# **Clinical Application of Plants**

**Shamim1\*, Sudhanshu Kumar Jha2, Tarmeen Ali3**

*1Assistant Professor, Department of Pharmacy, IIMT College of Medical Sciences, IIMT University, ‘O’ Pocket, Ganga Nagar, Meerut, U.P., India-250001*

*2Senior Research Fellow, Central Ayurveda Research Institute, CCRAS, Jhansi (CARI), Ministry of Ayush, Government of India.*

*3ResearchScholar, Department of Pharmacy, IIMT College of Medical Sciences, IIMT University, ‘O’ Pocket, Ganga Nagar, Meerut, U.P., India-250001*

**\*Corresponding Author’s Details:**

Dr. Shamim

Assistant Professor, Department of Pharmacy, IIMT College of Medical Sciences, IIMT University, O Pocket, Ganga Nagar, Meerut, U.P., India-250001

dr.shamimkhan07@gmail.com

**Abstract:** Ayurveda, Siddha, and Unani are ancient Indian and Greek medical systems. These techniques treat illnesses with medicinal plants and natural materials. These systems are distinct because they are rooted in ideologies and religion. Ayurveda, founded on Hindu philosophy, treats ailments with medicinal herbs and emphasises cosmic harmony. Siddha, one of India's oldest medical systems, treats chronic diseases and elemental imbalances with medicinal herbs. Ancient Greek Unani medicine treats patients' temperaments using medicines and nutrition therapy. Traditional medicine relies on medicinal herbs. Due to their safety and low adverse effects, they have been used for centuries to treat many diseases. Modern research has found neuroprotective and anti-cancer plant-based medications. Many plants have antibacterial, anti-inflammatory, and anti-diabetic properties, influencing modern medicine. Each plant has unique healing properties in Ayurveda, Siddha, and Unani. These herbs are nutrient-rich, antimicrobial, and non-toxic, making them safe and useful for many cures. Traditional medicine prioritises long-term health by treating fundamental causes rather than symptoms. Traditional medicine remains relevant due to continuous research and clinical trials. These approaches use medicinal herbs to bridge traditional and modern medicine.

**Keywords:** Ayurveda, Siddha, Unani, Unani, Clinical Application, Herbs

**1. Introduction**

Ancient tribes generally had unique, conventional methods for treating disease. Many fundamentally good fundamental concepts that have guided healers for ages form the foundation of traditional medical systems. (S. Ansari, 2020) Greek and Egyptian medicine is now primarily historically significant, but Traditional Chinese Medicine (TCM) and Indian Ayurveda are still widely practiced. Traditional medicine has a long history in India. The folklore customs and conventional features of medicinally significant natural materials are extensively covered in the Indian materia medica. (Mukherjee, 2001) Ayurveda, Siddha, and Unani are only a few of the systems on which Indian traditional medicine is founded. These medications are mainly evaluated using phytochemical, pharmacological, and related methodologies and various experimental techniques, including chromatography, microscopy, and others. The government and the commercial sector are looking into all of the possibilities for the best assessment of these systems in order to successfully embrace the treatment techniques offered by conventional medical systems and to help in collecting data to add these items to the national health programme. (Lodha & Bagga, 2000)

**1.1 Background and Rationale Study**

Herbal medicine, agriculture engineering, and food sciences are domains poised for significant advancement in the coming decades. These fields intersect at the nexus of human health, sustainable agriculture, and food production, making them crucial for addressing global challenges such as increasing population, food security, and healthcare needs. Understanding the rationale behind studying and predicting futuristic trends in these areas is essential for guiding research, policy, and investment decisions. This rationale study aims to provide a comprehensive overview of why investigating futuristic trends in herbal medicine, agriculture engineering, and food sciences is not only relevant but also imperative; Addressing Global Health Challenges, Sustainable Agriculture and Food Security, Innovations in Food Production and Quality, Bio-Based Economy, Interdisciplinary Synergy, Economic Growth and Job Creation, Environmental Conservation, and Health and Wellness.

**1.2 Objectives:**

1. ***Forecast Futuristic Trends:*** To identify and analyse emerging trends and technologies in herbal medicine, agriculture engineering, and food sciences that are likely to shape these fields in the coming decades.
2. ***Promote Sustainability:*** To explore how these trends can contribute to sustainable agriculture practices, environmentally friendly food production, and holistic healthcare solutions.
3. ***Inform Research and Policy:*** To provide insights that guide future research directions, policy development, and investment decisions in herbal medicine, agriculture engineering, and food sciences.
4. ***Enhance Interdisciplinary Collaboration:*** To encourage cross-disciplinary collaboration and innovation between herbal medicine, agriculture engineering, and food science professionals.

**Key Questions:**

**Herbal Medicine:**

1. What are the emerging trends in herbal medicine research and development?
2. How can herbal medicine contribute to personalized healthcare and preventive medicine?
3. What innovations are on the horizon for the cultivation, processing, and utilization of medicinal herbs?
4. How can herbal medicine address the challenges of antibiotic resistance and chronic disease management?

**Agriculture Engineering:**

1. What technological advancements are expected to revolutionize agriculture and farming practices?
2. How can agriculture engineering help achieve sustainable and efficient food production?
3. What role will automation, precision agriculture, and artificial intelligence play in the future of farming?
4. How can agriculture engineering contribute to reducing the ecological footprint of agriculture?

**Food Sciences:**

1. What novel food processing and preservation technologies will emerge in the coming decades?
2. How can food sciences meet the growing demand for nutritious and safe food products?
3. What trends will shape the development of alternative proteins and sustainable food sources?
4. How can food sciences contribute to minimizing food wastage and improving food security?

**Interdisciplinary Synergy:**

1. How can the convergence of herbal medicine, agriculture engineering, and food sciences lead to innovative solutions?
2. What interdisciplinary research areas hold the most promise for addressing global challenges?
3. How can professionals from these fields collaborate to develop bio-based materials, pharmaceuticals, or sustainable farming practices?

**Economic and Environmental Impact:**

1. What economic opportunities and challenges are associated with the futuristic trends in these fields?
2. How can investments in herbal medicine, agriculture engineering, and food sciences stimulate economic growth and job creation?
3. What environmental benefits can be expected from adopting emerging technologies and practices in agriculture and food production?

**Health and Wellness:**

1. How can herbal medicine contribute to holistic health and wellness in the future?
2. What role will personalize nutrition and dietary recommendations play in preventive healthcare?
3. How can the integration of herbal medicine, agriculture engineering, and food sciences promote healthier and more sustainable lifestyles?

**1.3 Principle of Therapeutic Approaches in Traditional System of Medicine**

1. **Ayurveda**

The foundation of Ayurveda was laid by the ancient Vaisheshika and Nyaya schools of Hindu philosophy and reasoning. (Mukherjee et al., 2017) Ayurveda is said to have originated from the Hindu God Brahma, who is revered as the universe's creator, both before these schools were established and even now. (Parasuraman et al., 2014) To disseminate information, poems known as "Shlokas" that discuss the therapeutic properties of plants were employed. (A. Chauhan et al., 2015) Four well-known knowledge compilations (Vedas) known as the Yajur Veda, Rig Veda, Sam Veda, and Atharva Veda are said to form the basis of the Hindu medical system. (K. Patwardhan, 2012) According to Ayurveda, the universe is made up of the elements Vayu (Air), Jala (Water), Aakash (Space or Ether), Prithvi (Earth), and Teja (Fire). (S. Kumar, 2014)

1. **Siddha**

One of India's oldest medical systems, Siddha, is regarded as the mother of Tamils and Dravidians in South India in antiquity. Siddha translates as established truth.(Sathasivampillai et al., 2017) One who has obtained a Siddhi is also referred to as a Siddha. A person on the way to becoming a Siddha is said to have emerging paranormal skills known as siddhis. These talents do not characterize a Siddha established in the Pranav-the-Aum, the spiritual foundation of creation. (Subbarayappa, 2001) The Siddhars were the people who founded this Siddha system of thought. Siddhars were moral individuals and mystics who attained extraterrestrial abilities. (Karunamoorthi et al., 2012)

1. **Unani**

In the Indian subcontinent, Unani medicine, a traditional medicine primarily based on herbs, is used. (A. Parveen et al., 2020) The Greek philosopher Hippocrates (460–377 BC) and his companions are credited with developing it. But with the support of the Persian and Arab empires, it developed and spread, eventually reaching the Indian subcontinent by the middle of the 14th century. (Nazamuddin et al., 2014) Dietary and pharmaceutical therapy is used to administer treatment by the patient's temperament. (Alam et al., 2021) Unani medicine prioritizes promoting good health and treats diseases in various ways, including medication, food therapy, and controlled therapy. (Sheehan & Hussain, 2002) Numerous clinical trials have demonstrated the effectiveness and few side effects of Unani drugs. (Vina, 2020) Many herbal medicines have recently undergone standardization, quality control, toxicity profiling, and validation of the formulations listed in the Unani Pharmacopoeia of India. (Sher et al., 2011)

**1.4 Role of Medicinal Plants in the Management of Diseases**

Human ailments have been treated using medicinal plants for thousands of years. More people are becoming aware of the importance of traditional medical practices and medicinal plants in addressing global health problems. Drugs made from plants are becoming more widespread worldwide. Modern research on medicinal plants or medicine has resulted in breakthroughs in the neuroprotective evaluation of several plants utilized in conventional medical systems. Cancer treatments now use plant-based cancer specialists. Clinical studies are conducted all around the world with anti-cancer specialists such as vincristine, taxol, vinblastine, analogs, irinotecan, and topotecan, as well as etoposide produced through epipodophyllotoxin. (Sohani, 2021)

The use of plant derivatives as an indigenous remedy in traditional systems of medicine has been linked to the use of plant derivatives in contemporary treatment. Several plants have discovered significant antibacterial, antifungal, anti-cancer, antidiuretic, anti-inflammatory, and anti-diabetic effects. (A. K. Garg et al., 2021)

1. **Ayurveda**

Every plant or herb has a distinctive quality that may be used to treat a variety of diseases and problems. (Pathak- Gandhi & Vaidya, 2017) Medicinal plants including aloe, turmeric, tulsi, pepper, elaichi, and ginger are widely used in ayurvedic home remedies since they are regarded to be the most effective treatments for throat and skin diseases. Ayurvedic herbs are a fantastic option for things or remedies because to their high therapeutic value since they are a rich source of nutrients, have antibacterial and anti-inflammatory qualities, and are naturally non-toxic. (Torwane et al., 2014), (B. Patwardhan et al., 2004)

Herbal medicinal plants are a common therapeutic option because of their reputation for safety and absence of negative effects. Since they are in tune with nature, they have a greater advantage over products that have undergone chemical processing and artificial cures. (Garodia et al., 2007) Ayurvedic herbs are known for treating illnesses at their root and assisting in the maintenance of long-term health and fitness, in contrast to conventional therapies and drugs. (S. Kumar et al., 2017)

1. **Siddha**

Since the beginning, traditional medical systems have been popular for treating various illnesses in numerous nations, including China, Japan, and India. The Siddha system of medicine (SSM) is one of India's historical, traditional medical systems. It is mainly used in the country's southern region to treat various illnesses, including chronic disorders. In contrast to other well-known conventional medical systems like Ayurveda (popular Indian medicine), TCM (traditional Chinese medicine), and Kampo (traditional Japanese medicine), it is, however, far less well-known to the scientific community. (Arjun et al., 2009) The Siddha medical system uses various medicinal plants to treat many diseases, including vitiligo, diabetes, ulcers, psoriasis, COPD, asthma, and other skin conditions. (Sathasivampillai et al., 2017) Aconitum heterophyllum, Aquilaria malaccensis, Adhatoda beddomei, Nardostachys jatamansi, Withania somnifera, Zinger officinale, Cuminum cyminum, and others are a few of the plants utilized in Siddha system of medicine. (Khare, 2004), (Esakkimuthu et al., 2021)

In Siddha medicine, the seven physical components (Udal Thathukkal) elements are maintained, with the balance between the three senses of humor. (Thas, 2008) Therefore, it is recommended to use a medicine, healthy food, and a disciplined lifestyle to help restore the balance of humor in a sick state. In a distinctive approach, the treatment addresses the fundamental problem rather than just the symptoms. For instance, instead of anti-pyretics and anti-microbials, medications that increase a person's immunity and reduce the likelihood of infection are given to treat fever. (Sundarrajan & Arumugam, 2017)

The Siddha system of medicine can be divided into three (three) main categories. (Ravishankar & Shukla, 2007)

1. Divine method (Deva Maruthuvam)
2. Human or rational approach (Manida Maruthuvam)
3. Surgical procedure (Asura Maruthuvam)
4. **Unani**

Unani medicines have been utilized to treat a wide range of medical issues in both simple and complex formulations. In Unani medicine, a wide range of oro-dental problems have been treated using a variety of single and combination medications. (Rai et al., 2020) Unani remedies can cure several oral conditions, including toothaches, gingivitis, stomatitis, bleeding gums, plaque, tooth decay, and dental caries. (Rai et al., 2020)

Numerous therapeutic techniques, including medication therapy, diet therapy, and Ilajbit-Tadbeer, have been referenced in the Unani School of Medicine for treating sickness. The Unani medicine system offers various efficient therapeutic options with little to no side effects. The Unani therapy is also far more affordable, accessible, and cost-effective. (Aquil et al., 2019)



**Figure 1:** Medicinal plants and their major chemical constituents with uses

**1.5 Plants and Their Clinical Application**

Plants have long been used to heal a variety of human illnesses. Different plant parts, such as leaves, stems, bark, roots, and others, are used to stop problems before they start, cure their symptoms, or make abnormalities normal again. (M. R. Khan et al., 2022) Due to the fact that "herbal remedies" do not always adhere to the findings of scientific research, mainstream medicine views "herbal medicines" as an alternative kind of therapy. Opium, aspirin, digitalis, and quinine are just a few examples of pharmaceuticals that are routinely prescribed by doctors and have a long history of usage as herbal treatments. Nowadays, active substances extracted from higher plants are used in contemporary medicine, and roughly 80% of these active substances show an excellent association between their current therapeutic application and their traditional uses. (Teka et al., 2022)

**Table 1:** Some plants with their chemical constituents and clinical application

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **S. No.** | **Plant Common Name/Botanical Name/ Family** | **Part Used** | **Chemical Constituents** | **Clinical Application** | **References** |
|  | Amla/*Emblica Officinalis*/Euphorbiaceae | Fruit | vitamin c, chelbulinic acid, gallic acid, chelbulagic acid, apeigenin, quercetin, etc. | Anti-diabetic, Help in digestion, Cardiotonic, Hair growth, Improve kidney health, Antioxidant,Liver tonic | (Patil & Killedar, 2021), (S. S. Yadav et al., 2017) |
|  | Guava/Psidium guajava L. /Myrtaceae | Leaf & Fruit | Vitamins A and C, iron, phosphorus, calcium, oleic acid, guaijavarin, quercetin, flavonoids, and saponin are a few examples. | Anti-microbial, Anti-cough, Anti-diarrheal activity, Reduced cholesterol level,Weight loss, Anti-cancer,Anti-acne | (Díaz-de-Cerio et al., 2017), (Shetty et al., 2018) |
|  | Fig /*Ficus Carica* Linn. / Moraceae | Leaf, Fruit &Root | Copper, Manganese, Magnesium, Potassium, Gallic acid, Chlorogenic acid, Flavonoids,Benzyl aldehyde, Benzyl alcohol, Furanoid, Linalool, Pyranoid etc. | Help in digestion, Anti hypertension, Weight loss, Cardiotonic, preventing constipation, curing reproductive problems, Help in joint strength. | (V. Garg et al., 2019) |
|  | Vasaka /*Adhatoda Vasica* Nees/ Acanthaceae | Leave, Bark, Root & Flowers | Vasicine, Vasicinone, Quinazoline alkaloids, Anisotine, Glycoside, Saponin, Tannins, Flavonoids, Carbohydrates, Terpenes, etc. | Anti-tussive, Anti-asthmatic, Antitubercular, Memory enhancer, Anti-inflammatory, Antispasmodic, Sedative, Used in Jaundice & Piles | (S. P. Singh & Das, 2021),(Arora, 2019) |
|  | Ashwagandha /*Withania Somnifera*/ Solanaceae | Fruit &Root | Withanolide, Withaferin A, Withanoside Iv, Withanoside V, Withanolide A, Viscosalactone B, Withanolide D, Withanone, (-)-Anaferine | Anti-inflammatory, Immunomodulatory, Anti-aging, Antioxidant, Anti-viral, Antihyperglycemic, Hepatoprotective, Anti-stress, Neuropharmacological activity, Antifungal, Anticonvulsant, Anti-tumor activity | (N. Singh et al., 2011), (Ng et al., 2020) |
|  | Marigold /*Calendula Officinalis*/Asteraceae | Petals | (E, E)-allo-ocimene, bicyclo germacrene, (E)-tagetone, Piperitone, (+)-cis-sabinol, Elemene, Calendic acid, Officinocide, Quercetin, Iso quercetin, Astragalin, etc | Heal skin wounds, burn & rashes, Anti-cancer, Detoxification the body, Anti-inflammatory, Menstrual pain, Headache, and toothache. | (S. Chauhan et al., 2022),(Ulbricht et al., 2008) |
|  | Fennel /*Foeniculum Vulgare*/Apiaceae | Seed | Anethole, Fenchone, Estragole, Limonene, 4-Anisaldehyde, Phellandrene, α-Pinene, Camphene, Sabinene etc. | Help in digestion, is Used for heartburn, Menstrual cramp, Anti-cancer, prevent anemia, Antacid, Stimulating milk secretion, and Laxative. | (H. W. Lee et al., 2020) |
|  | Castor /*Ricinus Communis* Linn. /Euphorbiaceae | Root & Leaves | Ricinoleic, Oleic, Stearic, Palmitic, Linoleic, Linolenic, Dihydrostearic & Ecosanoic acid, etc. | Birth control, Laxative, Leprosy, Syphilis, Antioxidant, Anti-inflammatory, Anti-microbial activity, Hepatoprotective, etc. | (Lima et al., 2022) |
|  | Belladonna /*Atropa Belladonna*/Solanaceae | Leaves, Fruits, Flowers & Roots | Atropine, Hyoscyamine, Belladonnine, Butylscopolamine, Butabarbital, Methylscopolamine bromide, N-methylpyrroline, 7-glu-coside, Homatropine, etc. | Parkinson's disease, whooping cough, haemorrhoids, nerve issues, and anti-asthmatic irritable bowel syndrome, motion sickness, and colic. | (Almubayedh et al., 2018),(Kwakye et al., 2018) |
|  | Carrot/*Daucus Carota* Linn. / Apiaceae | Root | β-Carotene, Carotol, Falcarinol, Bisabolene, Falcarindiol, Lycopene, Vitamin C, Vitamin A, Vitamin B1, α-Carotene etc.  | It improves vision; Ant diabetes is Immunomodulator, Cardiotonic, improves oral health, regulates blood pressure, Improves digestion & anti-cancer. | (Que et al., 2019) |
|  | Coca /*Erythroxylum Coca*/Erythroxylaceae | Leaves | Alkaloids, Cocaine, Cinnamyl Cocaine, Cocamine, Tropacocaine, Glucosides, Cinnamylcocaine, Hygrine, Hygroline, Cuscohygrine, etc. | Fast-acting anti-depressant medication, Gastrointestinal ailments, Local anesthesia, Motion sickness, Used in stress & Altitude illness treatment.  | (Weil, 1978), (Calatayud & González, 2003) |
|  | Rose /*Rosa Rubiginosa*/Rosaceae | Flowers & Root | Geraniol, Citronellol, Phenethyl alcohol, Nerol, Farnesol, Methyl eugenol, Eugenol, Rubixanthin, Rose oxide etc. | Anti-depressant, used in grief, Nervous stress, Adipsia, Healing old cough, Wound Healing, Anti-allergic, Good for skin health, Headache & Migraine | (Ayati et al., 2018), |
|  | Henna/*Lawsonia inermis* Linn. /Lythraceae | Bark, Root, Flower, Seed | Fat, Resin, Tannins, Quinones, Coumarins, Xanthones, Phenolics, Flavonoids, Saponins, Proteins, Alkaloids, Terpenoids, Quinones, Coumarins, and 2-hydroxy-1,4-naphthoquinone, among others. | Analgesic, Anti-Inflammatory, Hepatoprotective, Hypoglycaemic, Antihypertensive, Anti hemorrhagic, & Intestinal Antineoplastic. | (Chaudhary et al., 2010), (Borade et al., 2011) |
|  | Fenugreek/*Trigonella Foenum-Graecum* Linn. /Fabaceae | Seed & Leaves | Trigonelline, Diosgenin, Yamogenin, Hydroxyisoleucine, Protodioscin, Sotolon, 3-octen-2-one etc. | Constipation, Loss of appetite, Gastritis, breast milk production and flow, Anti-diabetic, used in painful menstruation, Arthritis, Anti-hypertensive, Obesity, Breathing problems, Muscle pain, migraine. | (Basch et al., 2003),(Bahmani et al., 2016) |
|  | Black Nightshade/*Solanum Nigrum* Linn. /Solanaceae | Fruits, Flowers, & Leaves | Steroidal saponins, alkaloids, Flavonoids, Coumarin, Lignin, Organic acids, Volatile oils, Polysaccharides, etc. | Antibacterial, Anti-tussive, Indigestion, Antiproliferative, Antiseizure, Antioxidant, Anti-viral, Anti-inflammatory & Hepatoprotective. | (Atanu et al., 2011),(R. Jain et al., 2011) |
|  | Lemon Grass/*Cymbopogon Jwarancusa* Schult. /Poaceae | Roots | Citronellal, geraniol, nerol, myrcene, geraniol, geraniol, geraniol, etc. | Colds, Seasonal fever, Anti asthmatic, Antitubercular, Rheumatic pain, Back pain, Toothache & Nervous Disorders | (Prasad et al., 2014), (Soorya et al., 2021) |
|  | Black berry/*Syzygium Cumini* Linn. /Myrtaceae | Fruit, Leaves, Bark & Seeds | Quercetin, Myricetin, Myricitrin, Kaempferol, Phenolic acids, Tannins, Terpenes, Ellagic acid, Ferulic acid, Chlorogenic acid, Gallic acid etc. | Antihyperglycemic, Antihyperlipidemic, Cardioprotective, Anti-inflammatory, Antioxidant & Anti-diabetic. | (Ayyanar & Subash-Babu, 2012) |
|  | Small Fennel/*Nigella Sativa* Linn. /Ranunculaceae | Seeds | Thymoquinone, Dithymoquinone, Longifolene, (+)-α-longipinene, Damascenine, Dithymoquinone, Thymohydrquinone, Thymol, Pinene etc. | Blood pressure medications, liver tonics, diuretics, digestive aids, anti-diarrheal medications, appetite stimulants, analgesics, and treatments for skin conditions. | (Sharma et al., 2009), (Gali-Muhtasib et al., 2006) |
|  | Common Witch-Hazel/*Hamamelis Virginiana*/Hamamelidaceae | Leaves & Bark | Hexen-2-ol, Hexenol, Eugenol, Safrole, Tannins, Gallic acid, Monogalloylhamamelose, Essential oil, Sesquiterpene etc. | Anti-inflammatory, Anti-diarrheal, Mucus colitis, used in blood vomiting, Antitubercular, used in itching, Used in hemorrhoid, and Antibacterial. | (Abbas et al., 2020) |
|  | Hemp/*Cannabis*/Cannabaceae | Leaves & Flower | Tetrahydrocannabinol, Cannabidiol, Cannabinol, Cannabigerol, Cannabichromene, Cannabielsoin, Cannabitriol, Cannabicyclol, etc. | reduce epileptic seizures, improvement of cardiovascular health decrease glaucoma used for sleep disturbances, protecting the brain after strokes, irritable bowel syndrome is treated with Analgesic, used in dementia. | (Aggarwal et al., 2009) |
|  | Linseed/*Linum usitatissimum* Linn. /Linaceae | Flower & Seed | Alpha-linolenic acid, Linatine, Secoisolariciresinol, Diglucoside, Secoisolariciresinol, Cyanogenic Glycoside, Cinnamic acid, Glucoside, Hydroxymetylglutaric acid etc. | effects that are anti-tumor, anti-oxidant, anti-microbial, anti-inflammatory, anti-obesity, anti-diabetic, anti-diarrheal, anti-malarial, hepato-protective, reno-protective, immunosuppressive, antiarrhythmic, and cognitive. | (Palla et al., 2015),(R. Ansari et al., 2018) |
|  | Neem/*Azadirachta Indica* A. Juss. /Meliaceae | Leaves, Flowers, Seeds, Fruits, Roots & Bark | Nimbin, Azadirachtin, Gedunin, Salannin, Azadirone, Azadiradione, Epoxyazadiradione, Nimolicinol, Quercetin, Epicathechin, Catechin, Isomargolonone etc. | Neuroprotective, Antinephrotoxicity, Antigingivitis, Anti-malarial, Hepatoprotective, Wound healing, Anti-pyretic, Anti-cancer, Immunomodulatory, Anti-viral, Antibacterial, Antifungal, Anti-inflammatory, Antioxidant, Anti-diabetic, Antiulcer. | (S. Ahmad et al., 2021), (V. S. Kumar & Navaratnam, 2013) |
|  | Papaya/*Carica Papaya* Linn. /Caricaceae | Fruit, Leaf, Seed, Bark & Latex | Carpaine, Papain, loliolide, Nictoflorin, Methyl gallate, Campesterol, Cycloartenol, Benzyl isothiocyanate, Citropten, etc. | Anti-protozoan, anti-bacterial, anti-fungal, anti-viral, anti-inflammatory, anti-hypertensive, hypoglycemic, hypolipidemic, wound-healing, free radical scavenging, anti-sickling, neuroprotective, diuretic, abortifacient, and antifertility characteristics are among their list of properties. | (Vij & Prashar, 2015),(Krishna et al., 2008) |
|  | Holy Basil/*Ocimum Sanctum* Linn. /Lamiaceae | Leaves, Stem, Flower, Roots & Seeds | Eugenol, Rosmarinic acid, Estragole, Elemene, β-Bisabolen, Borneol, Camphene, (-)-germacrene D, Methyl eugenol etc. | Actions that are anti-emetic, antispasmodic, analgesic, adaptogenic, and diaphoretic as well as anti-fertility, anti-cancer, anti-diabetic, anti-fungal, anti-microbial, hepatoprotective, and cardioprotective. | (Mahajan et al., 2013) |
|  | Shatavari/*Asparagus Racemosus* Willd. /Asparagaceae | Root & Flowers | Quercitin, Rutin, and Hyperoside are sitosterol 4,6-dihydroxy-2-O (2-hydroxybenzaldehyde analogues. Flavonoids, Racemoside A, B, C, steroidal saponin, 8-methoxy-5, 6, 4'-trihydroxyisoflavone, 7-o-D-glucopyranoside, Racemosol, and asparagine | Antioxidant, Antibacterial, Anti-diabetic, Anti-viral, helps in fetal development, helps to fight PMS, improves fertility, Anti tumor, Anti-cancer, Anti-depressant, Cardioprotective, Prevents osteoporosis.  | (Bopana & Saxena, 2007),(Kumar, S., Mehla, R. K., Dang, 2008) |
|  | Garlic/*Allium Sativum* Linn. /Amaryllidaceae | Leaves & Roots | Allicin, S-Allylcysteine, Alliin, Diallyl trisulfide, Ajoene, Diallyl disulfide, diallyl sulfide, Allyl methyl sulfide, Diallyl tetrasulfide, etc. | Antibacterial, Antifungal, Antiparasitic, Anti-hypertensive, used in hypercholesterolemia, Anti-diabetic, Preventing blood clotting & Hepatoprotective, immunomodulator. | (Londhe et al., 2011), (Narayan Labh & Ratna Shakya, 2014) |
|  | Mulberry/*Morus Indica* Linn. /Moraceae | Fruit & Leaves | Flavonoid, Gallic Acid, Quercetin, M. nigra, M. rubra, Linoleic acid, Palmitic acid, Oleic acid, Ascorbic acid etc. | Anti-cancer, Immunomodulator, improves blood circulation, promotes brain health, Antioxidant, improves vision, Anti-diabetic, Reduced cholesterol level & helps digestion.  | (Ercisli & Orhan, 2007),(Boro et al., 2021) |
|  | Indian Bay Leaf/*Cinnamomum Tamala* Nees. & Eberm. /Lauraceae | Leaf & Bark | Monoterpenes, Trans-sabinene Hydrate, (Z)-ocimene, Myrcene, -pinene, -sabinene, 21-sesquiterpenes, Germacrene A, and -gurjunene, among others. | Treatment of bad odour of mouth, Anti scar, Anti-inflammatory, Used as dental carries, Anti-tussive. | (Mir et al., 2004) |
|  | Ashok/*Saraca Asoca*/Fabaceae | Bark | 1-oleo-dipalmitin, Lupeol, Campesterol, β-Sitosetrol, Stigmasterol, Glochidiol, Ursolic acid, Glycosides, Flavonoids, Tannins, Saponins etc. | Anti-pyretic, Anti-inflammatory, Anti-acne, prevent internal bleeding, Anti-diarrheal, Helps in gynecological problem, Anti-diabetic, Treatment of kidney stone, Anti asthmatic, and Antioxidant. | (N. K. Yadav et al., 2015), (Pradhan et al., 2009) |
|  | Jasmine/*Jasminum Officinale*/Oleaceae | Flower | Isobutylene epoxide, 2-Propanol, 1-Propoxy, 5-hexene-2-one, Hydroperoxide pentyl, Beta-Butyrolactone, Methyl dihydro jasmonate, 2-butenol 2-methyl, 3-butanoic acid ethyl ester, 3-Butyn-2-ol, Benzyl alcohol, Cis-4-Heptenal, etc. | Anti-cancer, Aphrodisiac, used in hepatitis, prevent liver cirrhosis, Used in dysentery, Sedative, Skin disorder. | ("Pharmacological and Therapeutic Properties of Jasminum Officinale. L: A Review," 2022) |
|  | Asafoetida/*Ferula Assa-Foetida*/Umbelliferae | Root | Disulfides of isobutyl propanyl, 1-methylpropyl-1-propenyl, 1-(methylthio)-propyl-1-pro-penyl, and 1-methylpropyl Volatile oil, resin, gum, 3-(methylthio)-2-propenyl disulfide, R-2-butyl-l-propenyl disulfide, 2-butyl-3-methylthioallyl disulfide, etc. | Treatment of whooping cough, Anti asthmatic, Anti-ulcer, Anti-epileptic, used in stomachache, bronchitis, intestinal parasite, Antispasmodic, weak digestion, and influenza. | (Iranshahy & Iranshahi, 2011), (Mahendra & Bisht, 2012) |
|  | Cinchona/*Cinchona Spec.*/Rubiaceae | Bark | Quinine, Quinidine, Cinchonine, Cinchonidine, Cinchotannic acid, Dihydroquinine, Hydroquinine, Quinic acid etc. | Anti-malarial, Stomachache, Atrial fibrillation, Cardiac depressant, Antiarrhythmic, Anti pyretic. | (Ferreira Júnior et al., 2012), (Maldonado et al., 2017) |
|  | Brahmi/*Bacopa Monnieri*/Plantaginaceae | Root, Flower& Leaves | Bacoside A, Bacopaside i, loliolide, Oroxindin, Cucurbitacin b, Rosavin, Stigmastanol, Bacopaside ii, Bascopasaponin c etc. | Treatment of osteoporosis, arthritis, Irritable bowel syndrome, Hypoglycemia, Breast prostate cancer, skin disorder, Immunomodulator, Anti-pyretic,  | (Kean et al., 2016),(Vijayakumar et al., 2010) |
|  | Safed Chandan/*Santalum Album*/Santalaceae | Heartwood | Beta-Santalol, Alpha-Santalol, Sandalore, (-)-α-Santalene, Ximenynic acid, Cedrol, Esters, Aldehydes, Phytosterols, etc. | Anti-inflammatory, Anti scars, Astringent, Sedative, Anti-aging, Anti-hypertensive, Anti-viral, Helps strengthen gum and teeth, improves digestion, gives a cooling effect, and is anti-microbial. | (Goswami & Tah, 2018) |
|  | Chirata /*Swartia Chirata*/Gentianaceae | Whole plant | Amarogentin, Swerchirin, Swertiamarin, Xanthones, Flavonoids, Glycosides, Triterpenoids, etc. | Hepatoprotective, anti-hepatotoxic, anti-microbiological, anti-inflammatory, anticarcinogenic, anti-leprosy, hypoglycemic, anti-malarial, antioxidative, anticholinergic, CNS depressant, and mutagenic. | (Negi et al., 2010) |
|  | Giloe/*Tinospora Cordifolia*/Menispermaceae | Stem | Tinosporide, Berberine, Palmatine, Syringin, Furanolactone, Alkaloid, Glycoside, Diterpenoids, Lignans, Isoquinolone, etc. | Anti-pyretic, Anti-diarrheal, Anti asthmatic, Anti-Cancer, Insecticides, Antidiabetics, Treatment of Jaundice, Dysentery, Bone fracture, Snakebite & eye disorder. | (M. M. Khan et al., 2017), (Choudhary et al., 2013) |
|  | Gudmar/*Gymnema Sylvestre*/Apocynaceae | Leaves | Glucose, Stigmasterol, Betaine, Choline, Gymnemic acid, Tartaric acid, Gurmarin, Calcium oxalate, etc. | Anti-diabetic, Anti-inflammatory, Anti-microbial, Anti-viral, and Hypolipidemic, Used in weight loss, Cataracts, and Obesity.  | (Tiwari et al., 2014) |
|  | Guggal /*Commiphora wightii*/Burseraceae | Gum resin | Myrecene, Dimyrecene, Polymyrecene, Z-Guggulsterone, E-Guggulsterone, Z-Guggulusterol, Guggulusterol I-V, 20-α-Hydroxy-4-pregnen-3-one, 20-β-hydroxy-4-pregnen-3-one, 16-β-hydroxy-4,17(20)Z-pregnadien-3-one; 16-α-hydroxy-4-pregnen-3-one | They are used for obesity, Reduced cholesterol, Anti arthritis, Used skin infections, Treatment of thyroid, Cardioprotective, Brain abnormalities, Anti-inflammatory, Anti-diabetic diabetes, Respiratory woes & Kidney problems. | (Sarup et al., 2015) |
|  | Turmeric/*Curcuma Longa*/Zingiberaceae | Roots | Curcumin, Curcuminoid, Desmethoxycurcumin, Germacrone, Curcumene, Phellandrene, Zingiberene, Elemene, Curdione etc. | Reduce joint pain, promotes skin health, Brain tonic, Cardiotonic is Anti-inflammatory, Improves gut microbial health, anti-cancer, Anti-aging, Immunomodulator & Anti-diabetic. | (Verma et al., 2018) |
|  | Isabgol/*Plantago Ovate*/Plantaginaceae | Seeds | iridoid glycosides, phenolic acid derivatives, alkaloids, terpenoids, fatty acids, and polysaccharides | Toothache, Earache, Halitosis, Oral lesions, Mouth sores, Epistaxis, Hemoptysis, Gingivitis, and Tonsillitis are just a few of the symptoms. | (Franco et al., 2020) |
|  | Jatamansi/*Nardostachys Jatamansi*/Caprifoliaceae | Root & Rhizomes | Sesquiterpenes, Coumarins, Angelicin, -eudesemo, -atchoulense, -sitosterol, Calarene, Elemol, Jatamansin, Jatamansinol, Jatamansone, n-hexaco- sanyl, n-hexacosane, Oroselol, etc. are some examples. | CNS stimulant, Antispasmodic, Tonic, Laxative, Anti-epileptic, Skin Care, Anti-Bacterial, Uterine tonic, Anti-hypertensive, & Sleep inducing. | (Dhiman & Bhattacharya, 2020), (Sahu et al., 2016) |
|  | Kalmegh/*Andrographis Paniculata*/Acanthaceae | Whole plant | Andrographolide, Neoandrographolide, Andrograpanin, Labdane, Skullcapflavone i, Xiyanping etc. | Hepatoprotective, Anti-diabetic, Anti-malarial, Immunomodulator, Anti-pyretic, Analgesic, Anti-diabetic, Anti-depressant & Anti-HIV. | (Okhuarobo et al., 2014) |
|  | Lemon Balm/*Melissa Officinalis*/Lamiaceae | Leaves | Citral, Rosmarinic acid, Geraniol, Citronellal, Nerol, Methyl geranate, Copaene, Caffeic acid, Geranial etc. | Digestive, Carminative, Antispasmodic, Sedative, Antibacterial, Promote sweating, Analgesic, Tonic, Diuretic & Gastrointestinal disorders. | (Shakeri et al., 2016) |
|  | Shatavari /*Asparagus Racemosus*/Asparagaceae | Roots, Leaves& Fruits | kaempferol, quercetin, rutin, folic acid, vitamins, Shatavarin IV, Sarsasapogenin, isoflavone, 8-methoxy-5,6,4'-trihydroxyisoflavone-7-O-β-D-glucopyranoside, 9,10-dihydrophenanthrene derivative, etc. | Anti-Cancer, Anti-diabetic, preventing osteoporosis, helping digestion, Cardioprotective, Anti-depressant, Anti tumor, Improving fertility, & Fetal development. | (Kumar, S., Mehla, R. K., Dang, 2008) |
|  | Ginseng/*Panax Spec.*/Araliaceae | Leaves, Roots & Stem | Ginsenoside Rg1, (20S)-ginsenoside Rh2, Ginsenoside Rb1, Dammarane, Protopanaxatriol, Protopanaxadiol, Notoginsenoside R1, Compound K, Ginsenoside Rf etc. | Antioxidant, helps in weight loss, reduce menstrual discomfort, Anti tumor, improve male sexual desire, prevent male baldness, Provide energy & Anti-hypertensive. | (C. H. Lee & Kim, 2014),(Radad et al., 2006) |
|  | Kutki/*Picrohiza Kurroa*/Plantaginaceae | Roots & Rhizomes | Glycosides, Aromatic Ester, Bis-iridoid, Luteolin -7-O-β-D-glucoside, Gallic acid, Isoferulic acid, Vanillic acid, Hexacosanol, etc. | Anti-inflammatory, Hypolipidemic, Anti-diabetic, Hepatoprotective, Antioxidant, Anti-cancer, Anti-ulcer, Anti-arthritic, Anti asthmatic & Immunomodulatory. | (Debnath et al., 2020) |
|  | Liquirice/*Glycyrrhiza Glabra*/Fabaceae | Roots & Rhizomes | Glycyrrhizin, Glabridin, Liquiritin, Isoliquiritigenin, Liquiritigenin, Enoxolone, Licochalcone A, Isoliquiritin, liquiritin apioside etc. | Respiratory disorders, hyperdipsia, Epilepsy, Anti pyretic, Sexual debility, Paralysis, Stomach ulcers, Rheumatism, Skin diseases, Hemorrhagic diseases & Jaundice. | (Kaur et al., 2013),(Gupta et al., 2008) |
|  | Long Pepper/*Piper Longum*/Piperaceae | Roots, Leaves & Fruits | Piperine, Piperlonguminine, Piperlongumine, Piperolactam A, Guineesine, Pellitorine, Chavicine etc. | Anti-diabetic, it prevents liver ailment, helps in weight loss, Antibacterial, helps in oxygen supply, improve skeletal health & reduce menstrual problem. | (Khushbu et al., 2011) |
|  | Flaxsee /*Linum Usitatissimum*/Linaceae | Roots | Alpha-Linolenic acid, linatine, Secoisolariciresinol diglucoside, Secoisolariciresinol, Cyanogenic glycoside, Linolenic acid, Oleic acid, Stearic acid, Xanthene, Isovanilin, etc. | effects that are anti-cancer, anti-oxidant, anti-microbial, anti-inflammatory, anti-obesity, anti-diabetic, anti-diarrheal, anti-malarial, hepatoprotective, renal protection, immunosuppressive, antiarrhythmic, and cognitive. | (Palla et al., 2015) |
|  | Musali/*Chlorophytum Borivillianum/*Asparagaceae | Roots | Saponins, Alkaloids, Vitamins, Steroids, Calcium, Magnesium, Phenol, Resins, Mucilage, Polysaccharides, Sucrose, Glucose, Fructose, Galactose, Mannose, etc. | Anti-diabetic, Antioxidant, Anti-stress, Anti-microbial, Anti-inflammatory, Hypolipidemic, Analgesic, Anti-diarrheal, Anti-tumor, Anti-aging & Immunomodulatory.  | (Khanam et al., 2013), (Thakur et al., 2009) |

**Herbal Formulation**

Some herbal formulations of Ayurveda, Unani, and Siddha are listed below.

**a) Ayurveda Formulation**

**Table 2:** Some ayurvedic formulation with their chemical constituents and uses.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S. No.** | **Product name/Formulation type** | **Major Components** | **Uses** | **Reference** |
|  | Dashmularishta/Syrup | *Aegle marmelos, Premna serratifolia, Stereospermum suaveolens, Gmelina arborea, Serpentes, Tribulus terrestris, Solanum indicum, Solanum virginianum, Desmodium gangeticum, Hedysarum pictum, Symplocos, Plumbago zeylanica, Tinospora cordifolia, Emblica officinalis, Senegalia catechu, Limonia acidissima L., Harad, Terminalia bellirica, Boerhavia diffusa, Rubia cordifolia, Cedrus deodara, Saussurea Lappa, Embelia ribes, Glycyrrhiza glabra, Nardostachys jatamansi etc.* | Analgesic, Anti-arthritic, Anti-inflammatory, Anthelminthic, Anti-bronchitis, Anti-leucoderma or Anti-vitiligo, Anti-anorexic & Anti-diarrhoea. | (Sastry, 2016), (Ibrahim et al., 2022) |
|  | Kukkutandtwak Bhasma/Powder | *Kukkutandatvak*, *Oxalis corniculata.* | Improve density, Used in arthritis, osteoporosis, leucorrhea, UTI, and Anti-diabetic treatment. | (Panda & Mohapatra, 2011) |
|  | Gokshura/Tablet | *Tribulus Terrestris.* | To improve sexual desire, to treat asthma, Edema, Cough, Renal problems, Hair loss, Rheumatic pain, Headache, Stress, Menstruation, Weak nervous system, Obesity, Piles, & eye problems. | (Rathore et al., 2022) |
|  | Arjunarishth/Syrup | *Terminalia arjuna, Vitis vinifera, Madhucaindica, Jaggery, Woodfordiafruticosa.* | Cures heart diseases & Controls blood pressure. | (H. Singh et al., 2010) |
|  | Jatyadi Tel/Oil | *Myristica fragrans, Azadirachta indica, Trichosanthes Dioica, Curcuma longa, Berberis aristata, Glycyrrhiza glabra, Rubia cordifolia, Symplocos racemosa roxb,Nelumbo nucifera Gaertn., Saussurea lappa, Terminalia chebula, Nymphaea alba, Copper sulfate, Hemidesmus in*dicus, Caesalpinia crista Linn. etc. | Healing wounds and injuries, to treat eczema, Syphilis, Skin disease, External piles, Fissures, cracked heals, Sunburn & Skin burn. | (Tamoli et al., 2022) |
|  | Ayur Slim/Capsules | *Trigonella foenum-graecum, Gymnema sylvestre, Terminalia chebula, and Garcinia cambogia.* | Treatment of obesity, Hypolipidemic, Control appetite, increase metabolism rate & inhibits fatty acid synthesis and fat accumulation in tissues. | (Semwal et al., 2015) |
|  | Triphala Extract/Capsule | *Emblica officinalis, Terminalia chebula, Terminalia belerica.* | Promotes easy bowel movements, Anti-cancer, Anti-inflammatory, and Antioxidant; Stimulates gastric enzymes detoxifies the blood, antioxidant, and prevents age-related vision problems. | (R. Parveen et al., 2018) |
|  | Meshashringi/Tablet | *Gymnema Sylvestre.* | Promote secretion of insulin & regenerating pancreatic cells. | (Poshan Kumar Sahu et al., 2016) |
|  | Punarnava/Tablet | *Boerhavia diffusa.* | Anti-aging, Diuretics, Treatment of arthritis, Prevent heart failure, Hepatoprotective, Anti-obesity & Treatment of UTI. | (Rajpoot & Mishra, 2011) |
|  | Liv-52/Tablet | *Capparis spinosa, Cichorium intybus, Solanum nigrum, Terminalia arjuna, Cassia occidentalis, Achillea millefolium, and Tamarix gallica are examples of plants in this group.* | Promote liver health, Increase appetite, Antioxidant & Anti-viral. | (Fallah Huseini et al., 2005) |

**b) Unani Formulation**

**Table 3:** Some Unani formulation with their chemical constituents and uses.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S. No.** | **Product name/Formulation type** | **Compositions** | **Use** | **Reference** |
|  | Majoon-E-Ushba/Paste | *Phyllanthus emblica Linn, Cuscuta reflexa Roxb., Smilax aristolochic folia Mill.* | Blood purifier, Treatment of psoriasis, Anti arthritis & Treatment of skin diseases. | (Lone et al., 2011) |
|  | Iksir Shifa/Tablet | *Rauvolfia serpentine, Triticum sativum Lam.* | Sleep inducer, Anti-hypertensive, Treatment of Insomnia, Headache & Anti-epileptic.  | (Kumari et al., 2013) |
|  | Majun Suranjan/Paste | *Lawsonia inermis, Foeniculum vulgare, Asarum europaeum L., Capparis spinosa L., Terminalia chebula, Operculina turpethum Linn., Apium graveolens L., Plumbago zeylanica, Zingiber officinale, Convolvulus scammonia L., Sepia Officinalis, Colchicum luteum Baker., Cassia Senna, Thymus linearis Benth., Piper nigrum Linn., Coriander sativum Linn., Rosa damascena Mill, Verbascum thapsus, Ricinus communis, Saccharum officinarum.* | To treat Rheumatism, Gout, Sciatica & All types of aches. | (Afsahul KM & Anjum F. Suranjan, 2020) |
|  | Asgand/Powder | *Withania somnifera.* | Rheumatoid arthritis, polyarthritis, lumbago, painful swellings, spermatorrhoea, asthma, leucoderma, general and sexual decline, amnesia, anxiety neurosis, scabies, ulcers, marasmus, and leucorrhoea are some of the symptoms. | (Kulkarni & Dhir, 2008) |
|  | Itrifal Ustukhudus/Paste | *Terminalia Chebula,* *Terminalia Bellirica,* *Emblica Officinalis,* *Lavandula Stoechas, Rosa damascena flower, Polypodium vulgare, Cuscuta reflexa.* | Brain tonic, Improves the function of the intestine, Hyperacidity, Cold & Fever. | (Rab et al., 2021) |
|  | Hubb-E-Musaffi Khoon/Paste | *Melia azedarach Linn., Azadirachta indica, Lawsonia inermis, Pterocarpus santalinus, Tricholepis glaberrima, Terminalia chebula, Cassia absus, Berberis aristata, Cuminum cyminum L., Tephrosia purpurea, Fumaria officinalis, Piper nigrum L., Coriander sativum Linn., Bauhinia variegata, Rosa damascena Mill, Ajuga bracteosa.* | Blood purifier, Treatment of scabies & Anti-acne. | (Sultana et al., 2014), (Islas et al., 2020) |
|  | Jawarish Kamooni/Paste | *Piper nigrum, Ruta Graveolens, Carum carvi.* | Stomachache, Flatulence, digestive system Weakness, Hiccups, Acidity, & Constipation. | (N. Ahmad et al., 2012) |
|  | Halwa Supari Pak/Paste | *Hyoscyamus Niger, Elettaria cardamomum, Santalum album, Bambusa arundinacea, Ricinus communis, Ficus religiosa, Mentha spicata, Cinnamomum Zeylanicum, Myristica fragrans, Myristica fragrans, Cuminum cyminum L., Asparagus racemosus, Cyperus scariosus, Piper nigrum L., Myrtus Caryophyllus Spreng.* | Improves kidney function and digestion, treatment of premature ejaculation & treatment of leucorrhoea. | (Begum et al., 2010) |
|  | Jawarish Jalinus/Paste | *Pistacia lentiscus Linn., Nardostachys jatamansi, Alpinia cardamomum, Cinnamomum Cassia Blume, Cinnamomum verum, Alpinia galanga, Myrtus Caryophyllus Spreng., Cyperus Rotundus, Zingiber officinale, Piper longum L., Piper nigrum L., Saussurea lappa, Asarum europaeum L., Myrtus communis, Swertia chirayita, Crocus sativus, Crocus sativus.* | bloating, acid reflux, and feeling heavy after eating bloating, a heartburn-like feeling, Additionally, flatulence. | (Husain et al., 2017) |
|  | Jawarish Shahi/Paste | *Terminalia chebula, Emblica officinalis, Coriandrum sativum, Elettaria cardamomum, Crocus sativus.* | Cardiac & Brain tonic. | (Mobeen & Moazzam, 2022) |

**c) Siddha Formulation**

**Table 4:** Some Siddha formulations with their chemical constituents and uses.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S. No.** | **Product name/Formulation type** | **Compositions** | **Use** | **Reference** |
|  | Aptowin/Syrup | *Piper longum, Cuminum cyminum, Zingiber officinale, Piper nigrum, Taxus baccata, Myristica fragrans, Quercus infectoria, Alpinia speciosa, Alpinia galangal, and Trachysperum ammi are some of the herbs that are used in herbal medicine.* | Treatment of anorexia, improve appetite and digestion, Treat enlarged liver, and Improve spleen function. | (Zaveri et al., 2010) |
|  | Alerwin/Tablet | Smilax china, Saccharum officinarum. | Improvement of skin condition, Anti-inflammatory, Antibacterial, Antifungal, Treat vaginal infection, Leucchorea & sexually transmitted disease. | (I. Khan et al., 2009) |
|  | Jeevamirtham/Syrup | *Emblica Officinalis, Citrus limon, Hemidesmus indicus, Glycyrrhiza glabra, Syzygium aromaticum, Elettaria cardamomum, Albizia lebbeck, Ficus carica, Plumbago zeylanica, Abies spectabilis, Myristica fragrans.* | Immunomodulator, Antioxidant & Wound healing. | (Krishnamoorthy et al., 2019) |
|  | Gelcocid/Suspension | *Emblica Officinalis, Hemidesmus indicus, Terminalia chebula, Mentha Viridis, Cuminum Cyminum.* | Treatment of heartburn, Hyperacidity, and Indigestion. | (Nandy et al., 2020) |
|  | Anna Pavala/Tablet | *Lawsonia alba, Cynodon dactylon, Vinca rosea, Lippia nodiflora, Hibiscus rosasinensis, and Acalypha indica.* | Anti atherosclerosis, Immunomodulator, Menorrhagia, Bleeding hemorrhoids, Nasal bleeding, Cough, Cold & Respiratory disease. | (Shanmugasundaram et al., 1991) |
|  | Winlax/Syrup | *Terminalia chebula, Operculina terpethum, Picrorrhiza curroa, Syzygium aromaticum, Clestrus paniculatus, Nigella sativa, Piper nigrum, Coriandrum sativum, Cassia angustifolia.* | Treatment of chronic constipation, Abdominal discomfort, Indigestion, Control bleeding in piles & Reduced burning sensation in the body. | (Kohli et al., 2010) |
|  | Synwin/Capsule | *Smilax China, Hydnocarpus Kuri, Semicarpus anacardium, Nigella sativa, Cumminum cyminum, Calamus rotang, Withania somnifera, Enicostema littorale, Calotropis gigantean, Ficus racemosa, Corallocarpus epigaeus, Indigofera asphlathoides, Acorus calamus, Azima tetracantha, b. o. er. haavia Wrightia tinctoria, Aadirachta indica, and Toddalia asiatica.* | Antifungal, treatment of eczema and muscle spasm, improves nerve functioning, Immunomodulator, Heals crack feet and antioxidant. | (Semalty et al., 2010) |
|  | Leucowin/Tablet | *Tinospora cordifolia, Ficus infectoria, Emblica officinalis, Terminalia bellerica, Curcuma longa, Terminalia chebula, Azadirachta indica.* | Menorrhagia, Anti-microbial, Vaginal infection, excessive bleeding, Anti-allergic, Anti-inflammatory & wound healing. | (M. M. Khan et al., 2017) |
|  | Tumowin/Tablet | *Plumbago indica, Carum copticum.* | Anti-tumor, Anti mutagenic, Reduced gastric acid hypersecretion, ulcer healing properties & Abdominal discomfort. | (Priyanjani et al., 2021) |
|  | Bala tailam/Capsule | *Sida cordifolia, Tinospora cordifolia, Pluchea lanceolata, Saccharum officinarum, Saccharum officinarum, Sesamum indicum.* | Treatment of cough, Cold, Fever, Vomiting, Blotting, Wound healing, Spleen disease, Anti-epileptic & Asthma. | (A. Jain et al., 2011) |

**Conclusion:**

Traditional medicine has been essential to human healing for millennia. TCM, Indian Ayurveda Siddha, and Unani are still practised and revered, but Greek and Egyptian medicine are mostly historical. Ayurveda, based on Hindu philosophy and ancient literature, emphasises five-element balance for health. Siddha, India's oldest medical system, treats chronic diseases using medicinal herbs. Unani, inspired by Greek and Arab traditions, treats using herbs and temperament. Traditional medicine relies on medicinal plants to treat ailments. These plants' medicinal potential is attracting worldwide attention. Many plant-derived medications, including cancer therapies, have been shown effective by modern research, emphasising the need of merging traditional knowledge with modern medicine. Ayurveda, Siddha, and Unani use plant-based treatments for natural, safe, and side-effect-free therapy. Traditional approaches tackle diseases at their source for long-term health. Traditional medicine and medicinal plants may improve global health as the globe investigates alternative and complementary healthcare. Combining these ancient practises with modern medicine may solve many of humanity's health issues. Traditional medicine may improve global wellbeing by being integrated into current healthcare systems.

**Future Scope**

The future of healthcare lies on traditional medicine and medicinal plants. As the world values traditional knowledge and seeks more holistic and sustainable healthcare solutions, there are various areas of future scope; Ayurveda, Siddha, and Unani are being integrated with contemporary allopathic medicine. Combining the qualities of both systems may improve patient care. Research and Validation; Traditional medicine medicinal plants must be researched and validated. More clinical trials and scientific investigations can prove the usefulness and safety of plant-based therapies. Standardised Formulations; Traditional medicine formulations can assure quality, safety, and consistency. This will make them more accessible and integrate them into conventional healthcare systems. Ethnopharmacological Studies; Indigenous societies' knowledge of medicinal plants and their applications may lead to the discovery of novel and powerful natural treatments. Ethnopharmacological research can conserve and use this knowledge to healthcare. Cultivation and Conservation; Ensuring a steady supply of medicinal plants requires sustainable cultivation and conservation. Sustainable practises avoid overharvesting and conserve biodiversity. Education and Awareness: Healthcare professionals, legislators, and the public must be educated on the advantages and safety of traditional medicine and medicinal plants. Education may improve healthcare choices and acceptance of these systems. Global cooperation; Traditional medicine practitioners, researchers, and policymakers may share information and best practises via global cooperation. This partnership may provide multi-cultural healthcare solutions.

**Consent for Publication**

None

**Conflict of Interest**

None

**Acknowledgement**

I would like to express my sincere gratitude to all those who have contributed to the completion of this article. Your support, guidance, and encouragement have been invaluable throughout this journey.

**References**

1. Abbas, T. F., Abbas, M. F., & Lafta, A. J. (2020). Antibacterial activity and medical properties of Witch Hazel Hamamelis virginiana. *Annals of Tropical Medicine and Public Health*. https://doi.org/10.36295/asro.2020.231146
2. Afsahul KM, & Anjum F. Suranjan. (2020). Suranjan (Colchicum autumnale L. and Merendra persica): great resolvent herbs of Unani system of medicine-a review. *Int J Unani Integr Med*.
3. Aggarwal, S. K., Carter, G. T., Sullivan, M. D., ZumBrunnen, C., Morrill, R., & Mayer, J. D. (2009). Medicinal use of cannabis in the United States: Historical perspectives, current trends, and future directions. In *Journal of Opioid Management*. https://doi.org/10.5055/jom.2009.0016
4. Ahmad, N., Fazal, H., Abbasi, B. H., Farooq, S., Ali, M., & Khan, M. A. (2012). Biological role of Piper nigrum L. (Black pepper): A review. *Asian Pacific Journal of Tropical Biomedicine*. https://doi.org/10.1016/S2221-1691(12)60524-3
5. Ahmad, S., Zahiruddin, S., Parveen, B., Basist, P., Parveen, A., Gaurav, Parveen, R., & Ahmad, M. (2021). Indian Medicinal Plants and Formulations and Their Potential Against COVID-19–Preclinical and Clinical Research. In *Frontiers in Pharmacology*. https://doi.org/10.3389/fphar.2020.578970
6. Alam, M. A., Quamri, M. A., & Sofi, G. (2021). Historical account of endocrinal disorders in Unani medicine. In *Journal of Basic and Clinical Physiology and Pharmacology*. https://doi.org/10.1515/jbcpp-2020-0231
7. Almubayedh, H., Albannay, R., Alelq, K., Ahmad, R., Ahmad, N., & Naqvi, A. A. (2018). Clinical uses and toxicity of Atropa belladonna; an evidence based comprehensive retrospective review (2003-2017). *Bioscience Biotechnology Research Communications*. https://doi.org/10.21786/bbrc/11.1/6
8. Ansari, R., Zarshenas, M. M., & Dadbakhsh, A. H. (2018). A Review on Pharmacological and Clinical Aspects of Linum usitatissimum L. *Current Drug Discovery Technologies*. https://doi.org/10.2174/1570163815666180521101136
9. Ansari, S. (2020). Overview of traditional systems of medicine in different continents. In *Preparation of Phytopharmaceuticals for the Management of Disorders: The Development of Nutraceuticals and Traditional Medicine*. https://doi.org/10.1016/B978-0-12-820284-5.00017-4
10. Aquil, Z., Khalid, M., Uddin, Q., Ma, K., & Ahmad, W. (2019). Potential role of Unani medicinal plants in management of Kalaf (Chloasma): A review. In *J Skin*.
11. Arjun, R., Duraisamy, A. J., Selvakumar, B., & Vijay, P. S. (2009). Medicinal plants from Siddha system of medicine useful for treating respiratory diseases. *International Journal of Pharmaceuticals Analysis*.
12. Arora, P. (2019). Importance of Adhatoda Vasica Nees In Traditional System of Medicines: A Review. *American Journal of PharmTech Research*. https://doi.org/10.46624/ajptr.2019.v9.i2.009
13. Atanu, F. O., Ebiloma, U. G., & Ajayi, E. I. (2011). A review of the pharmacological aspects of Solanum nigrum Linn. *Biotechnology and Molecular Biology Review*.
14. Ayati, Z., Amiri, M. S., Ramezani, M., Delshad, E., Sahebkar, A., & Emami, S. A. (2018). Phytochemistry, Traditional Uses and Pharmacological Profile of Rose Hip: A Review. *Current Pharmaceutical Design*. https://doi.org/10.2174/1381612824666181010151849
15. Ayyanar, M., & Subash-Babu, P. (2012). Syzygium cumini (L.) Skeels: A review of its phytochemical constituents and traditional uses. In *Asian Pacific Journal of Tropical Biomedicine*. https://doi.org/10.1016/S2221-1691(12)60050-1
16. Bahmani, M., Shirzad, H., Mirhosseini, M., Mesripour, A., & Rafieian-Kopaei, M. (2016). A Review on Ethnobotanical and Therapeutic Uses of Fenugreek (Trigonella foenum-graceum L). *Journal of Evidence-Based Complementary and Alternative Medicine*. https://doi.org/10.1177/2156587215583405
17. Basch, E., Ulbricht, C., Kuo, G., Szapary, P., & Smith, M. (2003). Therapeutic applications of fenugreek. In *Alternative Medicine Review*.
18. Begum, S., Saxena, B., Goyal, M., Ranjan, R., Joshi, V. B., Rao, C. V., Krishnamurthy, S., & Sahai, M. (2010). Study of anti-inflammatory, analgesic and anti-pyretic activities of seeds of Hyoscyamus niger and isolation of a new coumarinolignan. *Fitoterapia*. https://doi.org/10.1016/j.fitote.2009.08.024
19. Bopana, N., & Saxena, S. (2007). Asparagus racemosus-Ethnopharmacological evaluation and conservation needs. In *Journal of Ethnopharmacology*. https://doi.org/10.1016/j.jep.2007.01.001
20. Borade, A. S., Kale, B. N., & Shete, R. V. (2011). A phytopharmacological review on Lawsonia inermis (Linn.). *International Journal of Pharmacy & Life Sciences*.
21. Boro, H., Das, S., & Middha, S. K. (2021). The therapeutic potential and the health benefits of Morus indica Linn.: a mini review. In *Advances in Traditional Medicine*. https://doi.org/10.1007/s13596-020-00544-5
22. Calatayud, J., & González, Á. (2003). History of the development and evolution of local anesthesia since the coca leaf. In *Anesthesiology*. https://doi.org/10.1097/00000542-200306000-00031
23. Chaudhary, G., Goyal, S., Poonia, P., & Linn, L. (2010). Lawsonia inermis Linnaeus : A Phytopharmacological Review. *Int. J. Pharm. Sci. Drug Res.*
24. Chauhan, A., Semwal, D., Mishra, S., & Semwal, R. (2015). Ayurvedic research and methodology: Present status and future strategies. *AYU (An International Quarterly Journal of Research in Ayurveda)*. https://doi.org/10.4103/0974-8520.190699
25. Chauhan, S., Rai, S., & Huddar, V. (2022). A review on clinical and experimental studies on Ayurveda and leukemia. In *Medical Journal of Dr. D.Y. Patil Vidyapeeth*. https://doi.org/10.4103/mjdrdypu.mjdrdypu\_253\_19
26. Choudhary, N., Siddiqui, M. B., Azmat, S., & Khatoon, S. (2013). Tinospora cordifolia: Ethnobotany, phytopharmacology and phytochemistry aspects. *International Journal of Pharmaceutical Sciences and Research*.
27. Debnath, P., Rathore, S., Walia, S., Kumar, M., Devi, R., & Kumar, R. (2020). Picrorhiza kurroa: a promising traditional therapeutic herb from higher altitude of western Himalayas. In *Journal of Herbal Medicine*. https://doi.org/10.1016/j.hermed.2020.100358
28. Dhiman, N., & Bhattacharya, A. (2020). Nardostachys jatamansi (D. Don) DC.-Challenges and opportunities of harnessing the untapped medicinal plant from the Himalayas. *Journal of Ethnopharmacology*.
29. Díaz-de-Cerio, E., Verardo, V., Gómez-Caravaca, A. M., Fernández-Gutiérrez, A., & Segura-Carretero, A. (2017). Health effects of Psidium guajava L. Leaves: An overview of the last decade. In *International Journal of Molecular Sciences*. https://doi.org/10.3390/ijms18040897
30. Ercisli, S., & Orhan, E. (2007). Chemical composition of white (Morus alba), red (Morus rubra) and black (Morus nigra) mulberry fruits. *Food Chemistry*. https://doi.org/10.1016/j.foodchem.2006.10.054
31. Esakkimuthu, S., Mutheeswaran, S., Elankani, P., Pandikumar, P., & Ignacimuthu, S. (2021). Quantitative analysis of medicinal plants used to treat musculoskeletal ailments by non-institutionally trained siddha practitioners of Virudhunagar district, Tamil Nadu, India. *Journal of Ayurveda and Integrative Medicine*. https://doi.org/10.1016/j.jaim.2018.11.005
32. Fallah Huseini, H., Alavian, S. M., Heshmat, R., Heydari, M. R., & Abolmaali, K. (2005). The efficacy of Liv-52 on liver cirrhotic patients: A randomized, double-blind, placebo-controlled first approach. *Phytomedicine*. https://doi.org/10.1016/j.phymed.2004.10.003
33. Ferreira Júnior, W. S., Cruz, M. P., Santos, L. L. Dos, & Medeiros, M. F. T. (2012). Use and importance of quina (Cinchona spp.) and ipeca (Carapichea ipecacuanha (Brot.) L. Andersson): Plants for medicinal use from the 16th century to the present. In *Journal of Herbal Medicine*. https://doi.org/10.1016/j.hermed.2012.07.003
34. Franco, E. A. N., Sanches-Silva, A., Ribeiro-Santos, R., & de Melo, N. R. (2020). Psyllium (Plantago ovata Forsk): From evidence of health benefits to its food application. In *Trends in Food Science and Technology*. https://doi.org/10.1016/j.tifs.2019.12.006
35. Gali-Muhtasib, H., El-Najjar, N., & Schneider-Stock, R. (2006). The medicinal potential of black seed (Nigella sativa) and its components. In *Advances in Phytomedicine*. https://doi.org/10.1016/S1572-557X(05)02008-8
36. Garg, A. K., Faheem, M., & Singh, S. (2021). Role of Medicinal Plant in Human Health Disease. *Asian Journal of Plant Science & Research*.
37. Garg, V., Kiran, Dhiman, A., & Dutt, R. (2019). Anti-cancer potential of functional and medicinal beverages. In *Functional and Medicinal Beverages: Volume 11: The Science of Beverages*. https://doi.org/10.1016/B978-0-12-816397-9.00006-6
38. Garodia, P., Ichikawa, H., Malani, N., Sethi, G., & Aggarwal, B. B. (2007). From ancient medicine to modern medicine: Ayurvedic concepts of health and their role in inflammation and cancer. In *Journal of the Society for Integrative Oncology*. https://doi.org/10.2310/7200.2006.029
39. Goswami, N. B., & Tah, J. (2018). White sandal (Santalum album L.), a precious medicinal and timber yielding plant: A short review. *Plant Archives*. https://doi.org/10.20959/wjpps20176-9299
40. Gupta, V. K., Fatima, A., Faridi, U., Negi, A. S., Shanker, K., Kumar, J. K., Rahuja, N., Luqman, S., Sisodia, B. S., Saikia, D., Darokar, M. P., & Khanuja, S. P. S. (2008). Anti-microbial potential of Glycyrrhiza glabra roots. *Journal of Ethnopharmacology*. https://doi.org/10.1016/j.jep.2007.11.037
41. Husain, G. M., Ahmed, S. S., Azhar, M., Siddiqui, J. I., Waheed, M. A., & Kazmi, M. H. (2017). Comparative toxicity study on classical and modified version of Jawarish Jalinoos (a traditional Unani formulation) in rats. *Integrative Medicine Research*. https://doi.org/10.1016/j.imr.2017.01.001
42. Ibrahim, M., Parveen, B., Zahiruddin, S., Gautam, G., Parveen, R., Khan, M. A., Gupta, A., & Ahmad, S. (2022). Analysis of polyphenols in Aegle marmelos leaf and ameliorative efficacy against diabetic mice through restoration of antioxidant and anti-inflammatory status. *Journal of Food Biochemistry*. https://doi.org/10.1111/jfbc.13852
43. Iranshahy, M., & Iranshahi, M. (2011). Traditional uses, phytochemistry and pharmacology of asafoetida (Ferula assa-foetida oleo-gum-resin) - A review. In *Journal of Ethnopharmacology*. https://doi.org/10.1016/j.jep.2010.11.067
44. Islas, J. F., Acosta, E., G-Buentello, Z., Delgado-Gallegos, J. L., Moreno-Treviño, M. G., Escalante, B., & Moreno-Cuevas, J. E. (2020). An overview of Neem (Azadirachta indica) and its potential impact on health. In *Journal of Functional Foods*. https://doi.org/10.1016/j.jff.2020.104171
45. Jain, A., Choubev, S., Singour, P. K., Rajak, H., & Pawar, R. S. (2011). Sida cordifolia (Linn) - An overview. *Journal of Applied Pharmaceutical Science*.
46. Jain, R., Sharma, A., Gupta, S., Sarethy, I. P., & Gabrani, R. (2011). Solanum nigrum: Current perspectives on therapeutic properties. In *Alternative Medicine Review*.
47. Karunamoorthi, K., Jegajeevanram, K., Xavier, J., Vijayalakshmi, J., & Melita, L. (2012). Tamil traditional medicinal system - siddha: an indigenous health practice in the international perspectives. *TANG [HUMANITAS MEDICINE]*. https://doi.org/10.5667/tang.2012.0006
48. Kaur, R., Kaur, H., & Dhindsa, A. S. (2013). Glycyrrhiza glabra: a phytopharmacological review. *International Journal of Pharmaceutical Sciences and Research*.
49. Kean, J. D., Downey, L. A., & Stough, C. (2016). A systematic review of the Ayurvedic medicinal herb Bacopa monnieri in child and adolescent populations. In *Complementary Therapies in Medicine*. https://doi.org/10.1016/j.ctim.2016.09.002
50. Khan, I., Nisar, M., Ebad, F., Nadeem, S., Saeed, M., Khan, H., Samiullah, Khuda, F., Karim, N., & Ahmad, Z. (2009). Anti-inflammatory activities of Sieboldogenin from Smilax china Linn.: Experimental and computational studies. *Journal of Ethnopharmacology*. https://doi.org/10.1016/j.jep.2008.10.009
51. Khan, M. M., Haque, M. S., & Chowdhury, M. S. I. (2017). Medicinal use of the unique plant Tinospora Cordifolia: evidence from the traditional medicine and recent research. *Asian Journal of Medical and Biological Research*. https://doi.org/10.3329/ajmbr.v2i4.30989
52. Khan, M. R., Khan, M. A., Singh, V. K., Saxena, A., Singh, T., Gangwar, A. K., & Shamim, S. (2022). Protective effect of aqueous extract of Nigella sativa on Oxidative Enzymes, Homocysteine, and Lipids in Methionine induced Hyperhomocysteinemic rats. *International Journal of Health Sciences*. https://doi.org/10.53730/ijhs.v6ns1.6144
53. Khanam, Z., Singh, O., Singh, R., & Bhat, I. U. H. (2013). Safed musli (Chlorophytum borivilianum): A review of its botany, ethnopharmacology and phytochemistry. In *Journal of Ethnopharmacology*. https://doi.org/10.1016/j.jep.2013.08.064
54. Khare, C. P. (2004). Enclyclopedia of Indian Medicinal Plants. *Springer-Verlag Berlin Heidelberg, New York*.
55. Khushbu, C., Roshni, S., Anar, P., … M. C.-… journal of research, & 2011, undefined. (2011). Phytochemical and therapeutic potential of Piper longum Linn a review. *Naturalingredient.Org*.
56. Kohli, K. R., Nipanikar, S. U., & Kadbhane, K. P. (2010). A comprehensive review on Trivrit [Operculina Turpethum syn. Ipomoea Turpethum]. In *International Journal of Pharma and Bio Sciences*.
57. Krishna, K. L., Paridhavi, M., & Patel, J. A. (2008). Review on nutritional, medicinal and pharmacological properties of papaya (Carica papaya linn.). *Indian Journal of Natural Products and Resources*.
58. Krishnamoorthy, R., Alshatwi, A. A., Subbarayan, S., Vadivel, B., Periyasamy, V. S., Al-Shuniaber, M. A., & Athinarayanan, J. (2019). Impact of farm-made liquid organic nutrients jevamirtham and fish amino acid on growth and nutritional status in different season of Abelmoschus esculentus—a self-sustainable field trial. *Organic Agriculture*. https://doi.org/10.1007/s13165-018-0205-2
59. Kulkarni, S. K., & Dhir, A. (2008). Withania somnifera: An Indian ginseng. In *Progress in Neuro-Psychopharmacology and Biological Psychiatry*. https://doi.org/10.1016/j.pnpbp.2007.09.011
60. Kumar, S., Mehla, R. K., Dang, A. K. (2008). Use of Shatavari Asparagus Racemosus As a Galactopoietic and Therapeutic Herb a Review. *Agric. Rev*.
61. Kumar, S. (2014). The concept of diet in Ayurveda and its implications for the modern world. In *Ayurvedic Science of Food and Nutrition*. https://doi.org/10.1007/978-1-4614-9628-1\_3
62. Kumar, S., Dobos, G. J., & Rampp, T. (2017). The Significance of Ayurvedic Medicinal Plants. In *Journal of Evidence-Based Complementary and Alternative Medicine*. https://doi.org/10.1177/2156587216671392
63. Kumar, V. S., & Navaratnam, V. (2013). Neem (Azadirachta indica): Prehistory to contemporary medicinal uses to humankind. *Asian Pacific Journal of Tropical Biomedicine*. https://doi.org/10.1016/S2221-1691(13)60105-7
64. Kumari, R., Rathi, B., Rani, A., Tiwari, S. M., & Bhatnagar, S. (2013). Rauvolfia serpentina L. Benth. ex kurz.: Phytochemical, pharmacological and therapeutic aspects. In *International Journal of Pharmaceutical Sciences Review and Research*.
65. Kwakye, G. F., Jiménez, J., Jiménez, J. A., & Aschner, M. (2018). Atropa belladonna neurotoxicity: Implications to neurological disorders. In *Food and Chemical Toxicology*. https://doi.org/10.1016/j.fct.2018.04.022
66. Lee, C. H., & Kim, J. H. (2014). A review on the medicinal potentials of ginseng and ginsenosides on cardiovascular diseases. In *Journal of Ginseng Research*. https://doi.org/10.1016/j.jgr.2014.03.001
67. Lee, H. W., Ang, L., Lee, M. S., Alimoradi, Z., & Kim, E. (2020). Fennel for reducing pain in primary dysmenorrhea: A systematic review and meta-analysis of randomized controlled trials. *Nutrients*. https://doi.org/10.3390/nu12113438
68. Lima, F. S., Matos, L. F., Pacheco, I. K., Reis, F., Câmara, J. V. F., Pierote, J. J. A., Matos, J. M., Ribeiro, A., Moura, W., & Fialho, A. C. (2022). Scaffold based on castor oil as an osteoconductive matrix in bone repair: Biocompatibility analysis. *Polimeros*. https://doi.org/10.1590/0104-1428.210018
69. Lodha, R., & Bagga, A. (2000). Traditional Indian systems of medicine. *Annals of the Academy of Medicine Singapore*.
70. Londhe, V. P., Gavasane, A. T., Nipate, S. S., Bandawane, D. D., & Chaudhari, P. D. (2011). Review Role of Garlic ( Allium Sativum ) in Various Diseases : an Overview. *Journal of Pharmaceutical Research and Opinion*.
71. Lone, A. H., Ahmad, T., & Naiyar, A. H. (2011). Clinical evaluation of efficacy of Majoon Ushba and Roghane Hindi in the management of psoriasis: A randomized single-blind, placebo-controlled study. *Journal of Ayurveda and Integrative Medicine*. https://doi.org/10.4103/0975-9476.78188
72. Mahajan, N., Rawal, S., Verma, M., Poddar, M., & Alok, S. (2013). A phytopharmacological overview on Ocimum species with special emphasis on Ocimum sanctum. In *Biomedicine and Preventive Nutrition*. https://doi.org/10.1016/j.bionut.2012.08.002
73. Mahendra, P., & Bisht, S. (2012). Ferula asafoetida : Traditional uses and pharmacological activity. In *Pharmacognosy Reviews*. https://doi.org/10.4103/0973-7847.99948
74. Maldonado, C., Barnes, C. J., Cornett, C., Holmfred, E., Hansen, S. H., Persson, C., Antonelli, A., & Rønsted, N. (2017). Phylogeny predicts the quantity of anti-malarial alkaloids within the iconic yellow Cinchona bark (Rubiaceae: Cinchona calisaya). *Frontiers in Plant Science*. https://doi.org/10.3389/fpls.2017.00391
75. Mir, S. R., Ali, M., & Kapoor, R. (2004). Chemical composition of essential oil of Cinnamomum tamala Nees et Eberm. leaves. *Flavour and Fragrance Journal*. https://doi.org/10.1002/ffj.1236
76. Mobeen, A., & Moazzam, S. W. (2022). Jawarish Shahi: A special dosage form of herbal formulations for functional gastrointestinal disorders in Unani medicine- A comprehensive review. In *Journal of Ethnopharmacology*. https://doi.org/10.1016/j.jep.2022.115319
77. Mukherjee, P. K. (2001). Evaluation of indian traditional medicine. *Therapeutic Innovation & Regulatory Science*. https://doi.org/10.1177/009286150103500235
78. Mukherjee, P. K., Harwansh, R. K., Bahadur, S., Banerjee, S., Kar, A., Chanda, J., Biswas, S., Ahmmed, S. M., & Katiyar, C. K. (2017). Development of Ayurveda – Tradition to trend. *Journal of Ethnopharmacology*. https://doi.org/10.1016/j.jep.2016.09.024
79. Nandy, S., Mukherjee, A., Pandey, D. K., Ray, P., & Dey, A. (2020). Indian Sarsaparilla (Hemidesmus indicus): Recent progress in research on ethnobotany, phytochemistry and pharmacology. In *Journal of Ethnopharmacology*. https://doi.org/10.1016/j.jep.2020.112609
80. Narayan Labh, S., & Ratna Shakya, S. (2014). Medicinal uses of garlic (Allium sativum) improves fish health and acts as an immunostimulant in aquaculture. *European Journal of Biotechnology and Bioscience*.
81. Nazamuddin, M., Wadud, A., Ansari, A. H., Alam, T., Perveen, A., & Iqbal, N. (2014). Concept of Diabetes in Unani System of Medicine : An Overview. *Medical Journal of Islamic World Academy of Sciences*. https://doi.org/10.12816/0008182
82. Negi, J. S., Singh, P., & Rawat, B. (2010). Chemical Constituents and Biological Importance of Swertia: A Review. *Current Research in Chemistry*. https://doi.org/10.3923/crc.2011.1.15
83. Ng, Q. X., Loke, W., Foo, N. X., Tan, W. J., Chan, H. W., Lim, D. Y., & Yeo, W. S. (2020). A systematic review of the clinical use of Withania somnifera (Ashwagandha) to ameliorate cognitive dysfunction. In *Phytotherapy Research*. https://doi.org/10.1002/ptr.6552
84. Okhuarobo, A., Ehizogie Falodun, J., Erharuyi, O., Imieje, V., Falodun, A., & Langer, P. (2014). Harnessing the medicinal properties of Andrographis paniculata for diseases and beyond: A review of its phytochemistry and pharmacology. *Asian Pacific Journal of Tropical Disease*. https://doi.org/10.1016/S2222-1808(14)60509-0
85. Palla, A. H., Khan, N. A., Bashir, S., Ur-Rehman, N., Iqbal, J., & Gilani, A. H. (2015). Pharmacological basis for the medicinal use of Linum usitatissimum (Flaxseed) in infectious and non-infectious diarrhea. *Journal of Ethnopharmacology*. https://doi.org/10.1016/j.jep.2014.11.030
86. Panda, G., & Mohapatra, K. (2011). Clinical effect of Kukkutanda Twak Bhasma in the management of Swetapradara. *AYU (An International Quarterly Journal of Research in Ayurveda)*. https://doi.org/10.4103/0974-8520.93917
87. Parasuraman, S., Thing, G. S., & Dhanaraj, S. A. (2014). Polyherbal formulation: Concept of Ayurveda. In *Pharmacognosy Reviews*. https://doi.org/10.4103/0973-7847.134229
88. Parveen, A., Parveen, R., Akhatar, A., Parveen, B., Siddiqui, K. M., & Iqbal, M. (2020). Concepts and quality considerations in unani system of medicine. *Journal of AOAC International*. https://doi.org/10.5740/JAOACINT.19-0284
89. Parveen, R., Shamsi, T. N., Singh, G., Athar, T., & Fatima, S. (2018). Phytochemical analysis and In-vitro Biochemical Characterization of aqueous and methanolic extract of Triphala, a conventional herbal remedy. *Biotechnology Reports*. https://doi.org/10.1016/j.btre.2018.02.003
90. Pathak- Gandhi, N., & Vaidya, A. D. B. (2017). Management of Parkinson’s disease in Ayurveda: Medicinal plants and adjuvant measures. *Journal of Ethnopharmacology*. https://doi.org/10.1016/j.jep.2016.08.020
91. Patil, P., & Killedar, S. (2021). Chitosan and glyceryl monooleate nanostructures containing gallic acid isolated from amla fruit: targeted delivery system. *Heliyon*. https://doi.org/10.1016/j.heliyon.2021.e06526
92. Patwardhan, B., Vaidya, A. D. B., & Chorghade, M. (2004). Ayurveda and natural products drug discovery. In *Current Science*.
93. Patwardhan, K. (2012). The history of the discovery of blood circulation: Unrecognized contributions of Ayurveda masters. *American Journal of Physiology - Advances in Physiology Education*. https://doi.org/10.1152/advan.00123.2011
94. Pharmacological and Therapeutic Properties of Jasminum officinale . L : A Review. (2022). *Indian Journal of Ecology*. https://doi.org/10.55362/ije/2022/3640
95. Poshan Kumar Sahu, Pushpa Prasad, & Amit Roy. (2016). Screening of In Vitro Anti-diabetic Activity of Herbal Formulation Meshashringi. *Pharmaceutical and Biosciences Journal*. https://doi.org/10.20510/ukjpb/4/i6/134672
96. Pradhan, P., Joseph, L., Gupta, V., Chulet, R., Arya, H., Verma, R., & Bajpai, A. (2009). Saraca asoca (Ashoka): A Review. *Journal of Chemical and Pharmaceutical Research*.
97. Prasad, C., Singh, D., Singh, U. B., & Shukla, O. (2014). Cymbopogon jwarancusa -An important medicinal plant: A review. *The Pharma Innovation Journal TPI*.
98. Priyanjani, H. A. S. A., Senarath, R. M. U. S., Senarath, W. T. P. S. K., & Munasinghe, M. L. A. M. S. (2021). Propagation, Phytochemistry and Pharmacology of Plumbago indica - A Review. *Journal of Pharmaceutical Research International*. https://doi.org/10.9734/jpri/2021/v33i42b32439
99. Que, F., Hou, X. L., Wang, G. L., Xu, Z. S., Tan, G. F., Li, T., Wang, Y. H., Khadr, A., & Xiong, A. S. (2019). Advances in research on the carrot, an important root vegetable in the Apiaceae family. In *Horticulture Research*. https://doi.org/10.1038/s41438-019-0150-6
100. Rab, R. A., Zahiruddin, S., Ibrahim, M., Husain, F., Parveen, R., Khan, W., Ahmad, F. J., Khan, A. A., & Ahmad, S. (2021). HPTLC and UPLC-MS/MS methods for quality control analysis of itrifal formulations of unani system of medicine. *Journal of AOAC International*. https://doi.org/10.5740/JAOACINT.19-0231
101. Radad, K., Gille, G., Liu, L., & Rausch, W. D. (2006). Use of ginseng in medicine with emphasis on neurodegenerative disorders. In *Journal of Pharmacological Sciences*. https://doi.org/10.1254/jphs.CRJ05010X
102. Rai, A., Fazil, M., Rasheed, A., Ahmad, B., Parveen, S., & Nikhat, S. (2020). Role of Unani Medicines in Oro-Dental Diseases: A Comprehensive Review and Scientific Evidence. *Fortune Journal of Health Sciences*. https://doi.org/10.26502/fjhs008
103. Rajpoot, K., & Mishra, R. (2011). Boerhaavia diffusa roots (Punarnava mool)–review as rasayan (rejuvenator/anti-aging). *International Journal of Research in Pharmaceutical and Biomedical Sciences*.
104. Rathore, P., Daniel, K., Daniel, V., Singh, C., Yashwant, & Gupta, A. K. (2022). Estimation of Active Components in Gokshura Tablet and Pushyanug Churna Formulation using High-performance Thin Layer Chromatography Method. *International Journal of Drug Delivery Technology*. https://doi.org/10.25258/ijddt.12.4.04
105. Ravishankar, B., & Shukla, V. J. (2007). Indian systems of medicine: A brief profile. In *African Journal of Traditional, Complementary and Alternative Medicines*. https://doi.org/10.4314/ajtcam.v4i3.31226
106. Sahu, R., Dhongade, H. J., Pandey, A., Sahu, P., Sahu, V., Patel, D., & Kashyap, P. (2016). Medicinal properties of nardostachys jatamansi (A Review). In *Oriental Journal of Chemistry*. https://doi.org/10.13005/ojc/320211
107. Sarup, P., Bala, S., & Kamboj, S. (2015). Pharmacology and Phytochemistry of Oleo-Gum Resin of Commiphora wightii (Guggulu) . *Scientifica*. https://doi.org/10.1155/2015/138039
108. Sastry, D. J. L. N. (2016). Clinical Evaluation of Dashmularishta (Ayurvedic formulation) in Restoring Normal Health of Postpartum Females. *JOURNAL OF RESEARCH IN TRADITIONAL MEDICINE*. https://doi.org/10.21276/jrtm.2016/106
109. Sathasivampillai, S. V., Rajamanoharan, P. R. S., Munday, M., & Heinrich, M. (2017). Plants used to treat diabetes in Sri Lankan Siddha Medicine – An ethnopharmacological review of historical and modern sources. In *Journal of Ethnopharmacology*. https://doi.org/10.1016/j.jep.2016.07.053
110. Semalty, M., Semalty, A., Badola, A., Joshi, G., & Rawat, M. S. M. (2010). Semecarpus anacardium Linn.: A review. In *Pharmacognosy Reviews*. https://doi.org/10.4103/0973-7847.65328
111. Semwal, R. B., Semwal, D. K., Vermaak, I., & Viljoen, A. (2015). A comprehensive scientific overview of Garcinia cambogia. In *Fitoterapia*. https://doi.org/10.1016/j.fitote.2015.02.012
112. Shakeri, A., Sahebkar, A., & Javadi, B. (2016). Melissa officinalis L. - A review of its traditional uses, phytochemistry and pharmacology. In *Journal of Ethnopharmacology*. https://doi.org/10.1016/j.jep.2016.05.010
113. Shanmugasundaram, E. R. B., Sundaram, P., Srinivas, K., Shanmugasundaram, K. R., & Shankaran, J. R. (1991). Double-blind cross-over study of modified Anna Pavala Sindhooram in patients with hyperlipidemia or ischemic heart disease. *Journal of Ethnopharmacology*. https://doi.org/10.1016/0378-8741(91)90147-6
114. Sharma, N. K., Ahirwar, D., Jhade, D., & Gupta, S. (2009). Medicinal and Phamacological Potential of Nigella sativa : A Review. *Ethnobotanical Review*.
115. Sheehan, H. E., & Hussain, S. J. (2002). Unani Tibb: History, theory, and contemporary practice in South Asia. *Annals of the American Academy of Political and Social Science*. https://doi.org/10.1177/0002716202583001008
116. Sher, H., Al-yemeni, M. N., & Wijaya, L. (2011). Ethnobotanical and antibacterial potential of Salvadora persica l: A well known medicinal plant in Arab and Unani system of medicine. *Journal of Medicinal Plants Research*.
117. Shetty, Y. S., Shankarapillai, R., Vivekanandan, G., Shetty, R. M., Reddy, C. S., Reddy, H., & Mangalekar, S. B. (2018). Evaluation of the efficacy of guava extract as an anti-microbial agent on periodontal pathogens. *Journal of Contemporary Dental Practice*. https://doi.org/10.5005/jp-journals-10024-2321
118. Singh, H., Mishra, S. K., & Pande, M. (2010). Standardization of Arjunarishta formulation by TLC method. *International Journal of Pharmaceutical Sciences Review and Research*.
119. Singh, N., Bhalla, M., de Jager, P., & Gilca, M. (2011). An overview on Ashwagandha: A Rasayana (Rejuvenator) of Ayurveda. *African Journal of Traditional, Complementary and Alternative Medicines*. https://doi.org/10.4314/ajtcam.v8i5S.9
120. Singh, S. P., & Das, A. K. (2021). Vasaka - A Boon to the Indian traditional system of medicine. *Journal of Medical Pharmaceutical and Allied Sciences*. https://doi.org/10.22270/jmpas.V10I3.1167
121. Sohani, S. (2021). Role of Medicinal Plant in Human Health Perspective. *Acta Scientific Agriculture*. https://doi.org/10.31080/asag.2021.05.1006
122. Soorya, C., Balamurugan, S., Basha, A. N., Kandeepan, C., Ramya, S., & Jayakumararaj, R. (2021). Profile of Bioactive Phyto-compounds in Essential Oil of Cymbopogon martinii from Palani Hills, Western Ghats, INDIA. *Journal of Drug Delivery and Therapeutics*. https://doi.org/10.22270/jddt.v11i4.4887
123. Subbarayappa, B. V. (2001). The roots of ancient medicine: An historical outline. In *Journal of Biosciences*. https://doi.org/10.1007/BF02703637
124. Sultana, S., Asif, H. M., Akhtar, N., Waqas, M., & Rehman, S. U. (2014). Comprehensive review on ethanobotanical uses, phytochemistry and pharmacological properties of Melia azedarach Linn. In *Asian Journal of Pharmaceutical Research and Health Care*.
125. Sundarrajan, S., & Arumugam, M. (2017). A systems pharmacology perspective to decipher the mechanism of action of Parangichakkai chooranam, a Siddha formulation for the treatment of psoriasis. *Biomedicine and Pharmacotherapy*. https://doi.org/10.1016/j.biopha.2016.12.135
126. Tamoli, S., Ukhalkar, V., Acharya, G. S., Gajre, K., Pathak, S., Pande, S., Solanki, Y., Jadhav, R., Quadri, M. J., & Koli, N. (2022). “Wound healing activity of topical herbal aerosol sprays on diabetic and Varicose Ulcers: A randomized, controlled, open labelled, multi-centric clinical trial". *Journal of Ayurveda and Integrative Medicine*. https://doi.org/10.1016/j.jaim.2022.100594
127. Teka, T., Zhang, L., Ge, X., Li, Y., Han, L., & Yan, X. (2022). Stilbenes: Source plants, chemistry, biosynthesis, pharmacology, application and problems related to their clinical Application-A comprehensive review. In *Phytochemistry*. https://doi.org/10.1016/j.phytochem.2022.113128
128. Thakur, G., Bag, M., Sanodiya, B., Debnath, M., Zacharia, A., Bhadauriya, P., Prasad, G., & Bisen, P. (2009). Chlorophytum borivilianum: A White Gold for Biopharmaceuticals and Neutraceuticals. *Current Pharmaceutical Biotechnology*. https://doi.org/10.2174/138920109789542084
129. Thas, J. J. (2008). Siddha Medicine-background and principles and the application for skin diseases. *Clinics in Dermatology*. https://doi.org/10.1016/j.clindermatol.2007.11.010
130. Tiwari, P., Mishra, B. N., & Sangwan, N. S. (2014). Phytochemical and pharmacological properties of Gymnema sylvestre: An important medicinal plant. In *BioMed Research International*. https://doi.org/10.1155/2014/830285
131. Torwane, N., Hongal, S., Goel, P., & Chandrashekar, B. (2014). Role of Ayurveda in management of oral health. In *Pharmacognosy Reviews*. https://doi.org/10.4103/0973-7847.125518
132. Ulbricht, C., Chao, W., Costa, D., Rusie-Seamon, E., Weissner, W., & Woods, J. (2008). Clinical Evidence of Herb-Drug Interactions: A Systematic Review by the Natural Standard Research Collaboration. *Current Drug Metabolism*. https://doi.org/10.2174/138920008786927785
133. Verma, R. K., Kumari, P., Maurya, R. K., Kumar, V., Verma, R., & Singh, R. K. (2018). Medicinal properties of turmeric (Curcuma longa L.): A review. *~ 1354 ~ International Journal of Chemical Studies*.
134. Vij, T., & Prashar, Y. (2015). A review on medicinal properties of Carica papaya Linn. *Asian Pacific Journal of Tropical Disease*. https://doi.org/10.1016/S2222-1808(14)60617-4
135. Vijayakumar, M., Vijayakumar, R., & Stephen, R. (2010). In vitro propagation of Bacopa monnieri L. - a multipurpose medicinal plant. *Indian Journal of Science and Technology*. https://doi.org/10.17485/ijst/2010/v3i7/29814
136. Vina, N. (2020). INDIKASI KEHARAMAN OPERASI PLASTIK DALAM PERSPEKTIF HUKUM ISLAM. In *Master Thesis*.
137. Weil, A. T. (1978). Coca leaf as a therapeutic agent. *American Journal of Drug and Alcohol Abuse*. https://doi.org/10.3109/00952997809029262
138. Yadav, N. K., Saini, K. S., Hossain, Z., Omer, A., Sharma, C., Gayen, J. R., Singh, P., Arya, K. R., & Singh, R. K. (2015). Saraca indica bark extract shows in vitro antioxidant, antibreast cancer activity and does not exhibit toxicological effects. *Oxidative Medicine and Cellular Longevity*. https://doi.org/10.1155/2015/205360
139. Yadav, S. S., Singh, M. K., Singh, P. K., & Kumar, V. (2017). Traditional knowledge to clinical trials: A review on therapeutic actions of Emblica officinalis. In *Biomedicine and Pharmacotherapy*. https://doi.org/10.1016/j.biopha.2017.07.065
140. Zaveri, M., Khandhar, A., Patel, S., & Patel, A. (2010). Chemistry and pharmacology of Piper longum L. *International Journal of Pharmaceutical Sciences Review and Research*.