culture that offers a holistic approach to healthcare. Its principles emphasize personalized treatment based on an individual's constitution. Integrating Ayurveda with modern medicine can enhance patient care by providing a more comprehensive approach towards health management. However, challenges exist regarding the standardization of Ayurvedic practices due to variations in formulations and the need for more scientific evidence for some treatments. Further studies are needed for validation purposes.

Keywords Ayurveda, Therapeutic lead, Integrative medicine, Panchakarma, Traditional medicine

Background

Ayurveda, also known as the “Science of Life,” is an ancient system of medicine that originated in India over 5000 years ago. It is contemplated one of the oldest healthcare classifications in the world and has been practiced continuously throughout history (Lohiya et al. 2016). Ayurveda encompasses a holistic approach to health and well-being, focusing on the balance between mind, body, and spirit. Ayurveda, an ancient healing system originating in India, has an opulent history spanning thousands of years. Its roots can be traced back to Vedic scriptures, including the Atharva Veda, Rig Veda, and Yajur Veda. Ayurvedic texts, such as the Charaka Samhita and the Sushruta Samhita, compiled between 1000

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and 500 BCE, serve as foundational sources for this traditional medical system (Narayana and Durg 2021; Singh and Agarwal 2022). These texts provide a comprehensive understanding of human anatomy, physiology, pathology, and therapeutic interventions. Ayurveda adopts a holistic approach to health and well-being, considering the physical, mental, and spiritual aspects of an individual. It emphasizes the dynamic balance between doshas (bio-energies), dhatus (body tissues), and malas (waste products) in maintaining health. Ayurvedic practitioners aim to restore this balance through various therapeutic modalities and lifestyle adjustments (Singh et al. 2021).

Fundamental principles

Panchakarma

Panchakarma is a central tenet of Ayurveda that involves a series of detoxification procedures to cleanse the body and mind. A holistic medical regimen called panchakarma purifies and revitalises the body, mind, as well as consciousness. It is founded on Ayurvedic principles, according to which each human is a unique phenomenon that is expressed through one of the five elements: Earth, Air, Fire, Water, and Ether. Each person has a different balance of the three doshas (tridosha) that are formed by these elements: Pitta, Kapha, and Vata. Disturbances in this doshic balance give rise to chaos and, ultimately, disease. Panchakarma is individualized for each individual founded on their unique constitution and disease, necessitating careful monitoring and oversight. It includes cleansing techniques (Shodanas) after pre-purification steps like Snehan and Svedana. It comprises five primary therapies, which are briefly described in Fig. 1.

Tridosha theory

One fundamental idea in Ayurveda that reflects a straightforward yet profound perspective on health is the Tridosha hypothesis. It asserts that the three basic energies—Pitta, Kapha, and Vata—that regulate all physiological processes are known as doshas. The various doshas that each person possesses in different amounts are what give humans their unique physical characteristics, personalities, and susceptibilities to illness. Ayurveda offers a variety of methods for balancing the doshas, such as Panchakarma, herbal remedies, dietary adjustments, and lifestyle changes (Fig. 2).

Therapeutic modalities

Ayurvedic medicine utilizes a vast array of herbs, spices, and plant extracts for therapeutic purposes. These herbal remedies are formulated into various preparations, including decoctions, infusions, pills, powders, and oils. Common herbs used in Ayurveda include turmeric, ginger, holy basil, neem and ashwagandha (Singh et al.

2022a, b, c, d; Wu et al. 2021). A few well-known Indian medicinal plants and their applications are included in Table 1.

Ayurvedic dietary guidelines are based on the principle of Ahara (proper nourishment). A balanced diet is essential for maintaining optimal health. Specific dietary recommendations are made according to an individual's dosha constitution and health condition. Ayurvedic massage, known as Abhyanga, involves massaging the body with medicated oils (Al Mahmud et al. 2023). It helps improve circulation, ease muscle tension, and promote relaxation. Specialized massage techniques, such as Shi-rodhara (pouring oil on the forehead), are also employed for specific health concerns. Ayurveda emphasizes the integration of yoga and meditation practices to enhance overall well-being. Yoga postures, breathing exercises, and meditation techniques are recommended to balance doshas, promote mental clarity, and reduce stress (Kakodkar et al. 2021). Ayurveda advocates for a harmonious lifestyle that aligns with the rhythms of nature. Regular exercise, adequate sleep, and stress management are essential components of Ayurvedic health maintenance. Ayurveda has gained global recognition for its holistic approach to health and well-being. It offers a comprehensive system that addresses the root causes of imbalances rather than merely treating them (Singh et al. 2022b; Verma et al. 2024).

Historical development

The origins of Ayurveda could be traced back to the Vedic period in ancient India when sages and seers documented their knowledge of health and healing in sacred texts called Vedas. These texts, particularly the Atharva Veda, contain detailed descriptions of various diseases, their causes, symptoms, and treatments (Sharma et al. 2022). Over time, Ayurveda evolved and expanded its scope through the contributions of renowned scholars such as Charaka and Sushruta. Sushruta Samhita and Charaka Samhita are two seminal texts that provide comprehensive guidelines for diagnosis, treatment, and prevention of diseases (Singh et al. 2022e). Ayurveda, a Sanskrit term meaning “science of life,” is a holistic system of medicine with its roots in ancient India. Ayurveda accentuates the equilibrium between body, spirit, and mind and uses natural herbs, diet, and lifestyle changes to promote health and prevent disease. Here is a detailed historical timeline of Ayurveda's development in India:

Early Vedic period (1500–1000 BCE)

The earliest evidence of Ayurvedic practices can be found in the ancient Vedic texts, such as the Rigveda, Atharvaveda, and Yajurveda. These texts mention medicinal herbs, surgical procedures, and guidelines for healthy

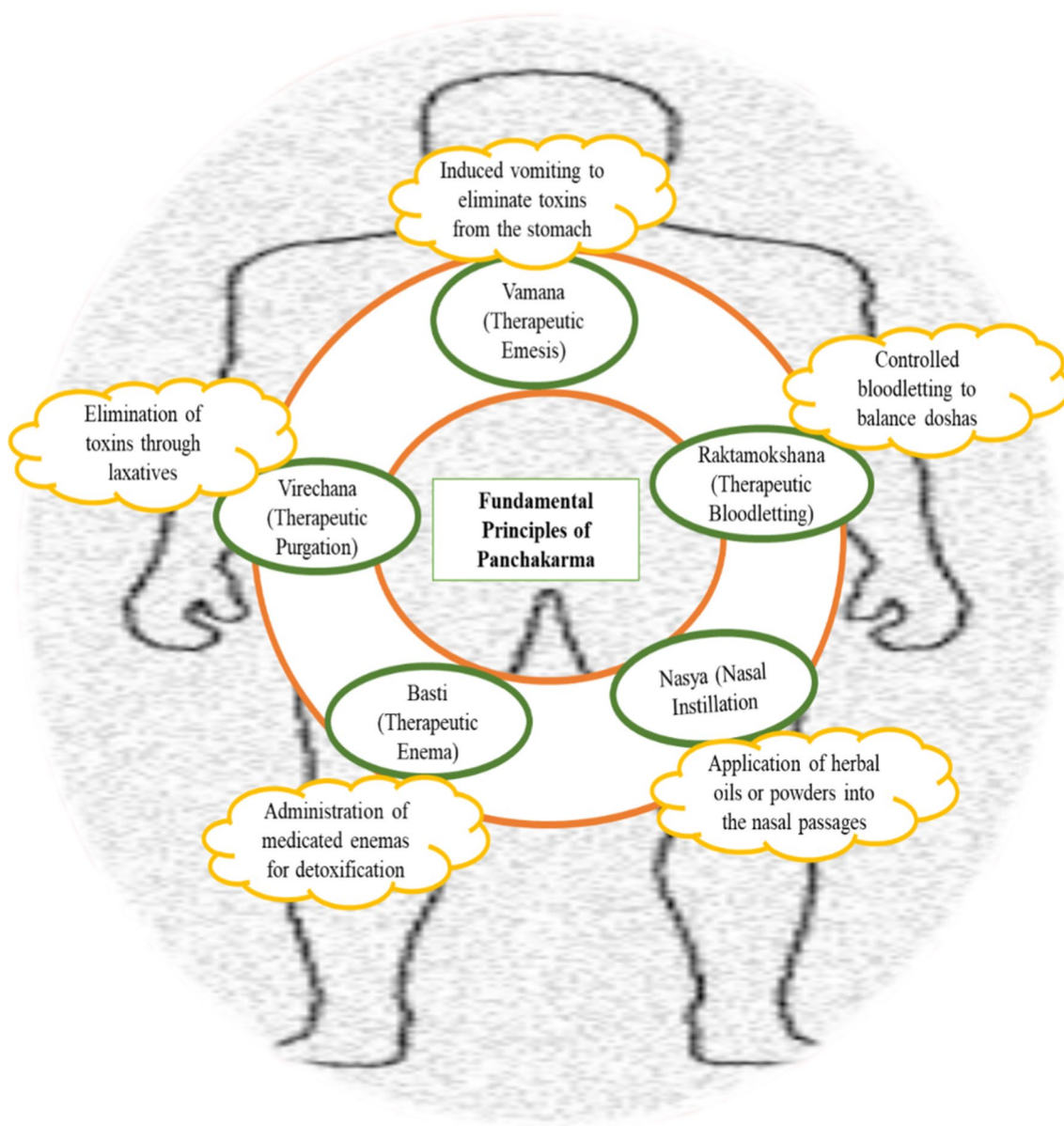


Fig. 1 Showing the fundamental principles of panchakarma for treating an infected individual

living. Ayurveda was closely associated with religion and spirituality, with many healing rituals performed by priests and healers in temples.

Classical period (1000–500 BCE)

During this period, Ayurveda experienced significant advancements, and several influential texts were composed. The most important of these texts are the Charaka Samhita, Sushruta Samhita, and Ashtanga Hridaya. These texts provided a comprehensive framework for Ayurvedic medicine, covering topics such as anatomy,

physiology, pathology, diagnosis, and treatment. The Sushruta Samhita, in particular, is acknowledged for its contributions to surgery, including descriptions of over 120 surgical instruments and procedures (Pandey et al. 2013; Shi et al. 2021).

Pre-classical period (500–300 BCE)

This period saw the emergence of various schools of Ayurvedic thought, each with its own unique methodology for treatment and diagnosis. The most prominent schools were the Charaka School, the Sushruta School,

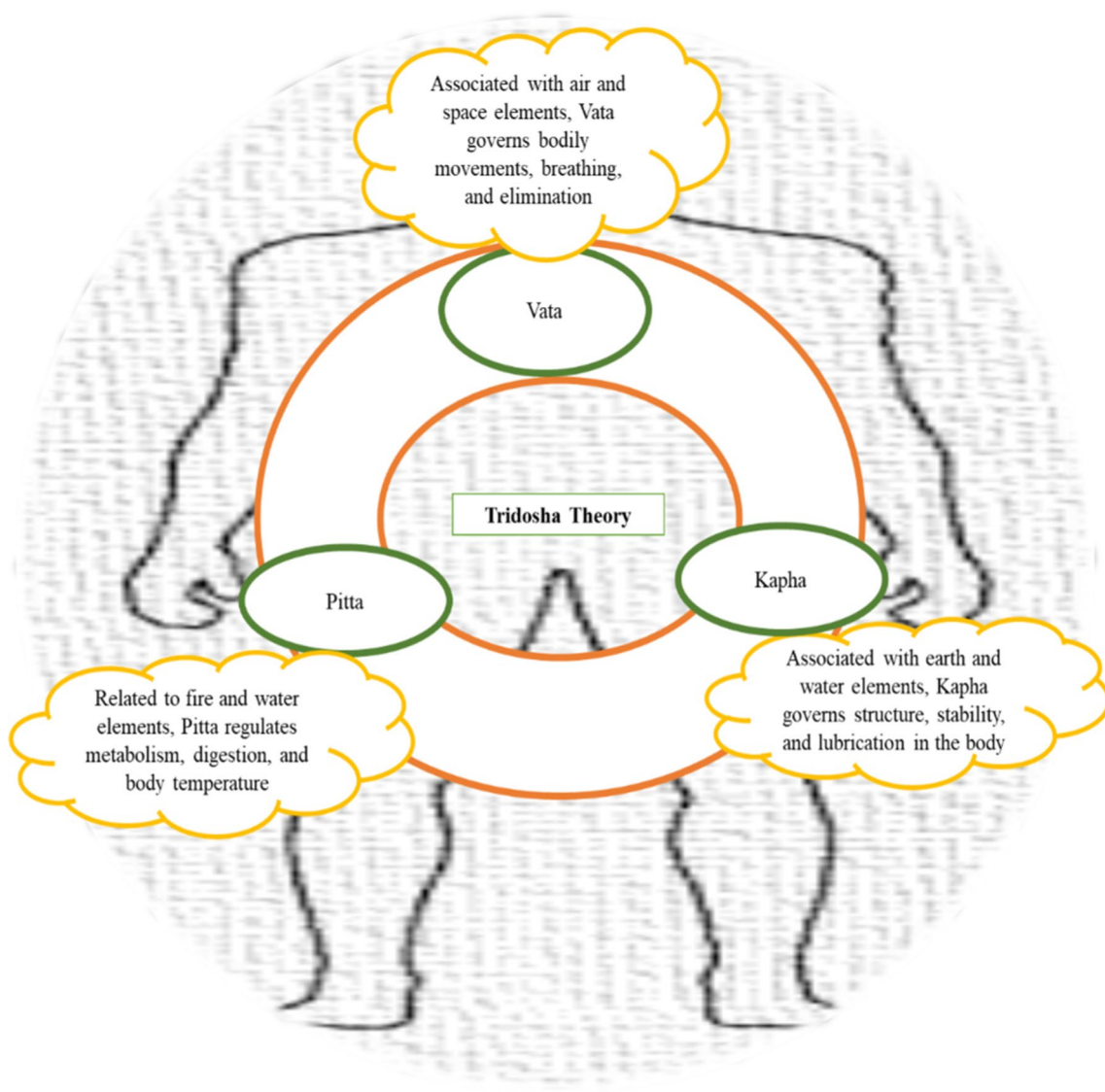


Fig. 2 A systematic depiction of tridosha theory in Ayurveda. Ayurvedic practitioners assess an individual's unique dosha constitution and offer treatment plans accordingly (Ibáñez et al. 2023; Kumar et al. 2021)

and the Vagbhata School. Despite their differences, these schools shared a common belief in the importance of a balanced diet, herbal remedies, and lifestyle changes for maintaining health (Jaiswal and Williams 2016).

Golden age of Ayurveda (300–1000 CE)

This period marked the pinnacle of Ayurvedic development, with significant contributions from renowned physicians and scholars. Notable figures during this time include Nagarjuna, Charaka, and Sushruta. Ayurveda was widely practiced throughout India, and Ayurvedic texts were translated into several languages,

including Arabic and Persian. Ayurvedic practitioners also began to establish medical schools, hospitals, and dispensaries (Honwad 2017).

Decline of Ayurveda (1000–1500 CE)

The rise of allopathic medicine and the influence of foreign invaders led to a decline in the popularity of Ayurveda. Allopathic medicine, with its emphasis on scientific experimentation and modern drugs, gained favor among the educated elite. Ayurveda was often viewed as outdated and unscientific, and its practice declined significantly (Li et al. 2022).

Table 1 List of Indian medicinal plants and its applications

| Botanical name | English name | Hindi name | Application | References |
|--------------------------------------|-----------------------|--------------|---|--|
| <i>Adhatoda vasica</i> Nees | Malabar Nut | Adusa/Vasaka | Asthma, Bronchitis, Cough | Gantait and Panigrahi (2018) |
| <i>Ananas comosus</i> | Pineapple | Ananas | Heart Disease, Obesity, Sore Throat, Diabetes | Hossain (2015) |
| <i>Acacia arabica</i> Willd | Indian Gum | Babool | Bleeding Gums and Oral Care | Gupta et al. (2019) |
| <i>Bacopa monniera</i> Pennel | Thyme leafed gratiola | Brahmi | Enhances Memory, Anxiety | Choudhary et al. (2021b) |
| <i>Coriandrum sativum</i> Linn. | Coriander | Dhaniya | Flatulence, Useful in Indigestion, Controls Spasmodic Pain | Thakur et al. (2021a, b) |
| <i>Andrographis paniculata</i> | Kalmegh | Kalmegh | Acne, Diarrhea | Sabharwal et al. (2021), Singh et al. (2021), Singh and Agarwal (2021) |
| <i>Allium sativum</i> | Garlic | Lashun | Ringworm, Wounds | Joshi et al. (2021) |
| <i>Cyperus rotundus</i> Linn. | Nut Grass | Nagarmotha | , Diabetes, Solar Dermatitis | Imam et al. (2014) |
| <i>Boerhaavia diffusa</i> Linn. | Spreading Hogweed | Punarnava | Anemia, Liver Diseases, Wounds, Kidney health | Abbi et al. (2013) |
| <i>Desmodium gangetium</i> DC. | Shal Leafed Bush | Shalparni | Analgesic, Anti-Inflammatory | Singh et al. (2015) |
| <i>Ocimum sanctum</i> Linn. | Holy Basil | Tulsi | Respiratory Diseases, Heart health and Indigestion | Cohen (2014) |
| <i>Argyrea speciosa</i> Sweet | Elephant Creeper | Vridhadaru | Diabetes, Skin Diseases, Wounds | Kareem et al. (2022) |
| <i>Aquilaria agallocha</i> Roxb. | Eagle Wood | Agarkasth | Urinary Bladder incontinence and Bed-Wetting | Godaly et al. (2016) |
| <i>Alangium salvifolium</i> | Sage leaf alangium | Ankol | Orthodoxly used in Dog Bite, Scorpion Bite and Snakebite | Yadav et al. (2023) |
| <i>Amomum subulatum</i> Pennel | Greater Cardamom | Badi Elaichi | Digestant, Asthma, Appetizer and Bronchitis | Korikanthimathm et al. (2001) |
| <i>Achyranthes aspera</i> | Prickly chaff flower | Chirchita | Indigestion, Cough, Asthma, Liver health | Dwivedi et al. (2008) |
| <i>Elettaria cardamomum</i> Maton | Lesser Cardamom | Elaichi | Dry Cough, Vomiting, Nausea | Sarvade et al. (2018) |
| <i>Abutilon indicum</i> | Country Mallow | Kanghi | Increases Strength, Joint Disorders and Nervine tonic | Ram et al. (2021a) |
| <i>Celastrus paniculatus</i> Willd | Staff Tree | Malakangini | Hair care, Osteoarthritis and Muscle Cramps | Kalam et al. (2019) |
| <i>Azadirachta indica</i> A. Juss | Margosa Tree | Neem | Intestinal Worms, Eye Disorders, Bloody Nose and Skin health | Reddy and Palagani (2022) |
| <i>Allium cepa</i> Linn. | Onion | Pyaj | Prostate health, Digestive, | Tripathi (2006) |
| <i>Asparagus racemosus</i> Willd | Asparagus | Shatavari | Improves Lactation, Infertility, Uterine health, Loss Of Libido | Alok et al. (2013) |
| <i>Abroma augustum</i> a | Devil's Cotton | Ulatkambal | Irregularity In Periods, Gynecological Problems | Ahmad et al. (2021) |
| <i>Alhagi camelorum</i> | Camel Thorn | Yavasa | Stomachache, Vomiting, Constipation and Rheumatism, | Srivastava et al. (2014) |
| <i>Anacyclus pyrethrum</i> | Pellitory | Akarkara | Loss of libido, Dryness Of The Mouth, Catarrh, Toothache | Kimothi (2016) |
| <i>Withania somnifera</i> Dunal | Winter Cherry | Ashgandh | Skin health, Joint Pains, Immunity and Stress Tolerance, | Paul et al. (2021) |
| <i>Aegle marmelos</i> Corr. | Bengal Quince | Bael | Gut health, Coolant, Dysentery And Diabetes | Choudhary et al. (2021a, b) |
| <i>Plumbago zeylanica</i> Linn. | Leadwort | Chitrak | Menstrual Disorders, Skin Diseases, Obesity and Arthritis | Bhinde et al. (2020) |
| <i>Aloe vera</i> Tourn ex. Linn. | Aloes | Ghee Kunwar | Women's health, Jaundice, Burn Injuries, Acne, Ulcers | Krunal and Doshi (2015) |
| <i>Costus speciosus</i> (Koeing) Sm. | Crepe Ginger | Ketaki | Obesity, Hyperlipidaemia, Diabetes | Rangasamy and Roshy (2010) |
| <i>Centella asiatica</i> Urban | Gotu Kola | Mandukparni | Hair care, Brain health, Improves memory | Gohil et al. (2010) |
| <i>Butea monosperma</i> Kuntze | Flame of forest | Palasha | Roundworm, Worm Infestations, and Complexion of Skin | Deogade (2016) |

Table 1 (continued)

| Botanical name | English name | Hindi name | Application | References |
|---|--------------------|---------------|--|-----------------------------------|
| <i>Abrus Precatorius</i> | Rosary Pea | Ratti | Alopecia, Fungal skin infections and Joint Pains | Taur and Patil (2011) |
| <i>Albizia lebbek</i> (Linn) Benth Pannel | Siris Tree | Shirish | Bronchial Asthma, Detoxification | Shyamal et al. (2012) |
| <i>Acorus calamus</i> | Sweet Flag | Bach | Ulcers, Atonic Dyspepsia and Flatulent Colic | Singh et al. (2021) |
| <i>Cassia fistula</i> Linn. | Indian Laburnum | Amaltas | Wounds, Ulcers and Mild laxative | Madgundi et al. (2023) |
| <i>Saraca indica</i> | Sorrowless tree | Ashok | Uterine Stimulant and Menstrual Irregularities | Nyeem (2017) |
| <i>Clerodendron serratum</i> Moon. | Bharangi | Bharangi | Allergic Rhinitis, Chronic Sinusitis and Common Cold | Bagade et al. (2023) |
| <i>Alstonia scholaris</i> | Dita | Chitvan | Increasing Lactation, Fever and Skin Ulcers | Joshi et al. (2019) |
| <i>Commiphora mukul</i> Engl. | Indian Bdelium | Guggulu | Hypolipidaemic, Heart Diseases and Joint Disorders | Azharhusain et al. (2022) |
| <i>Acacia catechu</i> Willd | Cutch Tree | Kadirkasth | Skin and Respiratory Problems, Oral Hygiene, Astringent | Ram et al. (2021b) |
| <i>Aconitum ferox</i> | Monks hood | Meetha Vish | Arthritis, Diuretic Action and Arthritis | Priyanka et al. (2023) |
| <i>Cissampelos pareira</i> Linn. | Velvet Leaf Tree | Patha | Poisonous Bites, Sinuses, Skin Diseases, Ulcers | Thaker et al. (2023) |
| <i>Cassia angustifolia</i> Vahl. | Indian Senna | Senna | Bowel Syndrome, Constipation, Irritable, Laxative, Weight Loss | Ansari et al. (2021) |
| <i>Areca catechu</i> Linn. | Areca Nut/Betelnut | Supari | Irregular Menstruation, Hyperlipidaemia, Diabetes and Obesity | Pathak et al. (2017) |
| <i>Barleria prionitis</i> Linn. | Barleria | Vajradanti | Catarrh, Useful in Fever and Strengthens Teeth, | Mirunalini and Krishnaveni (2010) |
| <i>Emblica officinalis</i> Linn. | Indian Gooseberry | Amla | Constipation, Anti-stress, Fever and Antioxidant | Semwal et al. (2019) |
| <i>Aconitum heterophyllum</i> Wall | Indian Ateech | Atees | Fever, Respiratory | Joshi et al. (2019) |
| <i>Betula utilis</i> D. Don | Himalayan Birch | Bhojpatra | Wounds, Obesity | Jain (2016) |
| <i>Cinnamomum zeylanicum</i> Breyn. | Bark Cinnamon | Dalchini | Antibacterial, Antiseptic | Thakur t al. (2021b) |
| <i>Amorphophallus campanulatus</i> | Elephant yam | Jimikand | Dysentery, Piles, Haemorrhoids | Dey et al. (2012) |
| <i>Alpinia galanga</i> | Greater Galangal | Kulanjan | Motion sickness, Dyspepsia, Vomiting and Flatulence, | Fahamiya et al. (2018) |
| <i>Glycyrrhiza glabra</i> Linn. | Liquorice | Mulethi | Digestive Disorders, Ulcers, Bronchitis, Skin health | Shakyawal and Mahobiya (2023) |
| <i>Piper longum</i> Linn. | Long Pepper | Pippali | Asthma, Cough, Indigestion | Pathak et al. (2010) |
| <i>Boswellia serrata</i> Roxb. | Indian Olibanum | Shalai Guggul | Diabetes, Headache and Joint Pains | Suneela (2019) |
| <i>Cinnamomum tamala</i> Nees | Cinnamon Leaf | Tamalpatra | Diabetes, Digestion, Cold | Thakur and Chaudhary (2021) |
| <i>Crataeva nurvala</i> Buch-Ham | Three Leafed Caper | Varun | Prostate health, Bladder Stones and Kidney Stones | Agarwal et al. (2010) |

Revival of Ayurveda (1500–present)

In the nineteenth century, there was a renewed interest in Ayurveda, thanks to the efforts of Indian nationalists and scholars. Figures like Mahatma Gandhi and Swami Vivekananda advocated for the revival of Indian traditional medicine. In the twentieth century, several Ayurvedic colleges were established, and the government began to promote Ayurvedic education and research. Today, Ayurveda is documented as a legitimate system of medicine in India in addition to is widely practiced alongside allopathic medicine. Ayurveda has an opulent and complex history

that spans several millennia. Despite facing challenges and periods of decline, Ayurveda has survived and continues to thrive in India today. Its holistic methodology to health, with its emphasis on natural therapies, has made it an increasingly popular choice for those seeking alternative or complementary healthcare options (Singh and Reddy 2020).

Ideologies of Ayurveda

Ayurveda, the ancient Indian system of medicine, is founded on the belief that health is a state of balance between the mind, body, and spirit. According to Ayurveda, imbalances in these three elements can lead to disease. The fundamental principles of Ayurveda are listed in Table 2.

These principles form the foundation of Ayurvedic medicine along with guide the diagnosis, treatment, and prevention of disease. Ayurvedic practitioners practice countless techniques, comprising herbal remedies, diet, lifestyle changes, and yoga, to restore balance to the doshas and promote overall health and well-being (Pandurangi et al. 2017).

Diagnosis in Ayurveda

Ayurvedic diagnosis is a holistic process that aims to understand the root cause of an individual’s imbalance and disease. It involves a comprehensive assessment of the patient’s physical, mental, and emotional state, over and above their lifestyle and diet (Kataria et al. 2022). The following are key components of Ayurvedic diagnosis shown in Table 3.

Based on the information gathered from these diagnostic techniques, the Ayurvedic practitioner determines the patient’s prakruti and vikruti. This information guides the appropriate selection of treatment strategies, including herbal remedies, diet, lifestyle changes, and yoga (Raynaud et al. 2021).

Treatment modalities

Ayurveda deals with an extensive range of treatment modalities to address various imbalances and diseases. These modalities aim to restore balance to the doshas, promote self-healing, and support the body’s natural detoxification processes (Singh et al. 2024b). Here some significant Ayurvedic treatment modalities are: Herbal Remedies i.e., Ayurveda utilizes a vast array of herbs and herbal formulations to treat various ailments (Singh et al. 2022a, b). These herbs are believed to possess specific medicinal properties that can balance the doshas, alleviate symptoms, and promote healing. Ayurvedic herbal remedies are typically prepared using whole herbs or standardized extracts (Amegbor and Rosenberg 2020). A few medications or chemicals that have been produced from natural ingredients are included in Table 4.

Diet and nutrition

Ayurveda places prodigious prominence on diet and nutrition as a foundation for good health. Ayurvedic practitioners vouch for a sattvic diet, which is predominantly vegetarian, fresh, and wholesome. The diet is personalized to the individual’s unique constitution and current state of imbalance. Specific foods and spices are recommended to poise the doshas and promote healing.

Panchakarma

It is a comprehensive detoxification and rejuvenation program that is considered the cornerstone of Ayurvedic treatment. It involves five main procedures: Nasya (nasal administration of herbal oils or

Table 2 Shows the fundamental principles of Ayurveda

| Ideologies of Ayurveda | Description |
|---------------------------------|--|
| Panchamahabhuta (five elements) | Ayurveda recognizes five basic elements that make up the universe and the human body: ether, fire, water, earth, and air. These elements are assumed to be present in different combinations in each individual, determining their unique constitution or prakruti |
| Tridosha (three humors) | Ayurveda posits that the body’s functions are presided over by 3 doshas or humor: Kapha, pitta, and vata. Vata is associated with space and air, pitta with fire and water, and kapha with earth and water. Each dosha has specific qualities and functions; an imbalance in any of them can lead to disease |
| Prakruti and Vikruti | Every individual has a unique constitution or prakruti, which is determined by the equilibrium of the 3 doshas at the time of conception. When the doshas are in balance, a person is healthy. However, when the doshas become imbalanced, a person’s vikruti, or current state of disparity, develops, leading to disease |
| Dhatus (body tissues) | Ayurveda recognizes seven basic tissues or dhatus in the body: rasa (plasma), rakta (blood), mamsa (muscle), meda (fat), asthi (bone), majja (bone marrow), and shukra (reproductive fluids). Each dhatu is formed from the previous one through a process of transformation |
| Ojas | Ojas are the essence of vitality and immunity in Ayurveda. It is produced through the appropriate food digestion and the balanced functioning of the doshas. Ojas nourishes the body’s tissues, organs, and mind, promoting overall health and well-being |
| Agni (digestive fire) | Ayurveda places great importance on the digestive fire or Agni. Agni is responsible for the proper digestion and assimilation of food, as well as the waste product elimination. A strong Agni is essential for good health, while a weak Agni leads to indigestion, toxicity, and disease |
| Rasa (taste) | Ayurveda recognizes six tastes: astringent, pungent, sweet, sour, salty and bitter. For each taste has specific qualities and effects on the mind and body. Balancing the different tastes in one’s diet is essential for maintaining health |

Table 3 List of the important components of Ayurvedic diagnosis

| Components of Ayurvedic diagnosis | Description |
|--|--|
| Nadi Pariksha (pulse diagnosis) | Ayurvedic practitioners place great importance on pulse diagnosis. They assess the potentials of the pulse, such as its strength, speed, and regularity, to determine the state of the doshas and the complete balance of the body |
| Jihva Pariksha (tongue diagnosis) | The tongue is considered a window to the digestive system and the overall health of the body. Ayurvedic practitioners examine the tongue's texture, coating and color to assess the state of the doshas as well as the presence of imbalances |
| Mutra Pariksha (urine analysis) | Urine analysis is used to assess the state of the urinary system and the overall balance of doshas. Ayurvedic practitioners examine the color, clarity, odor, and taste of the urine to determine imbalances |
| Mala Pariksha (stool analysis) | Stool analysis is used to assess the state of the digestive system and the overall balance of the doshas. Ayurvedic practitioners examine the color, consistency, and frequency of bowel movements to determine imbalances |
| Sharira Pariksha (physical examination) | Ayurvedic practitioners conduct a thorough physical examination, including observation of the skin, eyes, nails, and hair. They also palpate the abdomen, lymph nodes, and joints to assess the state of the doshas as well as identify any abnormalities |
| Prashna (patient interview) | The Ayurvedic practitioner engages in a detailed conversation with the patient to gather information about their symptoms, medical history, lifestyle, and diet. This information is used to understand the patient's unique constitution and the factors which may have impacted to their imbalance |
| Manasa Pariksha (psychological assessment) | Ayurvedic practitioners also assess the patient's mental and emotional state. They may ask questions about the patient's sleep patterns, dreams, fears, and anxieties. This information is used to understand the impact of the imbalance on the patient's emotional and mental well-being |

Table 4 Lists several medications or substances that have been created or separated from natural materials

| Compounds | Botanical name/plant | Therapeutic uses | Mechanism | References |
|--|--|--|--|---|
| Schisandrin C, bicyclol, bifendate | <i>Schisandra chinensis</i> (Turcz.) Baill. | Hepatoprotective, anti-hepatitis B virus | Apoptosis Induction, Glucose Homeostasis | Bao and Liu (2008), Li and Liu (2004), Sun et al. (2012), Wani and Horwitz (2014) |
| Taxol, docetaxel | <i>Taxus brevifolia</i> | Antitumor | Microtubule Stabilization, Disruption of Mitotic Spindle Formation, Induction of Apoptosis | Holmes et al. (1991), Kumar et al. (2022b) |
| Lovastatin | <i>Aspergillus terreus</i> | Hyperlipidemia | Inhibition of HMG-CoA Reductase | |
| Camptothecin, irinotecan and topotecan | <i>Camptotheca acuminata</i> Decne | Antitumor | Inhibition of Topoisomerase I | Kamal et al. (2022) |
| Ginkgolide B | <i>Ginkgo biloba</i> L. | Cerebral infarction | Platelet-Activating Factor (PAF) Antagonism | |
| Stilbene glycoside | <i>Polygonum multiflorum</i> Thunb. | Vascular dementia | Apoptosis Induction | Liu et al. (2019) |
| Ternatolide | <i>Ranunculus ternatus</i> Thunb. | Anti-tuberculosis | – | |
| Curcumin | <i>Curcuma longa</i> L. | Hypolipidemic | inhibits the activity of enzymes like cyclooxygenase-2 (COX-2), lipoxygenase (LOX), and inducible nitric oxide synthase (iNOS) | |
| Polysaccharide MDG-1 | <i>Ophiopogon japonicus</i> (L.f.) Ker-Gawl. | Anti-myocardial cell injury | Regulation of PPARα and PPARγ | |
| Romidepsin | <i>Chromobacterium violaceum</i> | Antitumor | Histone Deacetylase (HDAC) Inhibition | Xiong et al. (2019), Singh and Agarwal (2021) |

powders), Vamana (therapeutic emesis), Basti (medicated enemas), virechana (therapeutic purgation), and raktamokshana (bloodletting). Panchakarma is typically conducted under the supervision of an authorized Ayurvedic practitioner.

Yoga and meditation

It's an integral part of Ayurvedic treatment. Specific yoga postures, breathing exercises, and meditation techniques are recommended to poise the doshas, promote relaxation, and enhance overall well-being.

Ayurvedic massage

Ayurvedic massage, known as abhyanga, a therapeutic massage technique that uses herbal oils or ghee. Abhyanga is believed to improve circulation, promote relaxation, as well as balance the doshas. It can also be used to relieve muscle pain and stiffness.

Shirodhara

Shirodhara is a specialized Ayurvedic treatment that includes pouring a continuous stream of warm oil or medicated liquid onto the forehead. Shirodhara is believed to relax the mind, relieve stress and anxiety, and promote deep relaxation.

Ayurvedic facials and body treatments

Ayurvedic facials and body treatments use herbal pastes, oils, and powders to cleanse, nourish, and rejuvenate the skin. These treatments are believed to improve skin health, promote relaxation, along with balance the doshas (Evans et al. 2008; Ladas et al. 2015; Misawa et al. 2019). It's imperative to note that Ayurvedic treatment modalities should be administered by qualified Ayurvedic practitioners who have undergone proper training and education. Ayurveda is a complete medicine system, and the selection of apposite treatment modalities depends on the individual's unique constitution, current state of imbalance, and specific health concerns (Nlooto and Naidoo 2016).

Contemporary relevance

Ayurveda, the ancient Indian medicine system, is gaining increasing recognition and relevance in contemporary healthcare due to its wide-ranging methodology for health and well-being. Here are some vital aspects highlighting the contemporary relevance of Ayurveda.

Focus on prevention and personalized care

Ayurveda emphasizes preventive healthcare and takes a holistic approach to patient care. Ayurvedic practitioners consider the individual's unique constitution, lifestyle, and environment when making treatment recommendations. This personalized approach can help identify and address imbalances before they manifest as full-blown diseases (Pushpa 2024).

Treatment for rheumatoid arthritis

Studies have demonstrated that by identifying particular Prakriti-based subgroups, Ayurvedic medicines can aid in the treatment of complex diseases, including rheumatoid arthritis. Personalized diets, lifestyle modifications, and herbal therapies are prescribed by

Ayurvedic doctors based on each patient's distinct Prakriti (constitutional type) and symptoms.

Prakriti-based stratification of healthy individuals

By combining contemporary genomics with Ayurveda's Prakriti stratification techniques, the molecular and genomic underpinnings of the Dosha Prakriti idea have been discovered. Researchers discovered that healthy people with different Prakriti types (Pitta, Kapha, and Vata) had unique molecular signatures. By utilizing genomes and molecular phenotyping, this Ayurgenomics method allows for the methodical investigation of Ayurvedic principles.

Integration with modern medicine

Ayurveda is increasingly being integrated with modern medicine to provide an inclusive approach to healthcare. Ayurvedic principles and practices are being studied and incorporated into mainstream medical care, particularly in areas such as chronic diseases, stress management, and mental health (Sharma and Prajapati 2020).

The conflict between the traditional way of Ayurveda and the modern medical practice

The ancient Ayurvedic approach and contemporary medical treatment disagree on a number of important points: Lack of Standardization: Ayurvedic medications are created using natural components, which can vary in quality and potency, resulting to inconsistent effectiveness. This is in contrast to modern medicine, where drugs are synthesized in a lab under tight restrictions. Standard Operating Procedures (SOPs) versus Customization: Ayurvedic clinical practice is centered around customization, whereas modern medicine requires standard operating procedures (SOPs). A significant disagreement arises between the two systems as a result (Singh et al. 2024c). Evidence-based Practice: The majority of Ayurvedic treatments lack rigorous scientific study and evidence-based validation, which makes it challenging for Ayurveda to be incorporated into mainstream medicine. Integration Challenges: Lack of trust, technical incompatibilities, difficulties with operational coordination, and regulatory obstacles are some of the obstacles that stand in the way of integrating Ayurveda with contemporary medicine. Reductionist Approach: Ayurveda treats the patient holistically, whereas modern medicine takes a reductionist approach. When creating an interface between Ayurveda and modern medicine, caution must be taken to avoid unduly reductionist treatment of Ayurveda. Safety Myths: People frequently believe that Ayurvedic medications are safe and have no adverse effects, which can result in self-medication and even injury. It is essential for the successful integration of Ayurveda

and contemporary medicine to resolve these tensions through standardization, evidence-based research, and a cooperative approach in order to deliver safe and efficient patient treatment (Chopra and Doiphode 2002).

Scientific research and validation

An emergent body of scientific research supports the efficacy of Ayurvedic herbs, therapies, and formulations. Clinical studies have demonstrated the effectiveness of Ayurveda in managing various conditions, including arthritis, diabetes, hypertension, and anxiety (Gupta 2024).

Integrative and complementary medicine

Ayurveda is gaining acceptance as a integrative and complementary medicine system that can be used alongside conventional medicine to enhance treatment outcomes and improve overall well-being (Olbara et al. 2018). Table 5 Ayurvedic therapies can help reduce the conventional treatments' side effects and promote a faster recovery.

Lifestyle and wellness

Ayurvedic principles and practices, for instance, meditation, yoga, and a sattvic diet, are becoming popular in modern lifestyle and wellness trends. These practices are recognized for their ability to promote mental and physical well-being, diminish stress as well as enhance overall quality of life (Palileo-Villanueva et al. 2022).

Herbal medicine and nutraceuticals

Ayurvedic herbs and formulations are increasingly being used as nutraceuticals and dietary supplements to support complete health and well-being Table 6. The demand for standardized Ayurvedic herbal extracts and formulations is growing globally.

An organized display of medicinal plants, their corresponding products, potential interactions between drugs and herbs, and an analysis of their effectiveness is shown in Fig. 3.

Ayurvedic spas and wellness retreats

Ayurvedic spas and wellness retreats are becoming popular destinations for individuals seeking rejuvenation, relaxation, and healing. These retreats offer a range of Ayurvedic therapies, treatments, and lifestyle interventions to promote mental, emotional, and physical well-being (Peltzer and Pengpid 2019).

The challenge of standardizing Ayurvedic practice

Creating integrative treatment guidelines based on evidence could be one way to solve the issue of standardization in Ayurveda. The integration of contemporary

scientific research methodology with Ayurvedic principles may facilitate the development of standardized yet customized treatment regimens that capitalize on the advantages of both systems. This may entail locating essential Ayurvedic medicines, formulas, and techniques that have shown effective in clinical trials and incorporating them into all-encompassing, patient-focused treatment plans. Furthermore, putting in place regulatory frameworks and quality control procedures for Ayurvedic treatments and products could help guarantee consistency and safety, opening the door for Ayurveda to be more widely accepted and integrated into mainstream healthcare. Even though there are still difficulties, this integrated method may offer more concrete answers that close the knowledge gap between conventional medicine and Ayurvedic medicine.

Challenges associated with the use of AYUSH

When applied to modern medicine, Ayurveda, Yoga, Unani, Siddha, and Homoeopathy (AYUSH) presents several challenges: Absence of Scientific Confirmation Scientists haven't looked into the effectiveness of many AYUSH therapies in great detail, and the evidence for this is weak. The marketing of Ayurvedic procedures and items in the West has led to cultural appropriation and the loss of integrity and cultural identity. Safety and Quality Control Issues: There are concerns regarding the safety and quality of Ayurvedic products because they are not governed by many countries. Various goods have been found to contain hazardous compounds, such as heavy metals.

Integration with Modern Medicine: The primary barriers to the integration of AYUSH with modern medication are a lack of solid scientific research and the need for evidence-based validation. Misconceptions and Self-Medication: The common misconception that AYUSH drugs have no side effects may lead to self-medication and potential harm. Challenges with Education and Regulation: AYUSH practice and education are not subject to the same stringent standards and regulations as modern medicine, which makes it challenging to ensure the efficacy as well as safety of AYUSH therapies. The security and efficacy of herbal treatments While Ayurvedic medicines have long been considered safe, their effectiveness is sometimes only moderate, thus further research is needed to find out how efficient they are in treating certain conditions. These problems must be fixed in order to ensure the efficacy and safety of AYUSH treatments and to facilitate the seamless integration of AYUSH with modern medicine (Chandola 2012; Ghate and Wele 2022).

Table 5 Lists several significant herbal formulas that are commonly employed in India's traditional Ayurvedic system

| Disease | Formulation | | Dose/method of use | | References | | | |
|----------------------------------|-----------------------------|----------------------------|--------------------|---|--|--|--|---|
| | Botanical name | Ratio (%) | Part used | | | | | |
| Asthma/bronchitis | <i>Solanum xanthocarpum</i> | 25 | Whole plant | The patient was given 4 g of mixed powder with water twice a day, in the morning and at nighttime | Bhinde et al. (2020), Taur and Patil (2011) | | | |
| | <i>Piper longum</i> | 10 | Fruit | | | | | |
| | <i>Adhatoda vasica</i> | 25 | Leaf | | | | | |
| | <i>Zingiber officinale</i> | 10 | Root | | | | | |
| | <i>Curcuma zedoaria</i> | 10 | Root | | | | | |
| | <i>Ocimum sanctum</i> | 10 | Leaf | | | | | |
| | <i>Phyllanthus emblica</i> | 10 | Fruit | | | | | |
| | Cancer | <i>Azadirachta indica</i> | 20 | | | Bark | Treatment of cancer, the patient should take 4 g of mixed powder twice a day (in the morning and at night) with lukewarm honey | Pandey et al. (2013), Samy et al. (2008) |
| | | <i>Bauhinia variegata</i> | 15 | | | Bark | | |
| | | <i>Crataeva nurvala</i> | 15 | | | Bark | | |
| <i>Terminalia chebula</i> | | 15 | Fruit | | | | | |
| <i>T. bellerica</i> | | 10 | Fruit | | | | | |
| <i>Holarthra antidyserterica</i> | | 10 | Bark | | | | | |
| <i>Tinospora cordifolia</i> | | 15 | Stem | | | | | |
| Blood circulation | | <i>Zingiber officinale</i> | 20 | Root | The patient receives 4 g of blended powder twice a day, along with water | Ahmad et al. (2021), Amalraj et al. (2022), Pandey et al. (2013), Paul et al. (2021) | | |
| | | <i>Piper longum</i> | 10 | Root | | | | |
| | | <i>Withania somnifera</i> | 10 | Root | | | | |
| | <i>Phyllanthus emblica</i> | 10 | Fruit | | | | | |
| | <i>Curcuma longa</i> | 10 | Root | | | | | |
| | <i>Terminalia bellerica</i> | 10 | Fruit | | | | | |
| | <i>T. chebula</i> | 10 | Fruit | | | | | |
| | <i>Ocimum sanctum</i> | 10 | Leaf | | | | | |
| | <i>Tephrosia purpurea</i> | 10 | Leaf | | | | | |
| | Anemia | <i>Asparagus racemosus</i> | 20 | Root | | | Twice a day, the patient receives 4 g of powder along with water | Baliga et al. (2019), Mathai et al. (2015), |
| <i>Withania somnifera</i> | | 20 | Root | | | | | |
| <i>Phyllanthus emblica</i> | | 15 | Fruit | | | | | |
| <i>P. amarus</i> | | 10 | Leaf | | | | | |
| <i>Tephrosia purpurea</i> | | 10 | Leaf | | | | | |
| <i>Plumbago zeylanica</i> | | 5 | Root | | | | | |
| <i>Glycyrrhiza glabra</i> | | 15 | Root | | | | | |
| <i>Piper longum</i> | | 5 | Fruit | | | | | |

Table 5 (continued)

| Disease | Formulation | | Dose/method of use | | References |
|----------------------|-----------------------------------|-----------|--------------------|--|--|
| | Botanical name | Ratio (%) | Part used | | |
| Arthritis | <i>Piper longum</i> | 10 | Fruit | For rheumatic ailments, the patient should take 4 g of mixed powder twice a day together with ginger juice | Gupta et al. (2021), Shah (2019), Singh et al. (2022a) |
| | <i>S. xanthocarpum</i> | 15 | Whole plant | | |
| | <i>Withania somnifera</i> | 10 | Root | | |
| | <i>Terminalia chebula</i> | 10 | Fruit | | |
| | <i>T. bellerica</i> | 10 | Fruit | | |
| | <i>Curcuma zedoaria</i> | 15 | Root | | |
| | <i>Phyllanthus emblica</i> | 15 | Fruit | | |
| | <i>Ricinus communis</i> | 15 | Root | | |
| | <i>Tinospora cordifolia</i> | 15 | Stem | | |
| | <i>Ocimum sanctum</i> | 15 | Leaf | | |
| Chronic fever | <i>Adhatoda vasica</i> | 15 | Leaf | The patient receives 4 g of blended powder twice a day, along with water, before meals | Nair et al. (2019) |
| | <i>Azadirachta indica</i> | 15 | Leaf | | |
| | <i>Holarrhena antidysenterica</i> | 10 | Bark | | |
| | <i>Piper longum</i> | 10 | Fruit | | |
| | <i>Zingiber officinale</i> | 10 | Root | | |
| | <i>Terminalia bellerica</i> | 10 | Fruit | | |
| | <i>Phyllanthus emblica</i> | 25 | Fruit | | |
| | <i>Adhatoda vasica</i> | 20 | Leaf | | |
| | <i>Ocimum sanctum</i> | 10 | Leaf | | |
| | <i>Piper longum</i> | 10 | Fruit | | |
| Cough | <i>Zingiber officinale</i> | 10 | Root | To treat a cold, the patient should take 3 g of mixed powder twice a day in the morning and at night before bed. The powder should be heated and combined with honey | Kumar et al. (2022b), Mishra et al. (2022) |
| | <i>Terminalia bellerica</i> | 10 | Fruit | | |
| | <i>Phyllanthus emblica</i> | 25 | Fruit | | |
| | <i>Adhatoda vasica</i> | 20 | Leaf | | |
| | <i>Ocimum sanctum</i> | 10 | Leaf | | |
| | <i>Piper longum</i> | 10 | Fruit | | |
| | <i>Zingiber officinale</i> | 10 | Root | | |
| | <i>Glycyrrhiza glabra</i> | 15 | Root | | |
| | <i>Solanum xanthocarpum</i> | 10 | Whole plant | | |
| | <i>Holarrhena antidysenterica</i> | 10 | Bark | | |
| Chronic constipation | <i>Plumbago ovata</i> | 20 | Husk | Before going to bed at night, the patient receives 4 g of mixed powder mixed with water | Devendra and Vishnu (2021), Samy et al. (2008) |
| | <i>Terminalia bellerica</i> | 10 | Fruit | | |
| | <i>T. chebula</i> | 15 | Fruit | | |
| | <i>Phyllanthus emblica</i> | 15 | Fruit | | |
| | <i>Cassia angustifolia</i> | 20 | Leaf | | |
| | <i>Glycyrrhiza glabra</i> | 10 | Root | | |

Table 5 (continued)

| Disease | Formulation | | Dose/method of use | | References | | | |
|----------------------|-----------------------------------|---------------------------|--------------------|--|--|-------|---|--|
| | Botanical name | Ratio (%) | Part used | | | | | |
| Diarrhea | <i>Holarthena antidyserterica</i> | 25 | Bark | For treatment of diarrhea and dysentery, the patient is given three grams of mixed powder with curd thrice a day | Singh and Agarwal (2023), Singh et al. 2022a, b, c, d, Chauhan et al. (2023), Parmar et al. (2016) | | | |
| | <i>Aegle marmelos</i> | 25 | Fruit | | | | | |
| | <i>Zingiber officinale</i> | 10 | Root | | | | | |
| | <i>Terminalia chebula</i> | 10 | Fruit | | | | | |
| | <i>Cyperus rotundus</i> | 10 | Root | | | | | |
| | <i>Syzygium cumini</i> | 10 | | | | | | |
| | <i>Phyllanthus emblica</i> | 10 | Fruit | | | | | |
| | <i>Asparagus racemosus</i> | 15 | Root | | | | | |
| | <i>Withania somnifera</i> | 15 | Root | | | | | |
| | <i>Azadirachta arabica</i> | 20 | Bark | | | | | |
| Dislocation of bones | <i>Terminalia arjuna</i> | 20 | Bark | For fractures and bone dislocation, the patient is given 3 g of mixed powder two times a day with water | Gao et al. (2016) | | | |
| | <i>T. chebula</i> | 10 | Fruit | | | | | |
| | <i>T. bellerica</i> | 10 | Fruit | | | | | |
| | <i>Phyllanthus emblica</i> | 10 | Fruit | | | | | |
| | <i>Azadirachta indica</i> | 15 | Leaf | | | | | |
| | <i>A. arabia</i> | 15 | Bark | | | | | |
| | <i>Areca catechu</i> | 15 | Bark | | | | | |
| | <i>Achyranthes aspera</i> | 10 | Leaf | | | | | |
| | <i>Ficus benghalensis</i> | 15 | Bark | | | | | |
| | <i>Quercus infectoria</i> | 15 | Fruit | | | | | |
| Dental diseases | <i>Symplocos racemosa</i> | 15 | Bark | Twice a day, the teeth and gums are treated with the powder. Moreover, a gargle with the infusion (3 g of powder in 150 ml of water) | Samy et al. (2008) | | | |
| | <i>Terminalia chebula</i> | 20 | Fruit | | | | | |
| | <i>Azadirachta indica</i> | 20 | Bark | | | | | |
| | <i>Holarthena antidyserterica</i> | 10 | Bark | | | | | |
| | <i>Terminalia bellerica</i> | 10 | Fruit | | | | | |
| | <i>Withania somnifera</i> | 20 | Root | | | | | |
| | <i>Tinospora cordifolia</i> | 20 | Stem | | | | | |
| | Cysts | <i>Terminalia chebula</i> | 20 | | | Fruit | The patient receives 4 g of blended powder (one tea-spoonful) twice a day together with water | Gupta et al. (2021), Pundarikakshudu et al. (2024) |
| | | <i>Azadirachta indica</i> | 20 | | | Bark | | |

Table 5 (continued)

| Disease | Formulation | | Dose/method of use | | References |
|------------------|-----------------------------|-----------|--------------------|--|--|
| | Botanical name | Ratio (%) | Part used | | |
| Diabetes | <i>Gymnema sylvestre</i> | 30 | Leaf | The patient should receive 4 g of blended powder with water twice a day | Gaonkar and Hullatti (2020), Modak et al. (2007) |
| | <i>Tinospora cordifolia</i> | 15 | Stem | | |
| | <i>Azadirachta indica</i> | 10 | Leaf | | |
| | <i>Phyllanthus emblica</i> | 20 | Fruit | | |
| | <i>Curcuma longa</i> | 10 | Root | | |
| | <i>Aegle marmelos</i> | 15 | Leaf | | |
| | <i>Asparagus racemosus</i> | 20 | Root | | |
| | <i>Withania somnifera</i> | 20 | Root | | |
| | <i>Glycyrrhiza glabra</i> | 20 | Root | | |
| | <i>Phyllanthus emblica</i> | 10 | Fruit | | |
| Female sterility | <i>Ficus glomerata</i> | 10 | Bark | Twice a day, thirty minutes before meals, the patient receives three grams of mixed powder with milk | |
| | <i>F. religiosa</i> | 10 | Bark | | |
| | <i>Zingiber officinale</i> | 10 | Root | | |
| | <i>Piper longum</i> | 10 | Fruit | | |
| | <i>Mentha piperita</i> | 10 | Leaf | | |
| | <i>Terminalia chebula</i> | 15 | Fruit | | |
| | <i>T. bellerica</i> | 15 | Fruit | | |
| | <i>Phyllanthus emblica</i> | 15 | Fruit | | |
| | <i>Plumbago zeylanica</i> | 10 | Root | | |
| | <i>Tinospora cordifolia</i> | 15 | Stem | | |
| Gastritis | <i>Glycyrrhiza glabra</i> | 20 | Root | The patient receives 4 g of mixed powder twice a day, 30 min before meals, along with water | Amalraj et al. (2022), Tiwari et al. (2023) |
| | <i>Terminalia chebula</i> | 20 | Fruit | | |
| | <i>T. bellerica</i> | 15 | Fruit | | |
| | <i>Tinospora cordifolia</i> | 15 | Stem | | |
| | <i>Azadirachta indica</i> | 15 | leaf | | |
| | <i>Withania somnifera</i> | 15 | Root | | |
| | <i>Phyllanthus emblica</i> | 15 | Fruit | | |
| | <i>Plumbago zeylanica</i> | 10 | Root | | |
| | <i>Piper longum</i> | 10 | Fruit | | |
| | <i>Mentha piperita</i> | 10 | Leaf | | |
| Fistula | <i>Glycyrrhiza glabra</i> | 20 | Root | To treat fistula, the patient should receive 3 g of mixed powder two times a day with water | Samy et al. (2008) |
| | <i>Terminalia chebula</i> | 20 | Fruit | | |
| | <i>T. bellerica</i> | 15 | Fruit | | |
| | <i>Tinospora cordifolia</i> | 15 | Stem | | |
| | <i>Azadirachta indica</i> | 15 | leaf | | |
| | <i>Withania somnifera</i> | 15 | Root | | |
| | <i>Phyllanthus emblica</i> | 15 | Fruit | | |
| | <i>Plumbago zeylanica</i> | 10 | Root | | |
| | <i>Piper longum</i> | 10 | Fruit | | |
| | <i>Mentha piperita</i> | 10 | Leaf | | |

Table 5 (continued)

| Disease | Formulation | | Dose/method of use | | References |
|----------------------|-----------------------------|-----------|--------------------|---|--|
| | Botanical name | Ratio (%) | Part used | | |
| General health tonic | <i>Withania somnifera</i> | 20 | Root | The patient receives 4 g of powder with milk twice a day in the morning and the evening | Končić (2017) |
| | <i>Asparagus racemosus</i> | 10 | Root | | |
| High blood pressure | <i>Glycyrrhiza glabra</i> | 10 | Root | The patient receives 4 g of powder with honey twice a day in morning and evening | |
| | <i>Tribulus terrestris</i> | 10 | Fruit | | |
| | <i>Phyllanthus emblica</i> | 15 | Fruit | | |
| | <i>Terminalia arjuna</i> | 15 | Bark | | |
| | <i>Centella asiatica</i> | 10 | Leaf | | |
| | <i>Terminalia arjuna</i> | 35 | Bark | | |
| Hair problems | <i>T. chebula</i> | 15 | Fruit | The patient receives 4 g of blended powder with honey twice a day | |
| | <i>Asparagus racemosus</i> | 15 | Root | | |
| | <i>Zingiber officinale</i> | 10 | Root | | |
| | <i>Withania somnifera</i> | 25 | Root | | |
| | <i>Eclipta alba</i> | 15 | Leaf | | |
| | <i>Centella asiatica</i> | 15 | Leaf | | |
| | <i>Terminalia chebula</i> | 10 | Fruit | | |
| | <i>T. bellerica</i> | 10 | Fruit | | |
| | <i>Phyllanthus emblica</i> | 15 | Fruit | | |
| | <i>Glycyrrhiza glabra</i> | 15 | Root | | |
| Epilepsy | <i>Tinospora cordifolia</i> | 10 | Stem | To cure hysteria, the patient is given 3 g of mixed powder with fruit juice two times a day in morning and in evening | Paul et al. (2021), Udayakumar et al. (2010) |
| | <i>Tribulus terrestris</i> | 10 | Fruit | | |
| | <i>Centella asiatica</i> | 30 | Leaf | | |
| | <i>Withania somnifera</i> | 20 | Root | | |
| | <i>Tribulus terrestris</i> | 15 | Fruit | | |
| | <i>Piper longum</i> | 10 | Root | | |
| | <i>Achyranthes aspera</i> | 15 | Leaf | | |
| | <i>Plumbago zeylanica</i> | 10 | Root | | |

Table 5 (continued)

| Disease | Formulation | | Ratio (%) | Part used | Dose/method of use | References | | |
|-----------------------------|----------------------------------|----------------------------------|-------------|---|--|------------|--|--|
| | Botanical name | Ratio (%) | | | | | | |
| Heart tonic | <i>Withania somnifera</i> | 10 | Root | The patient receives 3 g of blended powder twice a day, along with water | Tiwari et al. (2023) | | | |
| | <i>Terminalia arjuna</i> | 30 | Bark | | | | | |
| | <i>T. bellerica</i> | 10 | Fruit | | | | | |
| | <i>T. chebula</i> | 10 | Fruit | | | | | |
| | <i>Cyperus rotundus</i> | 10 | Root | | | | | |
| | <i>Phyllanthus emblica</i> | 10 | Fruit | | | | | |
| | <i>Ocimum sanctum</i> | 10 | Leaf | | | | | |
| | <i>Symplocos racemosa</i> | 35 | Bark | | | | | |
| | <i>Asparagus racemosus</i> | 15 | Root | | | | | |
| | <i>Adhatoda vasica</i> | 10 | Leaf | | | | | |
| Leucorrhoea | <i>Aegle marmelos</i> | 10 | Fruit | The patient receives 3 g of blended powder twice a day, along with water | Pundarikakshudu et al. (2024) | | | |
| | <i>Phyllanthus emblica</i> | 10 | Fruit | | | | | |
| | <i>Azadirachta indica</i> | 10 | Bark | | | | | |
| | <i>Holarhena antidysenterica</i> | 10 | Bark | | | | | |
| | <i>Mentha piperita</i> | 10 | Leaf | | | | | |
| | <i>Tinospora cordifolia</i> | 20 | Stem | | | | | |
| | <i>Butea monosperma</i> | 20 | Seed | | | | | |
| | <i>Azadirachta indica</i> | 10 | Leaf | | | | | |
| | <i>Phyllanthus emblica</i> | 20 | Fruit | | | | | |
| | <i>Tribulus terrestris</i> | 10 | Fruit | | | | | |
| Intestinal worms | <i>Holarhena antidysenterica</i> | 10 | Bark | The patient receives 3 g of blended powder with water two times a day in morning and in evening | Baliga et al. (2019), De Santo et al. (1979) | | | |
| | <i>Eclipta alba</i> | 20 | Leaf | | | | | |
| | <i>Tephrosia purpurea</i> | 20 | Leaf | | | | | |
| | <i>Tinospora cordifolia</i> | 10 | Stem | | | | | |
| | <i>Azadirachta indica</i> | 10 | Bark | | | | | |
| | <i>Phyllanthus amarus</i> | 20 | Whole plant | | | | | |
| | <i>Plumbago zeylanica</i> | 10 | Root | | | | | |
| | Liver tonic | <i>Holarhena antidysenterica</i> | 10 | | | Bark | Twice a day, half an hour before meals, the patient has 4 g of mixed powder with water | |
| | | <i>Eclipta alba</i> | 20 | | | Leaf | | |
| | | <i>Tephrosia purpurea</i> | 20 | | | Leaf | | |
| <i>Tinospora cordifolia</i> | | 10 | Stem | | | | | |
| <i>Azadirachta indica</i> | | 10 | Bark | | | | | |
| <i>Phyllanthus amarus</i> | | 20 | Whole plant | | | | | |
| <i>Plumbago zeylanica</i> | | 10 | Root | | | | | |

Table 5 (continued)

| Disease | Formulation | | Dose/method of use | | References |
|---------------|-----------------------------|-----------|--------------------|--|-----------------------|
| | Botanical name | Ratio (%) | Part used | | |
| Leucoderma | <i>Psoralea corylifolia</i> | 20 | Seed | The patient should receive 3 g of mixed powder with water twice a day prior to meals | Gao et al. (2016) |
| | <i>Terminalia chebula</i> | 10 | Fruit | | |
| | <i>Phyllanthus emblica</i> | 20 | Fruit | | |
| | <i>Azadirachta indica</i> | 20 | Bark | | |
| | <i>Areca catechu</i> | 10 | Bark | | |
| | <i>Tinospora cordifolia</i> | 10 | Stem | | |
| | <i>Eclipta alba</i> | 10 | leaf | | |
| | <i>Zingiber officinale</i> | 10 | Root | | |
| | <i>Piper longum</i> | 10 | Fruit | | |
| | <i>Phyllanthus emblica</i> | 30 | Fruit | | |
| | <i>Terminalia chebula</i> | 15 | Fruit | | |
| | <i>Tinospora cordifolia</i> | 15 | Stem | | |
| | <i>Cassia angustifolia</i> | 10 | Leaf | | |
| | <i>Mentha piperita</i> | 10 | Leaf | | |
| Migraine | <i>Curcuma longa</i> | 15 | Root | For indigestion, the patient is given 4 g of mixed powder twice a day, after meals, along with water | Tiwari et al. (2023) |
| | <i>Glycyrrhiza glabra</i> | 15 | Root | | |
| | <i>Azadirachta indica</i> | 15 | Bark | | |
| | <i>Tinospora cordifolia</i> | 15 | Stem | | |
| | <i>Terminalia chebula</i> | 10 | Fruit | | |
| | <i>Ocimum sanctum</i> | 15 | Leaf | | |
| | <i>Eclipta alba</i> | 15 | Leaf | | |
| | <i>Tribulus terrestris</i> | 25 | Fruit | | |
| | <i>Zingiber officinale</i> | 10 | Root | | |
| | <i>Solanum xanthocarpum</i> | 10 | Whole plant | | |
| | <i>Crataeva nurvala</i> | 25 | Bark | | |
| | <i>Tinospora cordifolia</i> | 10 | Stem | | |
| | <i>Asparagus racemosus</i> | 10 | Root | | |
| | <i>Tephrosia purpurea</i> | 10 | Leaf | | |
| Urinary tract | <i>Tribulus terrestris</i> | 25 | Fruit | The patient receives 4 g of blended powder twice a day, along with water | Kataria et al. (2022) |
| | <i>Zingiber officinale</i> | 10 | Root | | |

Table 5 (continued)

| Disease | Formulation | | Dose/method of use | | References |
|-----------------------------|-----------------------------|---------------------------|--------------------|---|-------------------------|
| | Botanical name | Ratio (%) | Part used | | |
| Male sterility | <i>Withania somnifera</i> | 15 | Root | The patient receives 4 g of blended powder with honey twice a day | Ayabe et al. (1990) |
| | <i>Mucuna pruriens</i> | 25 | Seed | | |
| | <i>Tribulus terrestris</i> | 20 | Fruit | | |
| | <i>Glycyrrhiza glabra</i> | 10 | Root | | |
| | <i>Terminalia arjuna</i> | 10 | Bark | | |
| | <i>Phyllanthus emblica</i> | 10 | Fruit | | |
| | <i>Zingiber officinale</i> | 5 | Root | | |
| | <i>Piper longum</i> | 5 | Fruit | | |
| | <i>Terminalia chebula</i> | 15 | Fruit | | |
| | <i>Terminalia bellerica</i> | 15 | Fruit | | |
| | <i>Phyllanthus emblica</i> | 10 | Fruit | | |
| | <i>Crataeva nurvala</i> | 25 | Bark | | |
| | <i>Tribulus terrestris</i> | 25 | Fruit | | |
| | <i>Zingiber officinale</i> | 10 | Root | | |
| | <i>Eclipta alba</i> | 35 | Leaf | | |
| | <i>Terminalia chebula</i> | 15 | Fruit | | |
| Obesity | <i>Terminalia bellerica</i> | 10 | Fruit | two times a day in morning and in evening, the patient receives 4 g of powder mixed with warm water | Tiwari et al. (2023) |
| | <i>Phyllanthus emblica</i> | 10 | Fruit | | |
| | <i>Crataeva nurvala</i> | 25 | Bark | | |
| | <i>Tribulus terrestris</i> | 25 | Fruit | | |
| | <i>Zingiber officinale</i> | 10 | Root | | |
| | <i>Eclipta alba</i> | 35 | Leaf | | |
| | <i>Terminalia chebula</i> | 15 | Fruit | | |
| | <i>Terminalia bellerica</i> | 10 | Fruit | | |
| | <i>Phyllanthus emblica</i> | 10 | Fruit | | |
| | <i>Adhatoda vasica</i> | 10 | Leaf | | |
| | <i>Plumbago zeylanica</i> | 5 | Root | | |
| | <i>Piper longum</i> | 5 | Fruit | | |
| | <i>Aegle marmelos</i> | 10 | Fruit | | |
| | <i>Cyperus rotundus</i> | 10 | Root | | |
| | <i>Tinospora cordifolia</i> | 20 | Stem | | |
| | <i>Azadirachta indica</i> | 20 | Bark | | |
| <i>Terminalia chebula</i> | 10 | Fruit | | | |
| <i>T. bellerica</i> | 10 | Fruit | | | |
| <i>Curcuma longa</i> | 10 | Root | | | |
| <i>Phyllanthus emblica</i> | 10 | Fruit | | | |
| <i>Centella asiatica</i> | 10 | Leaf | | | |
| Piles | <i>Terminalia chebula</i> | 15 | Fruit | The patient receives 4 g of blended powder with water twice a day in the morning and the evening | Mukherjee et al. (2002) |
| | <i>Terminalia bellerica</i> | 10 | Fruit | | |
| | <i>Phyllanthus emblica</i> | 10 | Fruit | | |
| | <i>Adhatoda vasica</i> | 10 | Leaf | | |
| | <i>Plumbago zeylanica</i> | 5 | Root | | |
| | <i>Piper longum</i> | 5 | Fruit | | |
| | <i>Aegle marmelos</i> | 10 | Fruit | | |
| | <i>Cyperus rotundus</i> | 10 | Root | | |
| | <i>Tinospora cordifolia</i> | 20 | Stem | | |
| | <i>Azadirachta indica</i> | 20 | Bark | | |
| | <i>Terminalia chebula</i> | 10 | Fruit | | |
| | <i>T. bellerica</i> | 10 | Fruit | | |
| | <i>Curcuma longa</i> | 10 | Root | | |
| | <i>Phyllanthus emblica</i> | 10 | Fruit | | |
| | <i>Centella asiatica</i> | 10 | Leaf | | |
| | Skin diseases | <i>Terminalia chebula</i> | 15 | | |
| <i>Terminalia bellerica</i> | | 10 | Fruit | | |
| <i>Phyllanthus emblica</i> | | 10 | Fruit | | |
| <i>Adhatoda vasica</i> | | 10 | Leaf | | |
| <i>Plumbago zeylanica</i> | | 5 | Root | | |
| <i>Piper longum</i> | | 5 | Fruit | | |
| <i>Aegle marmelos</i> | | 10 | Fruit | | |
| <i>Cyperus rotundus</i> | | 10 | Root | | |
| <i>Tinospora cordifolia</i> | | 20 | Stem | | |
| <i>Azadirachta indica</i> | | 20 | Bark | | |
| <i>Terminalia chebula</i> | | 10 | Fruit | | |
| <i>T. bellerica</i> | | 10 | Fruit | | |
| <i>Curcuma longa</i> | | 10 | Root | | |
| <i>Phyllanthus emblica</i> | | 10 | Fruit | | |
| <i>Centella asiatica</i> | | 10 | Leaf | | |

Table 5 (continued)

| Disease | Formulation | | Dose/method of use | | References | | | |
|----------------------------|-----------------------------|----------------------------|--------------------|---|-----------------------|------|--|-----------------------|
| | Botanical name | Ratio (%) | Part used | | | | | |
| Prostate enlargement | <i>Tinospora cordifolia</i> | 15 | Stem | The patient receives 4 g of mixed powder twice a day, in the morning and the evening, along with water before meals | Ayabe et al. (1990) | | | |
| | <i>Tribulus terrestris</i> | 15 | Fruit | | | | | |
| | <i>Phyllanthus emblica</i> | 15 | Fruit | | | | | |
| | <i>Zingiber officinale</i> | 10 | Root | | | | | |
| | <i>Butea monosperma</i> | 10 | Seed | | | | | |
| | <i>Adhatoda vasica</i> | 5 | Leaf | | | | | |
| | <i>Terminalia chebula</i> | 10 | Fruit | | | | | |
| | <i>T. bellerica</i> | 10 | Fruit | | | | | |
| | <i>Glycyrrhiza glabra</i> | 10 | Root | | | | | |
| | <i>Withania somnifera</i> | 20 | Root | | | | | |
| Sleeplessness | <i>Centella asiatica</i> | 30 | Leaf | Before bedtime, the patient receives 3 g of mixed powder mixed with milk | Paul et al. (2021) | | | |
| | <i>Piper longum</i> | 20 | Root | | | | | |
| | <i>Glycyrrhiza glabra</i> | 10 | Root | | | | | |
| | <i>Terminalia bellerica</i> | 10 | Fruit | | | | | |
| | <i>Crataeva nurvala</i> | 20 | Bark | | | | | |
| | <i>Bauhinia variegata</i> | 20 | Bark | | | | | |
| | <i>Sida cordifolia</i> | 15 | Leaf | | | | | |
| | <i>Terminalia chebula</i> | 10 | Fruit | | | | | |
| | <i>T. bellerica</i> | 10 | Fruit | | | | | |
| | <i>Glycyrrhiza glabra</i> | 15 | Root | | | | | |
| Thyroid problems | <i>Zingiber officinale</i> | 10 | Root | Twice a day, the patient receives 3 g of mixed powder mixed with lukewarm water | Kataria et al. (2022) | | | |
| | <i>Withania somnifera</i> | 10 | Root | | | | | |
| | <i>Mucuna pruriens</i> | 20 | Seed | | | | | |
| | <i>Asparagus racemosus</i> | 10 | Root | | | | | |
| | <i>Sida cordifolia</i> | 10 | Seed | | | | | |
| | <i>Tribulus terrestris</i> | 20 | Fruit | | | | | |
| | <i>Glycyrrhiza glabra</i> | 10 | Root | | | | | |
| | Sexual debility | <i>Withania somnifera</i> | 10 | | | Root | The patient should receive about 4 g of mixed powder with milk twice a day, in the morning and at night before bed | Kataria et al. (2022) |
| | | <i>Mucuna pruriens</i> | 20 | | | Seed | | |
| | | <i>Asparagus racemosus</i> | 10 | | | Root | | |
| <i>Sida cordifolia</i> | | 10 | Seed | | | | | |
| <i>Tribulus terrestris</i> | | 20 | Fruit | | | | | |
| <i>Glycyrrhiza glabra</i> | | 10 | Root | | | | | |

Table 5 (continued)

| Disease | Formulation | | Dose/method of use | | References |
|----------------------------|-----------------------------|-----------|--------------------|---|--|
| | Botanical name | Ratio (%) | Part used | | |
| Throat diseases | <i>Glycyrrhiza glabra</i> | 30 | Root | The patient receives 4 g of mixed powder twice a day, in the morning and before bed, along with honey | Kataria et al. (2022) |
| | <i>Terminalia chebula</i> | 10 | Fruit | | |
| | <i>T. bellerica</i> | 10 | Fruit | | |
| | <i>Solanum xanthocarpum</i> | 20 | Whole plant | | |
| | <i>Piper longum</i> | 10 | Fruit | | |
| | <i>Sida cordifolia</i> | 10 | Root | | |
| | <i>Phyllanthus emblica</i> | 10 | Fruit | | |
| | <i>Curcuma zedoaria</i> | 20 | Root | The patient receives three grams of blended powder with honey three times a day | Caldwell et al. (2007), Udayakumar et al. (2010) |
| | <i>Withania somnifera</i> | 20 | Root | | |
| | <i>Tribulus terrestris</i> | 20 | Fruit | | |
| <i>Zingiber officinale</i> | 20 | Root | | | |
| <i>Piper longum</i> | 5 | Fruit | | | |
| <i>Crataeva nurvala</i> | 10 | Leaf | | | |
| <i>Plumbago zeylanica</i> | 5 | Root | | | |

Table 6 Lists a few common medicinal plants with potential as nutraceuticals, along with their main application in conventional medicine

| Common name | Botanical name | Uses | References |
|-----------------------------|--------------------------------------|---|---|
| Sunthi, Ginger | <i>Zingiber officinale</i> Rosc | In numerous Ayurvedic formulae, ginger is used as an adjuvant to improve absorption and minimize gastrointestinal adverse effects. In Ayurvedic medicine, this spice is frequently used to enhance digestion and avoid nausea. These characteristics ease constipation and soothe the muscles that govern the digestive tract | Amalraj et al. (2022), Singh et al. (2022a) |
| Pippali, Indian Long Pepper | <i>Piper longum</i> L. | Pippali can be used to rejuvenate the lungs and is a potent stimulant for both the respiratory and digestive systems. The release of metabolic heat energy is significantly influenced by it. Thyroid hormone levels that are elevated in the body cause this effect. With the capacity to improve absorption and boost the bioavailability of the other active substances, pippali is a common supplemental agent used in Ayurvedic medicine | |
| Yashtimadhu, Licorice | <i>Glycyrrhiza glabra</i> L. | In China and India, it is a multipurpose medication for gastrointestinal issues. It relaxes muscle spasms, calms and tones mucous membranes, and functions as a mild laxative. It supports several immunological processes, including the synthesis of interferon, and is an antioxidant that also protects against cancer. It works as an antimutagen to stop genetic material damage that can lead to cancer in the long run | Ayabe et al. (1990) |
| Ashwagandha | <i>Withania somnifera</i> (L.) Dunal | As in the case of traditional Chinese medicine, ginseng and ashwagandha are important components of Ayurvedic remedies. Some refer to it as "Indian Ginseng." Since ancient times, it has been a widely utilized treatment for a variety of ailments in Ayurvedic systems. When taken as a remedy for general debility, it is among the best health tonics and restoratives | Udayakumar et al. (2010) |
| Jatamansi, Musk root | <i>Nardostachys jatamansi</i> DC. | Plant jatamansi is calming and beneficial to mental health. It is a powerful component in many Ayurvedic compositions. It has been demonstrated to be helpful with numerous menopausal symptoms as well as preserving a peaceful night's sleep | Muskal et al. (2016) |

Table 6 (continued)

| Common name | Botanical name | Uses | References |
|---------------------------------------|-----------------------------------|--|---|
| Garcinia | <i>Garcinia cambogia</i> Dr. | Fruits are a source of physiologically active chemicals, such as hydroxy citric acid, which has been shown to prevent the formation of fats and lipids. HCA inhibits the ATP-citrate lyase enzyme, which lowers the synthesis of acetyl CoA, an essential component in the metabolism of fat and carbohydrates. As a result, relatively little LDL and triglyceride are formed. Additionally, it reduces hunger by encouraging the synthesis of glycogen. In this manner, the brain receives signals of happiness and fullness earlier. Garcinia is utilized as a heart tonic and has high levels of vitamin C | Bourque et al. (1999), Singh et al. (2024a, b, c) |
| Guduchi | <i>Tinospora cordifolia</i> Miers | Rich in natural vitamin C, guduchi effectively suppresses bacterial development, strengthens immunological resilience, and has anti-inflammatory properties. When this plant is used, white blood cells—the immune cells that fight against invaders—have a higher capacity to kill macrophages | |
| Kiwanch, Kapikachchhu, Cow-itch plant | <i>Mucuna pruriens</i> Baker | It provides a good natural L. dopa supply. It is said to be a powerful nervous system tonic in the Ayurvedic system. Research has shown that it is helpful in preserving the nervous system's peak functioning | Wichers et al. (1993) |
| Nagarmusta | <i>Cyperus scariosus</i> Br. | Both are hepatoprotective and beneficial in promoting a healthy genitourinary system | Amalraj et al. (2022) |
| Haritaki | <i>Terminalia chebula</i> Retz. | An excellent and safe expectorant, tonic, and purgative is haritaki. Being a blend of three fruits, it is a key component of the traditional Ayurvedic recipe "Triphala." Tiphalpha is a significant Ayurvedic treatment that promotes health through several processes of cleaning and detoxification. Owing to its high vitamin C concentration, it is well recognized to have potent antimutagenic properties | Tiwari et al. (2023) |
| Nimba, Neem | <i>Melia azadirachta</i> L. | Strong health-improving properties allow it to be used as an astringent and tonic that encourages healing. The extract exhibits antispasmodic properties. Many millennia of use in Ayurvedic medicine have attested to its cleansing qualities. The digestive, respiratory, urinary, and circulatory systems have all benefited the most from it | |

Table 6 (continued)

| Common name | Botanical name | Uses | References |
|-----------------------|----------------------------------|---|-----------------------------|
| Guggul | <i>Commiphora mukul</i> Engl. | A key component of joint and immunocare products and recognized as a treatment in Ayurvedic medicine, it raises white blood cell counts and has potent immunomodulatory effects. In addition to being used to treat a number of other ailments, like lowering triglycerides and cholesterol while preserving the HDL to LDL ratio, it also offers protection against the common cold | Babalola and Adedayo (2023) |
| Shatavari | <i>Asparagus racemosus</i> Willd | Powerful rejuvenating Ayurvedic remedy. It is mostly advised for women who have had hysterectomies and provides a variety of female hormones. Additionally, it boosts immunity, maintains the urinary tract, and purifies blood | Piermaria et al. (2009) |
| Pasanavheda | <i>Bergenia ligulata</i> Wall | It has a special quality that combines the best urinary tract health with diuretic activity. This crucial medication helps the bladder by maintaining the calcium salts' solution and affecting the crystalloid-colloid balance | Godaly et al. (2016) |
| Gurmarar | <i>Gymnema sylvestre</i> R. Br. | Its name in Sanskrit directly translates as "sugar destroyer." It acts as a glycolytic and weakens a glucose solution. It has been used for millennia in Ayurveda to control the metabolism of sugar. It raises insulin production as well as the site of insulin production and pancreatic cell regeneration. Gurmarar also has the ability to completely eliminate the taste of sugar, which makes it useful for stifling and neutralizing sugar cravings | Gholap and Kar (2003) |
| Maricha, Black pepper | <i>Piper nigrum</i> L. | One of the most significant spices, black pepper, is frequently used to facilitate the digestive process and increase the body's capacity to absorb nutrients from food | Tiwari et al. (2023) |

Global acknowledgement and acceptance

Ayurveda's growing recognition and acceptance worldwide as a legitimate system of medicine. Several countries have incorporated Ayurveda into their national healthcare systems, and Ayurvedic practitioners are increasingly being recognized as healthcare professionals. Overall, Ayurveda's contemporary relevance lies in its holistic approach toward health, its focus on prevention and personalized care, and its growing scientific validation. The amalgamation of modern medicine with Ayurveda and its increasing popularity in lifestyle and wellness trends further contribute to its relevance in the twenty-first century (Kumar et al. 2022a; Peltzer et al. 2008; Ramakrishnan et al. 2014).

Conclusions

Ayurveda, the ancient Indian system of medicine, has a rich and complex history spanning over several millennia. Its principles and practices are established on the credence that health is a state of balance between the mind, body, and spirit. Ayurveda emphasizes prevention and personalized care, besides the natural therapies use to promote healing and well-being. Despite its long history and contributions to healthcare, Ayurveda faced challenges and periods of decline, particularly during the colonial era. However, in recent decades, there has been a renewed interest in Ayurveda, both in India and globally. This revival is driven by several factors. There is growing recognition of the limitations of conventional medicine

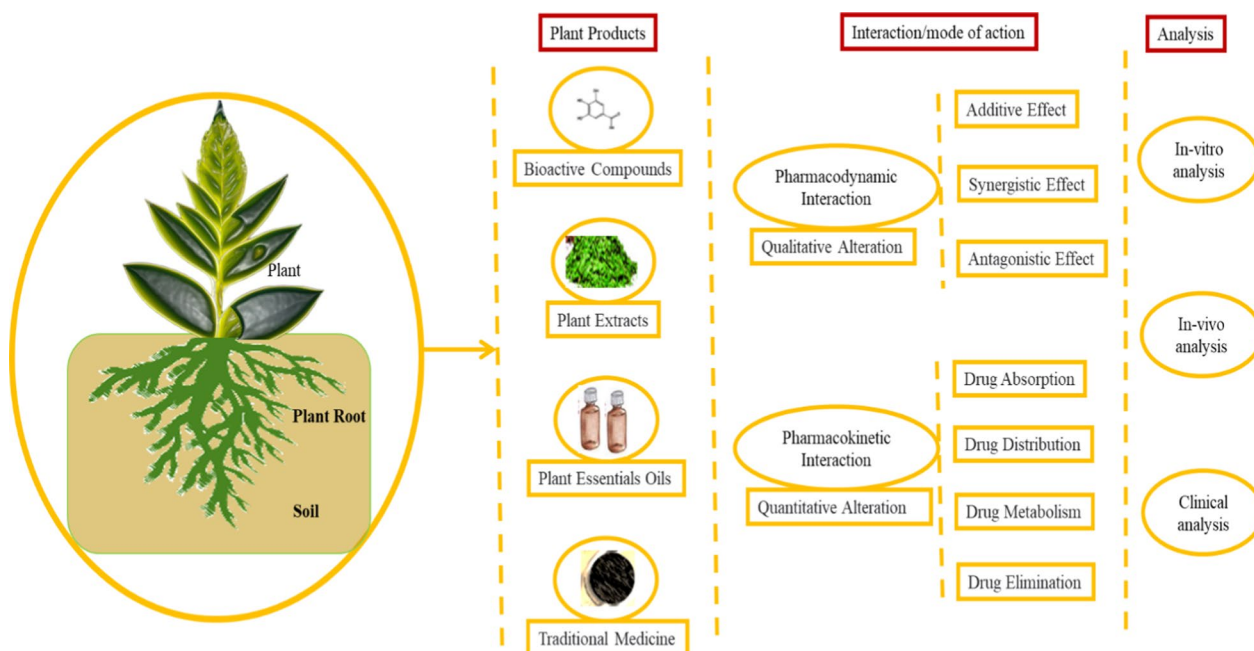


Fig. 3 A systematic representation of medicinal plant, their available products, possible mechanism of drug-herbal interaction and their efficacy analysis

in addressing chronic diseases and lifestyle-related disorders—increased awareness of the holistic and preventive approach of Ayurveda. Scientific research supporting the safety and efficacy of Ayurvedic herbs and therapies. Integration of Ayurveda with modern medicine and healthcare systems. Ayurveda’s contemporary relevance lies in its focus on personalized care, its emphasis on prevention and lifestyle management, and its potential role in addressing chronic diseases and promoting mental and emotional well-being. The amalgamation of Ayurveda with modern medicine and the growing body of scientific research supporting its efficacy is further contributing to its acceptance and recognition worldwide. As we move forward, it’s crucial to continue to study and validate Ayurvedic principles and practices through rigorous scientific research. This will help to establish Ayurveda as a credible and evidence-based system of medicine, further enhancing its relevance and integration into modern healthcare systems. In summary, Ayurveda, with its rich history, holistic approach, and growing scientific validation, is a valuable resource for promoting health and well-being in the twenty-first century. Its principles and practices can complement and enhance conventional medicine, providing individuals with a wide-ranging and personalized methodology for healthcare.

Abbreviations

AYUSH Ayurveda, Yoga, Unani, Siddha, and Homeopathy
 BCE Before the Common Era

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Author contributions

SKV and DS conceived the idea and wrote the manuscript, drew figures and tables, and MP and AS read, edited, revise and proofread the manuscript. All authors have read and approved the manuscript.

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