Study material

B.Sc. Life Science II

SEC: Medicinal Botany

Unit 1

**AYUSH**

The Ministry of AYUSH was formed on 9th November 2014 to ensure the optimal development and propagation of AYUSH systems of health care. Earlier it was known as the Department of Indian System of Medicine and Homeopathy (ISM&H) which was created in March 1995 and renamed as Department of Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homoeopathy (AYUSH) in November 2003, with focused attention for development of Education and Research in Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homoeopathy.

The Ayurvedic and Unani Tibbia College, also popularly known as Tibbia College, is an institution under Government of Delhi, located at Karol Bagh in New Delhi, India. The institution which offers education and training in Ayurvedic and Unani medicine, has its origins dating back to the late 19th century. The college, whose foundation was laid by Lord Hardinge, 1916, the then Viceroy of India and was inaugurated by the Father of Nation, Mahatma Gandhi, on 1921, offers bachelor's (BAMS & BUMS) and masters (MD) degrees in Ayurvedic and Unani streams.

<http://ayush.gov.in/sites/default/files/tkdl.pdf>

Traditional Knowledge Digital Library (TKDL) is a collaborative project between Council of Scientific and Industrial Research (CSIR), Ministry of Science and Technology and Department of Ayurveda, Yoga & Naturopathy, Unani, Siddha and Homoeopathy (AYUSH), Ministry of Health and Family Welfare. TKDL involves documentation of the knowledge available in public domain on traditional knowledge from the existing literature related to Ayurveda, Unani and Siddha in digitized format, in five international languages which are English, French, German, Spanish and Japanese. So far, the TKDL includes about 2.12 lakh medicinal formulations (Ayurveda: 82,900; Unani: 1,15,300; Siddha: 12,950 ), from 148 books available in public domain, and the database exists in 34 million A4 size pages. Creation of TKDL – Yoga is under process and till date about 900 no. of Yoga postures from 14 old yoga books in public domain have been transcribed, which will also be videographed and added to TKDL database. Government of India, on 29th June 2006, has approved to provide the access of TKDL database to International Patent Offices, under Non-disclosure Agreement, between CSIR and respective International Patent Office, according to which –

1. Access to TKDL by the examiners of an international patent office would only be utilized for patent search and examination, and
2. International Patent Offices and their examiners would not make any third party disclosure other than what is necessary and essential for the purpose of patent search and examination.

Access to TKDL has been given to European Patent Office (having 35 member states), German Patent Office, Indian Patent Office and United States Patent and Trademark Office (the Agreement for which was signed in November 2009, on the sidelines of the State visit of Hon’ble Prime Minister to United States).

The genesis of the maiden Indian effort dates back to the year 2000, when an interdisciplinary Task Force of experts was set up by Department of AYUSH and CSIR, to devise a mechanism on protection of India’s Traditional Knowledge, after the wrong patents granted on the wound healing properties of turmeric (US patent No. 5,401,504) by USPTO and on the bio-pesticidal property of Neem (EPO patent No. 436257) by EPO, came to notice which were later fought and got revoked. The reason for this misappropriation at International Patent Offices, as identified, is that the traditional medicinal knowledge exists in local languages, such as Sanskrit, Urdu, Arabic, Persian and Tamil which is neither available nor can be understood by patent examiners even in case of availability, at international patent offices since the information exists in local languages. In other words, there exists a language and format barrier due to which patents are being taken on the existing traditional knowledge of India. To break this language and format barrier Traditional Knowledge Digital Library (TKDL) was created by India, which with the help of Information Technology tools and a novel classification system i.e., Traditional Knowledge Resource Classification (TKRC), makes the knowledge available to patent examiners in patent application format and in a language that can be understood by them.

**Ayurveda**

Life in Ayurveda is conceived as the union of body, senses, mind and soul. The living man is a conglomeration of three humors (Vata, Pitta &Kapha), seven basic tissues (Rasa, Rakta, Mansa, Meda, Asthi, Majja & Shukra) and the waste products of the body i.e. mala, mutra and sweda. Thus the total body matrix comprises of the humors, the tissues and the waste products of the body. The growth and decay of this body matrix and its constituents revolve around food which gets processed into humors, tissues and wastes. Ingestion, digestion, absorption, assimilation and metabolism of food have an interplay in health and disease which are significantly affected by psychological mechanisms as well as by bio- fire (Agni).

Ayurveda is one of the traditional medicinal systems with an established history of many centuries. Furthermore known as Ayurvedic Medicine, this ancient Vedic knowledge is considered to be one of the oldest healing sciences and has survived until the present generation over many centuries of tradition. Etymologically speaking, it is the combination of the Sanskrit words ayur (life) and veda (science or knowledge), which means “the science of life,” focusing on bringing harmony and balance in all areas of life including mind, body and spirit. In Ayurveda, Panchamahabhutas or the five elements: Vayu (air), Teja (fire), Aap (water), Prithvi (earth) and Akasha (aether) are believed to build up the living microcosm (human beings) and the macrocosm (external universe). When combined in pairs, the Panchamahabhutas form Tridosha or the three humors namely Vata (responsible for body movement), Pitta (responsible for bodily chemical reactions such as metabolism and temperature) and Kapha (responsible for growth, protection, lubrication and sustenance). All these present the constitution or Prakriti of an individual, which determines the physical as well as mental characteristic of human. The concept is that health is achieved when there is a balance between these three fundamental doshas, whereas imbalance causes diseases. Based on these Panchamahabhutas and Tridosha, the Prakriti of an individual is determined and a distinctive treatment plan can be prescribed according to their unique constitution. The philosophy behind Ayurveda is preventing unnecessary suffering and living a long healthy life. Unlike the allopathic medicines which uses mainly synthetic chemicals designed for specific target receptors and primarily give symptomatic relief, Ayurveda involves the use of natural means such as diet, herbs, spices, minerals, exercise, meditation, yoga, mental hygiene, sounds, smells and mechano-procedures to eliminate the root cause of the disease by restoring balance, at the same time create a healthy life-style to prevent the reoccurrence of imbalance. Ayurveda is said to be holistic as it aims to integrate and balance body, mind and spirit to prevent illness and promote wellness, longevity, vitality and happiness.

THE HISTORY OF AYURVEDA

In terms of literature, the fourth Veda written during Indian Civilization, Atharva-veda serves as the earliest authentic text discussing on the nature of existence, health and disease, pathogenesis and principles of treatment. Here in Atharva-veda, the healing verses of Ayurveda can be primarily found, in which more than a hundred hymns were mentioned as the cures for diseases, including fever, leprosy, consumption, heart diseases, wounds, headaches, parasites, eye and ear diseases, poisoning, rheumatism and epilepsy. The uniqueness of this ancient medical system lies behind the vast variety of healing method used: Charms, plant and animal juices, natural forces (sun and water) as well as human contrivances. The eight branches of treatment, Ashtanga was mentioned here as well: Kaya Chikitsa (Internal medicine), Shalya Tantra (Surgery), Shalakya Tantra (Ear, nose, throat and eye diseases), Kaumarbhritya (Pediatrics), Agada Tantra (Toxicology), Bhuta Vidya (Psychiatry), Rasayana (Rejuvenation therapy) and Vajeekarana (Aphrodisiac therapy).

From the knowledge in Atharva-veda, early texts of Ayurveda such as Chakara Samhita and Sushruta Samhita were developed. Although the former focuses on the causes of diseases and the constitution of a person, the later emphasizes on Ayurvedic surgery and the details of its techniques. The history of Ayurveda can be traced back to the period between the pre-vedic periods (4000 B. C.-1500 B. C.). According to Ayurvedavatarana (the descent of Ayurveda), Lord Brahma, the Hindu God of Creation passed on his “knowledge of life” to Daksha Prajapati and Ashwins, subsequently to Indra. This knowledge is then transferred to different rishis (sages), in which these disciples of Ayurveda wrote different treatises based on their interpretations. Here, both Bhardwaj and Dhanvantari received the knowledge from Indra. They later developed school of medicine and school of surgery respectively. In Chakara Samhita, it was stated that the Ayurvedic teaching is transferred by Indra to Bhardwaj, who in turn taught this to Atreya. The disciples of Atreya wrote their own samhitas, with Agnivesha Samhita being the one well-accepted. It is then revised, edited and supplemented by Chakara about 800 years later. On the other hand, Sushruta Samhita mentioned the transfer of knowledge from Indra to Dhanvantari, along with Bhardwaj. The disciples in this school such as Sushruta wrote Sushruta samhita, compiling Dhanvantari's teaching and his additional findings.

The origin of Ayurveda dates back to the Vedic era. Most material relating to the health and diseases are available in Atharva veda. Historians claim that Ayurveda is a part of Atharva Veda. However RigVeda which is the earliest Veda also mentions about diseases and medicinal plants. In Athrava veda there are hyms which mention about medicines like Accorus calamus and Phylanthus Embelia. The systematized form of Ayurveda dates back to the prehistoric period of Rishi Conference which was held in the foot hills of Mount Himalaya. The earliest codified document on Ayurveda is Charaka Samhita. Sushruta samhita is another codified document. Sushruta tradition was said to be descended and propagated by Dhanvantari whereas Charaka tradition was descended through Atreya. Sushruta School is dominated by surgical procedures and techniques while Charaka Samhita deals with internal medicine.

It is believed that the ancient rishis or seers of India received the gift of Ayurveda from their Hindu gods about 5,000 years ago. Essential information for how to achieve a balanced and healthy life was recorded in their sacred texts, the Vedas, specifically the Atharva Veda. It is said that the Hindu god Brahma, one of the chief triumvirate gods of Hinduism, created Ayurveda. He then transmitted this knowledge to his son, Daksha Prajapati. Daksha passed it down to the twin Vedic gods Ashwini Kumaras. The twin gods became the physicians of the gods, and the Devas of Ayurveda. The twin gods presented Ayurveda to Indra, the king of gods. Indra had three physicians as his disciples, namely Acharya Bharadwaj, Acharya Kashyapa and Aacharya Divodas Dhanvantari. From Bharadwaj’s teaching, his student Agnivesha developed the fundamental Ayurvedic text of internal medicine. Agnivesha’s disciple, Acharya Charak then revised this body of work. This started the tradition of passing down the knowledge of Ayurveda from gods to sages. The Mahabharata, India’s epic narrative, also tells of the incarnation of Vishnu in the being of Dhanvantari. During the great cosmic churning of the ocean for the celestial nectar of immortality, Dhanvantari emerged, and Vishnu commissioned him to help humanity cure diseases. The rishis and munis of Indian society dedicated their entire lives to understanding the truth about the universe. They passed down their knowledge and practices to their students, with which the oral tradition continued on for thousands of years. They recorded their discoveries in the holy book of Vedas. One of the most prominent rishis was Bharadwaja who lived around the time of 700 BCE. The Vedas are the world’s oldest form of literature. They are written in Sanskrit, India’s ancient language. They hold Hinduism’s sacred scriptures, which are said to be records of revelations discovered by ancient seers and sages. There are four different bodies of the Veda. These are the Rig Veda, Yajur Veda, Sama Veda, and Atharva Veda. These books detail practices in rituals, worship, hymns, mantras, and ways of life. Atharva Veda, the latest book to be added to the four Vedas, was compiled in approximately 900 BCE. It is in this body of knowledge that India’s ancient medical practice is comprehensively and systematically outlined.

Ayurvedic Texts

Ayurveda established its own identity as a distinct science after the Vedic period. The Ayurvedic texts are composed of two halves, the Great Three Classics Of Ayurveda and the Lesser Three Classics Of Ayurveda. The Great Three Classics of Ayurveda consist of Charaka Samhita, Sushruta Samhita, and Ashtanga Hridayam Sangraha. The Charaka Samhita is believed to have thrived between the second century BCE and the second century CE. The original texts of this book were thought to be written by Agnivesha. He was one of the disciples of Punarvasu Atreya, an Ayurvedic scholar. Agnivesha and his co-disciples created the Samhitas, drawing from the knowledge they received from Atreya and adding their comprehension on the subject. Agnivesha’s Samhita was of particular interest because of its unique and detailed content. Charaka later annotated Agnivesha's work, and focused more on the diagnosis of a disease and channeled Ayurveda as a means of preventing and curing illnesses. Charaka also detailed the medicinal value and qualities of over 10,000 herbal plants.

Sushruta Samhita explains the concept and practice of surgery in Ayurveda. Modern scholars and researchers suggest that the Sushruta Samhita was created approximately in the middle of the first millennium BCE. It is believed to be authored by Sushruta, one of the students of Divodasa. Sushruta Samhita is composed of 184 chapters and presents 1,120 health conditions, 300 types of operations that require 42 different surgical procedures, 121 various kinds of instruments, and 650 kinds of medicine derived from animals, plants, and minerals.

Ashtanga Hridayam Sangraha was formed by Vagbhata some years after the Charaka Samhita and Sushruta Samhita were written. It mainly focuses on Kayachikitsa, the branch of Ayurveda that specializes in internal medicine. It was in this body of knowledge that the dosha and their sub-parts were presented in detail.

The Lesser Three Classics of Ayurveda consist of the Sharngadhara Samhita, Bhava Prakasha, and Madhava Nidanam. Sharngadhara Samhita was written by Sharngadhara and is valued for how it specified and explained pharmacological formulations utilized in Panchakarma. It is also in this book that the diagnosis of a person’s health status is made through their pulse. Bhava Prakasha was created around the 16th century, which is one of the later Ayurvedic texts. It also deals with Kayachikitsa, and explains the qualities of various food, plants, and animals in respect of their medicinal and health benefits. Madhava Nidanam emerged around 700 CE and is valued for discussing diseases that involve women and children, toxicology, and conditions of the throat, nose, and ears.

**The Concept of** Ayurveda- The word Ayurveda is comprised of two Sanskrit terms. Ayur means life, while Veda translates into science or knowledge. Ayurveda has extensively explored natural methods for improving the wellness of the body and mind for millennia. Ayurveda continues to evolve as it responds to the discovery of new diseases. The main principle of Ayurveda states that the mind and body are connected and the mind has the power to heal and transform a person’s whole being. In Ayurvedic practices, treatment is specifically created for each person and will largely depend on the state of his or her dosha. In particular, an Ayurvedic practitioner will assess the composition of a person’s dosha and the illnesses he or she is experiencing. It is only then that the Ayurvedic practitioner will recommend a specific treatment for the illness or imbalance. Practitioners of Ayurveda believe that the manifestation of illness is not the same for all people, and that sickness will vary based on how their bodies manifest the symptoms.

**Panchamahabhuta: the five basic elements of nature**

[**http://ayush.gov.in/about-the-systems/ayurveda/panchamahabhutas**](http://ayush.gov.in/about-the-systems/ayurveda/panchamahabhutas)

According to Ayurveda all objects in the universe including human body are composed of five basic elements (Panchamahabhutas) namely, earth, water, fire, air and vacuum (ether). There is a balanced condensation of these elements in different proportions to suit the needs and requirements of different structures and functions of the body matrix and its parts. The growth and development of the body matrix depends on its nutrition, i.e. on food. The food, in turn, is composed of the above five elements, which replenish or nourish the like elements of the body after the action of bio-fire (Agni). The tissues of the body are the structural entities whereas humours are physiological entities, derived from different permutations and combinations of Panchamahabhutas.

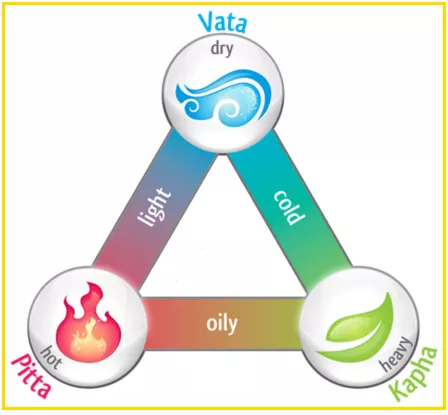
[**https://livingwiseproject.com/2017/05/15/understanding-ayurvedic-principles-panchamahabhuta-tridosha/**](https://livingwiseproject.com/2017/05/15/understanding-ayurvedic-principles-panchamahabhuta-tridosha/)

Ayurveda describes five basic elements *“Panchamahabhuta”* of Air “*Vayu*”, Water “*Jal*” , Fire “*Agni*”, Earth “*Bhumi*”, and Space/Ether “*Aakash*”. The *Panchamahabhuta* mix together in multiple ways and proportions to create unique and distinct forms of matter.

In the human body, the correspondence of the presence of *Panchamahabhuta* is as follows:

* **Space**represents the voids within the body such as mouth, nostrils, abdomen
* **Air**denotes the movement of the muscular and nervous system
* **Fire**controls the functioning of enzymes  and corresponds to intelligence, functioning of digestive system and metabolism
* **Water**is in all bodily fluids such as plasma, saliva, digestive juices
* **Earth**manifests itself in the solid structure of the body  such as bones, teeth, flesh, and hair etc.

The *Panchamahabhuta* therefore serve as the foundation of all diagnosis & treatment modalities in Ayurveda and has served as a most valuable theory for physicians to detect and treat illness of the body and mind successfully.



**Tridosha – Ayurvedic principles that define the physical state**

The *Panchamahabhuta* work together in different ways to create physical energies, termed as “*dosha*” in individuals. These three govern creation, maintenance and destruction of bodily tissues (“*dhatus*”) as well as the assimilation and elimination functions.

* **Earth + Water**→ **“*Kapha*”** corresponding to structure and all of the oily factors of  our body such as, fat tissue, lubricating fluids like synovial fluid in joints,  the mucous secretions in the digestive system and respiratory system. **Qualities –** heaviness, slow movement, oiliness, liquidity, thickness and density.
* **Air + Fire**→ **“*Pitta*”** corresponding to digestion, bio transformation of the digested food, and the factors responsible for our metabolism. The seats of Pitta are in the digestive system, skin, eyes, brain, lymph, liver, spleen and blood. Presence of Pitta is evident through our body temperature. **Qualities** – hotness, sharpness, lightness, liquidity, sourness, oiliness and fast spreading nature.
* **Air + Space**→ **“*Vata*”** corresponding to movements of our body and inside our body. These include movements of the muscles, movement of food through our digestive tract and movement of the blood through the blood vessels. **Qualities** – dryness, roughness, coldness, mobility, clarity and astringent taste.

Tridosha- Three forces are fundamental to the concept of Ayurveda. These are the vata, pitta, and the kapha. They are also known as dosha. They are thought to circulate through the body and control a person’s physiological operations. Vata is said to be connected to the wind, always mobile and dynamic, and regulates the central nervous system. Pitta is viewed similarly to the sun, which is the source of energy, and governs the digestive system and other biochemical processes. Lastly, kapha controls the balance of the body’s tissue fluids, the growth of cells, and the body’s muscular tone. These dosha can also affect an individual’s temperament and personality. The concept of prakruti explains an individual’s dosha composition and suggests each person has a combination of the three dosha. These energies actively change in response to a person’s thoughts, actions, food, and environmental factors such as the seasons. Identifying a person’s dosha composition will enable him or her to take measures that will bring their state to balance. There are three states in which the dosha can manifest. The ideal state is balanced or having achieved equilibrium. This happens when all three dosha are in natural proportion with each other. Another condition is the increased state where one of the dosha are greater or excess in proportion relative to the others. Lastly, the decreased state happens one of the dosha is depleted, reduced, and lesser than the other dosha. When the dosha become imbalanced, a person's state becomes what is known as vikruti. It can manifest in physiological and behavioral symptoms. For example, a person who has a dominant vata dosha may exhibit the imbalance through dehydration, low energy, feelings of dizziness, anxiety, confusion, and excessive movement and speech. Ayurveda seeks to maintain the balance of the dosha. Optimum health is claimed to be achieved when these dosha are in perfect harmony with each other. In contrast, negative health status is said to be a result of an imbalance among the dosha. An Ayurvedic practitioner can customize remedies and therapies to heal a person according to his or her needs and bring the dosha into balance.

**The Seven Bodily Tissues--Sapta Dhatus**

<https://www.planetayurveda.com/concept-of-dhatus-in-ayurveda/>

<http://ayurveda.md/component/content/article?id=67&Itemid=9>

The dhatus are the basic varieties of tissues which compose the human body. The word “dhatu” comes from a Sanskrit word which means “that which enters into the formation of the body”; the root Daa (dha) means “support, that which bears”. The primary Dhatus are seven in number. They are:

1. Sukra dhatu (reproductive tissues)
2. Majja dhatu (bone marrow and nervous tissues)
3. Asthi dhatu (bone)
4. Meda dhatu (fatty tissues)
5. Mamsa dhatu (muscle tissues)
6. Rakta dhatu (formed blood cells)
7. Rasa dhatu (plasma)

The most unique feature of Ayurvedic histology (concept of tissue formation) is that each human tissue is formed from the previous tissue in ascending order of complexity. Thus when food is ingested it is digested until, in the small intestines, it becomes a liquidy, chyme-like material known in Ayurveda as ahara rasa, or food essence. With the help of ahara rasagni (each dhatu has its own agni), this ahara rasa is converted into Rasa dhatu (blood plasma)--the first and most simple tissue. Now, Rasa dhatu--catalyzed by Rasagni--is transformed into Rakta dhatu (formed blood cells), the second fundamental bodily tissue. Rakta dhatu in turn, with the help of raktagni, becomes mamsa dhatu (muscle), and so on.

<https://www.ayurvedacollege.com/book/export/html/558>

<https://www.ayurtimes.com/sapta-dhatu-in-ayurveda/>

The seven dhatus are the seven tissues of the body. In English they are plasma, blood, muscle, fat, bone, marrow / nerve, and reproductive tissue. In Sanskrit, they are rasa, rakta, mamsa, medas, asthi, majja, and shukra respectively. These are the structures that make up the body. The structural and supporting units of the body are called Dhatu in Ayurveda. In modern science, it related to tissues. So, Dhatu meaning in English is tissue. In ayurveda science, there are seven basic tissues that make the body and these tissues are collectively called Sapta Dhatu in Ayurveda.

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| Rasa Dhatu | Body fluids |
| Rakta Dhatu | Blood |
| Mamsa Dhatu | Muscular tissue |
| Meda Dhatu | Adipose tissue |
| Asthi Dhatu | Bony tissue |
| Majja Dhatu | Bone marrow and nervous tissue |
| Shukra Dhatu | Generative tissue (including semen and ovum constituents, stem cells) |

Dhatu Agni**-** According to Ayurvedic Principles, each Dhatu has its own specific Agni. This is called Dhatu-Agni. This Agni relates to specific enzymes, chemicals and processes in the body that help to convert Dhatu to higher Dhatu or Upadhatu (sub-tissue or secondary tissue). These metabolic processes also give rise to waste products, which are called Mala in Ayurveda. These include nail, hairs, saliva, tear, ear wax, stool, urine, sweat etc.

Precursor of Sapta Dhatu- The food is the precursor of all tissues. The waste products of food are stool and urine.

**Rasa Dhatu-** Rasa Dhatu relates to body fluids in the body. It includes intracellular and extracellular fluids, plasma in the blood and fluid in the lymphatic system. It also includes all nutrients absorbed in the intestine. Rasa Dhatu is responsible for providing nutrition to all cells, tissues, and organs in the body.

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| Dosha | [Kapha Dosha](https://www.ayurtimes.com/kapha-dosha-ayurveda/) |
| Upadhatu | Stanya (breastmilk), Raja (menstrual fluid/blood) |
| Mala (Waste Product) | Sweat, Tears, and Saliva |

**Rakta Dhatu-** Rakta Dhatu relates to blood components (RBCs) except plasma in the blood. Rakta is derived from nutrients present in the Rasa. Rakta Dhatu supplies oxygen to all structures in the body. It is also responsible for maintaining strength, health, and happiness. It supports the functions of skin and sense organs.

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| Dosha | [Pitta Dosha](https://www.ayurtimes.com/pitta-dosha-ayurveda/) |
| Upadhatu | Shira (Blood Vessels), Kandara (Fascia) |
| Mala (Waste Product) | – |

**Mamsa Dhatu-** Mamsa Dhatu relates to muscular tissues in the body. Mamsa tissue is derived from nutrient in the Rakta in addition to Rasa. The main function of Mamsa Dhatu is to provide strength to the body and protecting internal organs.

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| Dosha | Kapha Dosha |
| Upadhatu | Muscle, Fat and Skin |
| Mala (Waste Product) | Earwax, crusts in the nose, and tartar of teeth |

**Meda Dhatu-** Meda Dhatu relates to adipose tissues in the body. It is derived from nutrients in Mamsa Dhatu in addition to Rasa, and Rakta. Meda Dhatu is responsible for lubrication and providing strength and nutrition to the bones, joints, tendons, and ligaments.

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| --- | --- |
| Dosha | Kapha Dosha |
| Upadhatu | Snayu (tendons), Sandhi (joints), Shira (lymphatic vessels), and Sweat (Sharangadhara Samhita) |
| Mala (Waste Product) | Sweat, Smegma of the prepuce |

**Asthi Dhatu-** Asthi Dhatu relates to bony and skeletal tissues in the body. It is derived from nutrients in Meda Dhatu in addition to Rasa, Rakta, and Mamsa. The main function of Asthi Dhatu is to protect delicate nervous tissue, brain, spinal cord and support bone marrow.

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| Dosha | [Vata Dosha](https://www.ayurtimes.com/vata-dosha-ayurveda/) |
| Upadhatu | Teeth |
| Mala (Waste Product) | Nails and Hair |

**Majja Dhatu-** Majja Dhatu relates to the Bone marrow and nervous tissue in the body. It is derived from nutrients in the Asthi Dhatu in addition to Rasa, Rakta, Mamsa, and Meda. Majja Dhatu is responsible for proving nourishment to Shukra Dhatu. All functions of bone marrow, brain, and nervous tissue represent the functions of Majja Dhatu.

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| Dosha | Kapha Dosha |
| Upadhatu | Hair (according to Sharangadhara Samhita) |
| Mala (Waste Product) | Oily secretions of skin – include secretions of sebaceous gland |

**Shukra Dhatu-** Shukra Dhatu relates to the generative tissue in the body. It is derived from nutrients in the Majja Dhatu in addition to Rasa, Rakta, Mamsa, Meda, and Asthi. Shukra Dhatu is not only constituents of semen or ovum. It also includes all generative tissues and stem cells in the body, which are responsible for cellular regeneration and reproduction.

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| --- | --- |
| Dosha | Kapha Dosha |
| Upadhatu | – |
| Mala (Waste Product) | – (beard? Some believes) |

**Treatment**

<http://ayush.gov.in/about-the-systems/ayurveda/treatment>

The treatment approach in the Ayurveda system is holistic and individualized having preventive, curative, mitigative, recuperative and rehabilitative aspects. The principal objectives of Ayurveda are maintenance and promotion of health, prevention of disease and cure of sickness. Treatment of the disease consists in avoiding causative factors responsible for disequilibrium of the body matrix or of any of its constituent parts through the use of Panchkarma procedures, medicines, suitable diet, activity and regimen for restoring the balance and strengthening the body mechanisms to prevent or minimize re-occurrence of the disease. Normally treatment measures involve use of medicines, specific diet and prescribed activity routine. These three measures are used in two ways. In one approach of treatment the three measures antagonize the disease by counteracting the etiological factors and various manifestations of the disease. In the second approach the same three measures of medicine, diet and activity are targeted to exert effects similar to the etiological factors and manifestations of the disease process. These two types of therapeutic approaches are respectively known as Vipreeta and Vipreetarthkari Chikitsa. The treatment of disease can broadly be classified as:

Shodhana therapy (Purification Treatment)

Shamana therapy (Palliative Treatment)

Pathya Vyavastha (Prescription of diet and activity)

Nidan Parivarjan (Avoidance of disease causing and aggravating factors)

Satvavajaya (Psychotherapy)

Rasayana therapy (use of immuno-modulators and rejuvenation medicines)

[**http://ayush.gov.in/about-the-systems/ayurveda/types-treatment?q=node/89656**](http://ayush.gov.in/about-the-systems/ayurveda/types-treatment?q=node/89656)

**Rasayana** therapy deals with promotion of strength and vitality. The integrity of body matrix, promotion of memory, intelligence, immunity against the disease, the preservation of youth, luster and complexion and maintenance of optimum strength of the body and senses are some of the positive benefits credited to this treatment. Prevention of premature wear and tear of body tissues and promotion of total health content of an individual are the roles that Rasayana therapy plays.

<https://www.ayurtimes.com/category/ayurveda/>

Rasayana Therapy (ayurvedic rejuvenation therapy) recommends some food supplements, herbs and ayurvedic formulations, which help you to live a healthier, happier and longer life (Ayur Times Motto).

**a. Achara Rasayana-** [**https://www.ayurtimes.com/achara-rasayana/**](https://www.ayurtimes.com/achara-rasayana/)

The main aim of Achara Rasayana is mental satisfaction and worry free living. It is only possible if you are very honest and you did nothing wrong. It is a code of conduct aimed to provide a good mental, physical, social and spiritual health and general well-being. Achara Rasayana is a code of conduct, which includes the maintaining living standard based on honesty, trust, faith, love and truth. Factors responsible for psychosomatic and lifestyle disorders are Stress, Anxiety, Uncontrolled mind, Bad habits, Lack of wisdom of good and bad.

Psychological Aspects- Honesty, truth and peace are three pillars of Psychological Aspects of Achara Rasayana. These include following characters.

1. Be truthful (SATYAVADI)
2. Be calm (AKRODHI)
3. Avoid violence and prefer peace (AHIMSAKA)
4. Be cheerful and happy (ANAYASA)
5. Stay calm, cool and quiet (PRASHANTA)
6. Speak good and pleasant, which will not hurt others (PRIYAVADI)
7. Do meditation regularly or recite the name of god or holy hymns (JAPA PARA)

Social and Behavioral Aspects-

1. Trustworthiness, honesty and love are three pillars of social and behavioral aspects of Achara Rasayana.
2. Be trustworthy (SATYAVADI)
3. Be honest to social and family relations (SATYAVADI)
4. Avoid alcohol and observe abstinence (NIVRUTTAM MADHYA MAITHUNATH) – Observe abstinence.
5. Respect old people, elders and teachers (DEVA-GAU-BRAHMANA ACHARYA GURU VRUDDHA ARCHANARATAM)
6. Be devoted to love and avoid violence (ANRUSHAMSAM)
7. Be merciful and compassionate (NITYA KARUNAVEDI)
8. Do not have ego and live a life ego free (ANAHANKRUTAM)
9. Serve old people, parents and wise people (UPASITARAM VRUDDHANAM)
10. Have faith in almighty or ultimate nature (ASTIKAANAM)
11. Have a control over mind and avoid unnecessary sensory pleasures (JITAATMANAAM).

Spiritual Aspects-

1. Meditation, helping needful people, and reading good texts are three pillars of spiritual aspects of Achara Rasayana.
2. Be duty bound and follow ethical principles related to your jobs (DHARMASHASTRAPARAM).
3. Read good texts or books, which provide peace to mind (ADHYATMA PRAVANENDRIYAM)
4. Practice meditation regularly (TAPASWINAM)
5. Help needful people and do charity where needed (DAANA NITYAM)

Personal Aspects

1. Hygiene and following diet and lifestyle according to body type and season are main parts of Personal Aspects of Achara Rasayana.
2. Maintain a proper Hygiene (SHOUCHAPARAM)
3. Take a balanced sleep and avoid excessive laziness and sleepiness. Awake in early morning and sleep early at night (AMAJAGARANA SWAPNA).
4. Take care of season and livable places to maintain your health. Do some needful changes if required according to season and place (DESHA KALA PRAMANAJNAM).
5. Be skillful and wise, so other people cannot deceive you easily (YUKTIJNAM).
6. Have a good self control (JITATMANAM)

Food and Nutritional Aspects

1. Take an appropriate amount of milk and ghee (clarified butter) according to your digestion capacity (NITYAM KSHEERA GRITHASHINAM).
2. Take a balanced diet and make a good plan for eating habits (ASANKEERNAM).
3. Achara Rasayana is also a type of ayurvedic therapeutics. It helps reducing psychosomatic disorders and strengthens the mind.

**b. Ashwagandha Rasayana-** [**https://www.ayurtimes.com/ashwagandha-rasayana/**](https://www.ayurtimes.com/ashwagandha-rasayana/)

Taking 12 grams Ashwagandha Powder with milk, Ghee, sesame oil or lukewarm water for 15 days is called **Ashwagandha Rasayana**, according to Ashtanga Hridaya. The main purpose of using Ashwagandha Rasayana is to strengthen the body. It provides all benefits of Ashwagandha Powder. Overall, Ashwagandha Rasayana increases physical strength, stamina, vigor, vitality and physical endurance capacity. It also reduces fatigue, laziness, and feeling of loss of energy. In ancient text, it is only indicated for 15 days, but still, it can increase your body weight by 1 to 3 Kg, especially in people with Kapha Body Type. Its effects on body weight vary person-to-person. In some cases, individual does not gain weight.

**Ingredients (Composition)**

|  |  |
| --- | --- |
| **Ingredients** | **Quantity** |
| [Ashwagandha](https://www.ayurtimes.com/ashwagandha-withania-somnifera/) Powder | 12 grams |
| Adjuvant (any one of milk, Ghee, sesame oil or lukewarm water) | Q.S. |
| **Reference:** Ashtanga Hridaya Samhita, Uttar Sansthana, Chapter 39, Rasayana Vidhir, Ashwagandha Rasayana, Verse 147 | |

**How to Take Ashwagandha Rasayana**

1. Procure a good quality of Ashwagandha Powder.
2. Measure 12 grams powder of Ashwagandha.
3. Select the best adjuvant that you can easily digest. In most cases, Milk is a suitable and well-tolerated adjuvant. If you are Vata Prakriti, then Sesame Oil is best. If you are Pitta Prakriti, then Ghee should be best. If you are Kapha Prakriti, warm water should be the best
4. In another way, if you have a thin body, then Milk should be the best If you have an average body type or overweight or obese, then warm water is the best adjuvant for you.
5. If Ghee or sesame oil is being used as an adjuvant, then mix Ashwagandha Powder in it and eat it.
6. If milk or warm water is being used as an adjuvant, then you can eat the Ashwagandha powder along with a glass of milk or warm water.

**When to take Ashwagandha Rasayana?**

Should take Ashwagandha Rasayana on empty stomach in the morning for best results.

**Medicinal Properties**

Ashwagandha Rasayana has the following medicinal properties:

* Strengthening
* Ergogenic
* Anti-fatigue
* Anti-stress
* Anti-aging
* Cognitive enhancer
* Antioxidant
* Anti-inflammatory
* Immunity enhancer

**Benefits of Ashwagandha Rasayana**

Ashwagandha Rasayana provides the following benefits:

* Strengthens the body
* Improves mood and reduces stress
* Reduces oxidative stress and level of oxygen reactive molecules in the blood
* Improves physical endurance capacity
* Improves brain functions and cognitive functions
* Exerts anti-inflammatory action and prevents inflammatory diseases and arthritis
* Helps to gain weight
* Improves libido and male performance
* Boots non-specific immunity and helps to prevent several diseases
* Delays aging and improves muscle strength

**c. Medhya Rasayana-** [**https://www.ayurtimes.com/medhya-rasayana-nootropic-herbs-cognitive-enhancers/**](https://www.ayurtimes.com/medhya-rasayana-nootropic-herbs-cognitive-enhancers/)

Medhya Rasayana is a group of ayurvedic nootropic herbs or medicines, which enhance cognitive functions and improve memory. Medhya Rasayanas are ayurvedic supplements, which improve the power of acquisition, retention, and recollection. It improves cognition, memory, intelligence, creativity, learning skills and executive functions. Additionally, these supplements also boost immunity and improve functions of immune system. These herbs have intrinsic nature to exert these effects on the human brain.

There are four main herbs described as Medhya Rasayana in Charak Samhita.

|  |  |
| --- | --- |
| **Herbs** | **Part Used** |
| [Mandukaparni (Gotu Kola) – Centella asiatica](https://www.ayurtimes.com/gotu-kola-centella-asiatica-mandukaparni/) | Whole Plant Juice |
| [Yashtimadhu or Mulethi](https://www.ayurtimes.com/mulethi-yashtimadhu/) (Licorice) – [Glycyrrhiza glabra](https://www.ayurtimes.com/licorice-glycyrrhiza-glabra-root-extract-benefits-side-effects/) | Root Powder |
| [Guduchi (Giloy) – Tinospora cordifolia](https://www.ayurtimes.com/tinospora-cordifolia-giloy-guduchi-benefits-medicinal-uses-side-effects/) | Stem Juice |
| [Shankhapushpi – Convolvulus pluricaulis](https://www.ayurtimes.com/shankhpushpi-convolvulus-pluricaulis-benefits-side-effects/) | Whole Plant Paste |
| These herbs are used either individually or in combinations. | |

Out of these four herbs, [Shankhpushpi](https://www.ayurtimes.com/shankhpushpi-convolvulus-pluricaulis-benefits-side-effects/) ([Convolvulus pluricaulis](https://www.ayurtimes.com/shankhpushpi-convolvulus-pluricaulis-benefits-side-effects/)) is considered best cognitive enhancer herb by Acharya Charak.

**Dosage of Charak’s Medhya Rasayana**

|  |  |  |
| --- | --- | --- |
| **Herb** | **Dosage** | **Adjuvant** |
| Mandukaparni (Gotu Kola) Juice | 10 ml | Honey |
| [Yashtimadhu](https://www.ayurtimes.com/mulethi-yashtimadhu/) (Licorice) Powder | 3 grams | Milk |
| [Guduchi (Giloy) Stem Juice](https://www.ayurtimes.com/tinospora-cordifolia-giloy-guduchi-benefits-medicinal-uses-side-effects/) | 10 ml | Honey |
| [Shankhpushpi Paste](https://www.ayurtimes.com/shankhpushpi-convolvulus-pluricaulis-benefits-side-effects/) | 10 grams | Milk |
| **Note:**Adjuvants are not described in [Charak Samhita](https://www.ayurtimes.com/charak-samhita/), but we added the most suitable and preferable adjuvants for each herb. | | |
| **Best Time to Take:**These Nootropic Supplements can be taken on empty stomach in the morning and in the evening after sunsets or 2 to 3 hours before dinner for best results. | | |

**Other herbs acts as Medhya (Nootropic Herbs)**

Sushruta Samhita also considers following herbs as Medhya (Nootropic herbs):

* Brahmi (Waterhyssop) – Bacopa Monnieri
* [Jyotishmati (Malkangani) – Celastrus Paniculatus](https://www.ayurtimes.com/celastrus-paniculatus-jyotishmati-malkangani/)
* Kushmanda (Winter melon) Benincasa Hispida
* [Vacha (Sweet Flag) – Acorus Calamus](https://www.ayurtimes.com/vacha-sweet-flag-acorus-calamus/)
* [Jatamansi (Spikenard) – Nardostachys Jatamansi](https://www.ayurtimes.com/jatamansi-spikenard-nardostachys-jatamansi/)
* Chitrak – Plumbago Zeylanica

In addition to these herbs, some medicines like [Swarna Bhasma](https://www.ayurtimes.com/swarna-bhasma/) and [Mukta Pishti](https://www.ayurtimes.com/mukta-moti-pishti-bhasma-pearl-calcium-benefits-uses/) are also considered as Medhya Rasayana in ayurveda. Swarna (gold) is used in form of [Swarna Prashana](https://www.ayurtimes.com/suvarna-prashan-swarna-prashana/) in children for similar benefits.

Benefits of Medhya Rasayana- In ancient time, Medhya Rasayana was used to enhnce intellectual ability, intelligence, memory and cognitive functions. Nowadays, its use becomes more important due to stressful and hectic life. It reduces stress, calms the mind and improves the skills of rational thinking and reasoning. In addition, it helps to reduce forgetfulness by boosting memory and improving retention span.

According to Charak Samhita, Medhya Rasayana has following benefits:

* Increase life span
* Increase immunity, prevent diseases and treat diseases
* Increase digestive power (*AGNI*)
* Improve complexion
* Improve the quality of voice
* Increase brain power

Generally, Medhya Rasayana enhances following mental abilities and characters:

* Memory or Retention
* Intelligence
* Concentration
* Mental Perception
* Creativity
* Immunity
* Longevity
* Learning and reasoning skills

Power of acquisition- The cognitive process that helps to acquire knowledge and skills is called the power of acquisition. Medhya Rasayana herbs act on this power and improve skills to acquire knowledge and learn skills.

Power of Retention- The mental capability by which one can retain and recall past experience and knowledge is called the power of retention. Medhya Rasayana herbs improve the power of retention and increase memory.

Power of Recollection- The mental process of remembering things and recovering information is called the power of recollection. Medhya Rasayana helps to improve the capability of the brain to process information, store information, and remembering things and recovering information from the brain.

Safety Profile- Medhya Rasayana described in [Charak Samhita](https://www.ayurtimes.com/charak-samhita/) is most safe and well-tolerated in most individuals when used under the supervision of an ayurvedic physician.

Side Effects of Medhya Rasayana- There are no side effects reported with the use of Medhya Rasayana.

**d. Triphala Rasayana-** [**https://www.ayurtimes.com/triphala-rasayana/**](https://www.ayurtimes.com/triphala-rasayana/)

The formulations described in Charaka Samhita, which mainly contain Triphala as a major ingredient and beneficial for rejuvenative purposes and useful in preventive medicine, are known as Triphala Rasayana. In ayurveda, Rasayana therapy is a crucial part of preventive health and it is also used for treating some age related problems. Triphala Rasayana is one of the best Rasayana formulations and ancient sages were using it for keeping themselves healthy, active and disease free. It staves off many diseases and let person to live a healthy and a longer life. (Charaka Samhita). Triphala Rasayana reduces blockage of micro and major channels in the body, cleans the alimentary canal especially intestines, it flushes out toxins (AMA), and preserves the natural functions of several organs in the body. It lowers the tendency of falling ill. The main action of Triphala Rasayana is observable on abdomen. It reduces feeling of heaviness in the abdomen, helps easier passage of fecal matter, and improves absorption and assimilation of nutrients in the body. It also has immunostimulatory effects, which prevents common diseases.

**Triphala Rasayana Preparations, Usage & Advantages**

There are four different ayurvedic formulations of Triphala Rasayana and different ways to use it that are given in Charaka Samhita:-

**Triphala Rasayana – 1**

The most common and well-known method is –

1. Take Haritaki (Terminalia chebula) Churna, which should be equivalent to 1 Haritaki Fruit pulp after digestion of food (i.e. approx. 3 hours after meal) or on empty stomach in the early morning.
2. Take Bibhitaki (Terminalia bellerica) Churna, which should be equivalent to 2 Bibhitaki Fruit pulp just before meal or before lunch
3. Take [Amla](https://www.ayurtimes.com/amla-indian-gooseberry-phyllanthus-emblica/) (Emblica officinalis) Churna, which should be equivalent to 4 Amalaki Fruit pulp just after food or after dinner

**Adjuvant:** According to Charaka Samhita, This Rasayana should be taken mixing with unequal amount of honey and Ghee.

**Duration of Use:** It should be continued for a year for maximum health benefits.

**Benefits:** Charaka said that it helps preventing all diseases, improves quality of life and increases the lifespan.

**Triphala Rasayana – 2**

1. Take [Triphala Churna](https://www.ayurtimes.com/triphala-benefits-uses-dosage-side-effects/).
2. Make Triphala paste using water and apply it on new iron vessel.
3. Leave it for day and night i.e. 24 hours and then collect it from the iron vessel and mix it in honey and 250 ml water to make Sharbat (Indian sweet beverage).
4. Drink it in the morning on empty stomach.
5. This should be continued for a year.

The dosage of Triphala and its adjuvant honey and water is not given in Charaka Samhita, so its quality can be used as follows:

|  |  |
| --- | --- |
| Triphala Churna | 5 to 10 grams |
| Honey | 1 to 2 teaspoons |
| Water | 200 to 250 ml |

**Duration of Use:**1 Year

**Benefits:** It prevents diseases, slows down the process of aging, improves quality of life and maintains health. It is also good for eyes and improves hemoglobin level.

**Triphala Rasayana – 3**

Third formulation of Triphala Rasayana contains following ingredients:

|  |  |
| --- | --- |
| [Triphala Churna](https://www.ayurtimes.com/triphala-benefits-uses-dosage-side-effects/) | 20% |
| [Mulethi](https://www.ayurtimes.com/mulethi-yashtimadhu/) ([Yashtimadhu](https://www.ayurtimes.com/mulethi-yashtimadhu/)) – Licorice – [Glycyrrhiza Glabra](https://www.ayurtimes.com/licorice-glycyrrhiza-glabra-root-extract-benefits-side-effects/) | 20% |
| [Vanshlochan](https://www.ayurtimes.com/vanshlochan-tabasheer-bamboo-silica-manna/) | 20% |
| Pippali (Piper Longum) | 20% |
| Misri (Sugar candy) | 20% |

The above mixture should be taken with unequal amount of Honey (10 grams) and Ghee (5 grams) according to digestive capacity of the person (most suitable 1 teaspoon or around 4 to 5 grams).

**Duration of Use:**1 Year

**Benefits:** It improves digestion, assimilation of food, reduces gastritis, and improves liver functions. It also provides similar benefits as Triphala Rasayana – 2.

**Triphala Rasayana – 4**

This formulation contains:

1. [Triphala Powder](https://www.ayurtimes.com/triphala-benefits-uses-dosage-side-effects/).
2. Sarva Lauh– [Kanta Loha Bhasma](https://www.ayurtimes.com/kanta-loha-bhasma/).
3. [Swarna Bhasma](https://www.ayurtimes.com/swarna-bhasma/).
4. [Vacha (Acorus Calamus)](https://www.ayurtimes.com/vacha-sweet-flag-acorus-calamus/).
5. Vaividang.
6. Pippali.
7. [Rock Salt (Sendha Namak)](https://www.ayurtimes.com/rock-salt-sendha-namak-halite-benefits-uses/).
8. Honey.
9. Ghee.

The proportion of above ingredients is not given. According to ayurvedic principles, all ingredients should be mixed in equal proportion, but it may not be suitable for most of people in these days. Nowadays, the following proportion should be best.

|  |  |
| --- | --- |
| [Triphala Powder](https://www.ayurtimes.com/triphala-benefits-uses-dosage-side-effects/) | 3 grams |
| [Kanta Loha Bhasma](https://www.ayurtimes.com/kanta-loha-bhasma/) or [1000 Puti Lauh Bhasma](https://www.ayurtimes.com/loha-bhasma/) | 100 mg |
| [Swarna Bhasma](https://www.ayurtimes.com/swarna-bhasma/) | 25 mg |
| [Vacha (Acorus Calamus)](https://www.ayurtimes.com/vacha-sweet-flag-acorus-calamus/) | 500 mg |
| Vaividang | 500 mg |
| Pippali | 250 mg |
| [Rock Salt (Sendha Namak)](https://www.ayurtimes.com/rock-salt-sendha-namak-halite-benefits-uses/) | 250 mg |
| Honey | 10 grams |
| Ghee | 5 grams |

It is the single dose. You should use it making paste in Honey (10 grams) and Ghee (5 grams). The best time to take it is in the morning on empty stomach.

**Benefits:**

Triphala Rasayana – 4 has 5 major benefits:

1. Intellect.
2. Memory.
3. Strength.
4. Longevity.
5. Wealth.

It enhces intelligence, brain power, memory, and strength. It also provides similar benefits as Triphala Rasayana – 2.

**Unani system**

<https://en.wikipedia.org/wiki/Unani_medicine>

Arab and Persian elaborations upon the Greek system of medicine by figures like Ibn Sina (Avicenna) and al-Razi (Rhazes) influenced the early development of Unani. The medical tradition of medieval Islam was introduced to India by the 13th century with the establishment of the Delhi Sultanate and it took its own course of development during the Mughal Empire, influenced by Indian medical teachings of Sushruta and Charaka. Alauddin Khalji had several eminent physicians (Hakims) at his royal courts. This royal patronage led to the development of Unani in India, and also the creation of Unani literature. The Hellenistic origin of Unani medicine is based on four humours: phlegm (balgham), blood (dam), yellow bile (ṣafrā) and black bile (saudā'),

According to Unani medicine, management of any disease depends upon the diagnosis of disease. Proper diagnosis depends upon observation of the patient's symptoms and temperament. Unani, like Ayurveda, is based on theory of the presence of the elements in the human body. According to followers of Unani medicine, these elements are present in fluids and their balance leads to health and their imbalance leads to illness. According to Unani practitioners, the failure of the Quwwat-e-Mudabbira-e-Badan, or the body's ability to maintain its own health, may lead to derangement of the normal equilibrium of the body's akhlat (humors). Abnormal humors are believed to lead to pathological changes in the tissues at the affected site, creating the clinical manifestations of illness. The theory postulates the presence of blood, phlegm, yellow bile and black bile in the human body. Each person's unique mixture of these substances determines his mizaj (temperament). A predominance of blood gives a sanguine temperament; a predominance of phlegm makes one phlegmatic; yellow bile, bilious (or choleric); and black bile, melancholic.

After diagnosing the disease, treatment follows a pattern (Usool-e-ilaj): Izalae Sabab (elimination of cause), Tadeele Akhlat (normalization of humors), Tadeele Aza (normalization of tissues/organs)

Treatment includes regimens and therapies included in the term Ilaj-Bil-Tadbeer. These therapies include cupping, aromatherapy, bloodletting, bathing, exercise, and dalak (massaging the body). It may also involve the prescription of Unani drugs or surgery.

<http://ayush.gov.in/about-the-systems/unani>

The Unani System of Medicine has a long and impressive record in India. It was introduced in India by the Arabs and Persians sometime around the eleventh century. Today, India is one of the leading countries in so for as the practice of Unani medicine is concerned. It has the largest number of Unani educational, research and health care institutions.

As the name indicates, Unani system originated in Greece. The foundation of Unani system was laid by Hippocrates. The system owes its present form to the Arabs who not only saved much of the Greek literature by rendering it into Arabic but also enriched the medicine of their day with their own contributions. In this process they made extensive use of the science of Physics, Chemistry, Botany, Anatomy, Physiology, Pathology, Therapeutics and Surgery. Unani Medicines got enriched by imbibing what was best in the contemporary systems of traditional medicines in Egypt, Syria, Iraq, Persia, India, China and other Middle East countries. In India, Unani System of Medicine was introduced by Arabs and soon it took firm roots. The Delhi Sultans (rulers) provided patronage to the scholars of Unani System and even enrolled some as state employees and court physicians. During 13th and 17th century A.D. Unani Medicine had its hey-day in India. The system suffered a severe setback during the British rule in India. The allopathic system was introduced and gained ground. This retarded the growth of education, research and practice of Unani system of medicine. All the traditional systems of medicine along with Unani System faced almost complete neglect for about two centuries. The withdrawal of State Patronage could not harm much as the masses reposed faith in this system and it continued to be practiced. It was mainly Sharifi family in Delhi, the Azizi family in Lucknow and the Nizam of Hyderabad due to whose efforts Unani Medicine survived during the British period.

The Unani system of the Medicine, saw the beginning of its revival during the freedom struggle. Hakim Ajmal Khan, was a renowned physician and also one of the foremost freedom fighters in the country. He established an Ayurvedic and Unani Tibbia College and Hindustani Dawakhana a pharmaceutical company for manufacturing of Ayurvedic and Unani medicine in Delhi in 1916. Mahatma Gandhi inaugurated the college on February 13, 1921. Some of the Princely States also fully patronized this system. After independence the Unani System along with other Indian systems of medicine received a fresh boost under the patronage of the National Government and its people. Government of India took several steps for the all round development of this system. It passed laws to regulate and promote its education and training. It established research institutions, testing laboratories and standardized regulations for the production of drugs and for its practice. Today the Unani system of medicine with its recognized practitioners, hospitals and educational and research institutions, forms an integral part of the national health care delivery system.

**Principles Concepts and Definition**

Avicenna, one of the greatest scholars of Unani Tabb (medicine), has defined it as:

Tabb is the science of which we learn the various states of body, in health and when not in health, and the means by which health is likely to be lost and, when lost, is likely to be restored. The basic theory of Unani system is based upon the well- known four- humour theory of Hippocrates. This presupposes the presence, in the body, of four humours viz., blood, phlegm, yellow bile and black bile. The human body is considered to be made up of the following seven components are: Arkan (Elements), Mizaj (Temperament), Akhlat (Humors), Aaza (Organs), Arwah (Spirits), Quwa (Faculties), Afaal (Functions)

**Arkan (Elements)**- The human body contains four elements. Each of the four elements has its own temperament as follows (Element- Temperament):

1. Air- Hot and Moist
2. Earth- Cold and Dry
3. Fire- Hot and Dry
4. Water- Cold and Moist

**Mizaj (Temperament)-** In the Unani system, the temperament of the individual is very important as it is considered to be unique. The individuals temperament is believed to be the result of the interaction of the elements. The temperament can be real equitable where the four elements used are in equal quantities. This does not exist. The temperament may be equitable. This means presence of just and required amount of compatible temperament. Lastly, temperament can be inequitable. In this case there is absence of just distribution of temperament according to their requirements for healthy functioning of the human body.

**Akhlat (Humours)-** Humours are those moist and fluid parts of the body which are produced after transformation and metabolism of the aliments; they serve the function of nutrition, growth and repair; and produce energy, for the preservation of individual and his species. The humours are responsible for maintaining moisture of different organs of the body and also provide nutrition to the body. Food passes through four stages of digestion; (1) Gastric digestion when food is turned in to chyme and chyle and carried to liver by mesenteric veins (2). Hepatic digestion in which chyle is converted into four humours in varying quantities, that of blood being the largest. Thus, the blood which leaves the liver is intermixed with the other humours namely, phlegm, yellow bile and black bile. The third and fourth stages of digestion are known as (3) vessels and (4) tissue digestion. While the humours are flowing in the blood vessels, every tissue absorbs its nutrition by its attractive power and retains it by its retentive power. Then the digestive power in conjunction with assimilative power converts it into tissues. The waste material in humour at this stage is excreted by the expulsive power. According to this system when any disturbance occurs in the equilibrium of the humour, it causes disease. The treatment, therefore, aims at restoring the equilibrium of humours.

**Aaza (Organs)-** These are the various organs of the human body. The health or disease of each individual organ affects the state of health of the whole body.

**Arwah (Spirits)**- Ruh (Spirit) is a gaseous substance, obtained from the inspired air, it helps in all the metabolic activities of the body. It burns the akhlat latifah to produce all kinds of quwa (powers) and hararat ghariziyah, it is the source of vitality for all the organs of the body. These are considered to be the life force and are, therefore, important in the diagnosis and treatment of disease. These are the carriers of different powers, which make the whole body system and its parts functional.

**Quwa (Faculties)-** These are of three kinds:

1. Quwa Tabiyah or Natural power is the power of metabolism and reproduction. Liver is the seat of this power and the process is carried on in every tissue of the body. Metabolism is concerned with the processes of nutrition and growth of human body. Nutrition comes from the food and is carried to all parts of the body, while growth power is responsible for the construction and growth of human organism.
2. Quwa Nafsaniyah or Psychic power refers to nervous and psychic power. It is located inside the brain and is responsible for perceptive and motive power. Perceptive power conveys impressions or sensation and motive power brings about movements as a response to sensation.
3. Quwa Haywaniyah or Vital power is responsible for maintaining life and enables all the organs to accept the effect of psychic power. This power is located in the heart. It keeps life running in the tissues.

**Afaal (Functions)-** This component refers to the movements and functions of all the organs of the body. In case of a healthy body the various organs are not only in proper shape but are also performing their respective functions. This makes it necessary to have full knowledge of the functions of the human body in full detail.

Health- Health refers to that state of human body when all the functions of the body are carried out normally. Disease is the opposite of health in which one or more functions or forms of the body organs are at fault. Prevention of disease is as much a concern of the system as curing of sickness. Right in its formative stages the influence of the surrounding environment and ecological condition on the state of health of human beings has been recognized. There is emphasis on the need for keeping water, food and air free from pollution. Six essentials pre-requisites (Asbab Sitta e Zaroriayah) have been laid down for the promotion of health and prevention of disease. These are: Air, Food and drinks, Bodily movement and repose, Psychic movement and repose, Sleep and wakefulness, Evacuation and retention

Good and clean air is considered as most necessary for health. Avicenna, the famous Arab physician, noted that the change of environment relieves the patients of many diseases. He also emphasized the need for open airy houses with proper ventilation. It is recommended that one take fresh food, free from putrefaction and disease producing matter. Dirty water is considered as a carrier of several diseases. The system, therefore, strongly emphasizes the need for keeping the water free from all sorts of impurities. Exercises as well as rest are considered necessary for maintaining good health. Exercise helps the growth of muscles and ensures nutrition, increases blood supply and proper functioning of excretory system. It also keeps the heart and the liver in good condition. The system documents extensively the impact on health of such psychological factors as happiness, sorrow, and anger etc. There is a branch of Unani medicine known as psychological treatment, which deals in detail with this topic. Normal sleep and wakefulness are considered essential for good health. Sleep provides physical and mental rest. The lack of it is said to cause dissipation of energy, mental weakness and digestive disturbances. Proper and normal functioning of the excretory processes is necessary for keeping good health. If the waste products of the body are not completely excreted or when there is disturbance or blockage, it leads to diseases and sickness.

Diagnosis- The Diagnostic process in Unani system is dependent on observation and physical examination. Any illness of a person is to be regarded as a product of: The stuff and material he is made of ; The kind of temperament, structure and strength of faculties he has; The type of factors operating on him from outside; and Natures own attempt to maintain his physical functions and to ward off disruptions to the extent possible. Keeping all inter-related factors in view, the cause and nature of illness is determined and treatment is chalked out. Diagnosis involves investigating the causes of disease thoroughly and in detail. For this, the physicians depend mainly on Pulse (Nabz) reading and examination of urine and stool. The alternative contraction and expansion of the arteries produced by the systolic and diastolic of heart is called Pulse (Nabz). Besides the means of pulse reading and physical examination of urine and stool, other conventional means such as inspection, palpitation, percussion and occultation are also used for diagnosis purposes.

Therapeutics- In this system the entire personality of a patient is taken into account. Each individual has got its own basic structure, physique, make-up, self-defense mechanism, reaction to environmental factors, likes and dislikes. Unani medicine has the following main types of treatment- Regimental therapy (Ilaj-bil-Tadbir), Dieto therapy (Ilaj-bil-Ghiza), Pharnacotherapy (Ilaj-bil-Dawa), Surgery (Ilaj-bil-Yad ).

The National Institute of Unani Medicine (NIUM), Bangalore was registered under the Societies Registration Act on 19th November 1984 as a center of excellence to develop and propagate Unani system of Medicine. There are several Indian universities devoted to Unani medicine, in addition to universities that teach traditional Indian medical practices in general. Undergraduate degrees awarded for completing a Unani program include the Bachelor of Unani Medicine and Surgery, Bachelor of Unani Tib and Surgery, and Bachelor of Unani Medicine with Modern Medicine and Surgery degrees. A small number of universities offer post-graduate degrees in Unani medicine.

The Central Council of Indian Medicine (CCIM), a statutory body established in 1971 under the Department of Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homoeopathy (AYUSH), monitors higher education in areas of Indian medicine including Ayurveda, Unani, and other traditional medical systems. Another subdivision of AYUSH, the Central Council for Research in Unani Medicine (CCRUM), aids and co-ordinates scientific research in the Unani system of medicine through a network of 22 nationwide research institutes and units.

To fight biopiracy and unethical patents, the Government of India set up the Traditional Knowledge Digital Library (TKDL) in 2001 as repository of formulations used in Indian traditional medicine, including 98,700 Unani formulations

**Siddha system**

<http://ayush.gov.in/about-the-systems/siddha>

Introduction and Origin- Siddha system is one of the oldest systems of medicine in India . The term Siddha means achievements and Siddhars were saintly persons who achieved results in medicine. Eighteen Siddhars were said to have contributed towards the development of this medical system. Siddha literature is in Tamil and it is practised largely in Tamil speaking part of India and abroad. The Siddha System is largely therapeutic in nature.

Basic Concepts- This principles and doctrines of this system, both fundamental and applied, have a close similarity to Ayurveda, with specialization in Iatro-chemistry. According to this system the human body is the replica of the universe and so are the food and drugs irrespective of their origin. Like Ayurveda, this system believes that all objects in the universe including human body are composed of five basic elements namely, earth, water, fire, air and sky. The food, which the human body takes and the drugs it uses are all, made of these five elements. The proportion of the elements present in the drugs vary and their preponderance or otherwise is responsible for certain actions and therapeutic results. As in Ayurveda, This system also considers the human body as a conglomeration of three humours, seven basic tissues and the waste products of the body such as faeces, urine and sweat. The food is considered to be basic building material of human body which gets processed into humours, body tissues and waste products. The equilibrium of humours is considered as health and its disturbance or imbalance leads to disease or sickness. This system also deals with the concept of salvation in life. The exponents of this system consider achievement of this state is possible by medicines and meditation.

The system has developed a rich and unique treasure of drug knowledge in which use of metals and minerals is very much advocated. Some idea about the depth of knowledge the system possesses in the field of mineral, materia medica can be formed from the detailed drug classification, briefly described below:

1. There are 25 varieties of water-soluble inorganic compounds called UPPU. These are different types of alkalies and salts.
2. There are 64 varities of mineral drugs that do not dissolve in water but emit, vapours when put in fire. Thirty-two of these are natural and remaining are artificial.
3. There are Seven drugs that do not dissolve in water but emit vapour on heating.
4. The system has classified separately classes of metals and alloys, which melt when, heated and solidifies on cooling. These include items like gold, silver, copper, tine, lead and iron. These are incinerated by special processes and used in medicine.
5. There is a group of drugs that exhibit sublimation on heating and includes mercury and its different forms like red sulphide of mercury, mercuric chloride and red oxide of mercury etc.
6. Sulpher, which is insoluble in water, finds a crucial place in Siddha materia medica along with mercury for use in therapeutics and in maintenance of health.

The above classification shows detailed knowledge and study of minerals that this system has evolved for treatment. In addition there are drugs obtained from animal sources. The system has published and hand-book on Siddha treatment for common diseases and ailments.

In Siddha system chemistry had been found well developed into a science auxiliary to medicine and alchemy. It was found useful in the preparation of medicine as well as in transmutation of basic metals into gold. The knowledge of plants and mineral were of very high order and they were fully acquainted with almost all the branches of science. The Siddhars were also aware of several alchemical operations divided into several processes such as calcinations, sublimation, distillation, fusion, separation conjunction or combination, congelation, cibation, fermentation, exaltation i.e. the action or process of refining gold, fixation i.e. bringing to the condition of being non-volatile i.e. to the state of resisting the action of fire, purification, incineration of metals, liquifaction, extraction and so on. Even cupellation of gold and silver which is an essential process in Alchemy in which is claimed to have been discovered by the Arabs, was known to the Siddhars long long before. They were even polypharmacists and as such were engaged in boiling, dissolving, precipitating and coagulating chemical substances. Some of their secret methods, especially those in fixing and consolidating certain volatile substances that could not resist the action of fire, such as Mercury, Sulpher, Orpiment, Vermilion, Arsenic etc. continue still a mystery.

The Siddha system is capable of treating all types of disease other than emergency cases. In general this system is effective in treating all types of skin problems particularly Psoriasis, STD, urinary tract infections, diseases of liver and gastro intestinal tract, general debility, postpartum anaemia, diarrhoea and general fevers in addition to arthritis and allergic disorders.

Diagnosis and Treatment- The diagnosis of diseases involve identifying it causes. Identification of causative factors is through the examination of pulse, urine, eyes, study of voice, color of body, tongue and the status of the digestive system. The system has worked out details procedure of urine examination which includes study of its color, smell, density, quantity and oil drop spreading pattern. It holistic in approach and the diagnosis involves the study of person as a whole as well as his disease. The Siddha System of Medicine emphasizes that medical treatment is oriented not merely to disease but has to take into account the patient, environment, the meteorological consideration, age, sex, race, habits, mental frame, habitat, diet, appetite, physical condition, physiological constitution etc. This means the treatment has to be individualistic, which ensures that mistakes in diagnosis or treatment are minimal. The Siddha System also deals with the problems affecting the women's health and a lot of formulations are available in the Siddha classics which can counter the problems for a better living. The care for women's health starts from the first day of the girl child. The Siddha System strongly advocates breast feeding upto the first three months of the life. The Siddha System believes in the principle of Food itself is medicine and during this nursing period, lactating mothers are advised to take the food rich in iron, protein and fibre so as to prevent any nutritional disorders both to the child as well as the mothers. Once in 15 days, the mothers are advised to take simple remedies for de -worming so that they may not land up in anaemic conditions. For any diseases due to infection or otherwise, the treatment is individualistic on examination of that particular patient. Once the girl child attained menarche, the Siddha System has got a variety of preparations which can strengthen her reproductive system so as to deliver a healthy child in future. And also, effective treatments are available to take care of the menopausal syndromes, especially problems related to the hormonal imbalance. The Siddha System is effective in treating chronic cases of liver, skin diseases especially Psoriasis, rheumatic problems, anaemia, prostate enlargement, bleeding piles and peptic ulcer. The Siddha Medicines which contains mercury, silver, arsenic, lead and sulpher have been found to be effective in treating certain infectious diseases including venereal diseases.

<https://nischennai.org/siddhamedicine.html>

ABOUT SIDDHA MEDICINE

ORIGIN:

The Siddha System of Medicine (Traditional Tamil System of medicine), which has been prevalent in the ancient Tamil land, is the foremost of all other medical systems in the world. Its origin goes back to B.C 10,000 to B.C 4,000. As per the textual and archeological evidences which indicate the remote antiquity of the Dravidian civilization of the erstwhile submerged land Kumarikandam, that is the Lemuria continent situated in the Indian ocean, the Siddha System of Medicine is contemporaneous with those of the submerged lands Egyptian, Mesopotamian, Chinese and Grecian medicines. The uniqueness of Siddha System is evident by its continuous service to the humanity for more than 5000 years in combating diseases and also in maintaining its physical, mental and moral health while many of its contemporaries had become extinct long ago.

The roots of the ancient Siddha System are intertwined with the mythology and culture of the ancient Tamil civilization that existed in the southernmost tip of the Indian peninsula, predating much of recorded history. Mythically, the origin of Siddha is attributed to Lord Siva, who is supposed to have handed it down to his consort Parvathi (Shakthi), who in turn passed on the sacred knowledge to Nandi, from whom it was transmitted to the first of "Siddhars". Siddha is a Tamil word derived from "siddhi" -- attaining perfection in life or heavenly bliss. The system is said to have emerged in antiquity, from the highly evolved consciousness of the Siddhars. The clarified intellect and heightened intuition of the Siddhars, resulting from their yogic powers, enabled them to explore the world around them and exploit its natural resources for the sake of humanity. Their findings on the characteristics of plants, metals, minerals and animal products and their knowledge of the properties of drugs, its purification, processing, fixing dosage, toxicity, antidote and clinical application, were preserved in the form of verses for the use of the posterity. This unique legacy was bequeathed to select disciples or "chidas" by word of mouth. It is believed that there was a line of 18 siddhars, with Agasthya being the foremost and a large portion of Siddha lore is credited to him. With time, this oral tradition was transcribed on palm leaf manuscripts that now serve as the major repository of the knowledge.

The contributors of Siddha system, the Siddhars, of Tamil land, were mystics, yogis, poets, devotees, seers and medical men of various combinations and various statures. They were super human beings who possessed supernatural powers (like Eight types of Siddhis). They were the greatest scientists of ancient times and were the guardians of the world and they existed, and still exist, for the benefit of the public at large. They were men of great practical knowledge and wisdom. They had full awareness of the nature and activities of all the objects in this planet and of all times-past, present and future. They were mainly responsible for the growth and development not only of Tamil medicine that includes alchemy, medicine, yoga, kayakalpa (rejuvenation therapy), philosophy, astronomy, astrology, varma, muppu, thokkanam etc., but also for many other sciences of public utility.

GUIDING PRINCIPLES:

When the normal equilibrium of the three humors — Vaadham, Pittham and Kapam — is disturbed, disease is caused.[dubious – discuss] The factors assumed to affect this equilibrium are environment, climatic conditions, diet, physical activities, and stress. Under normal conditions, the ratio between Vaadham, Pittham, and Kapam are 4:2:1, respectively.[13]

According to the Siddha medicine system, diet and lifestyle play a major role in health and in curing diseases. This concept of the Siddha medicine is termed as pathiyam and apathiyam, which is essentially a rule based system with a list of "do's and don'ts".

The herbal agents used by the siddhars could be classified into three groups: thavaram (herbal product), thadhu (inorganic substances) and jangamam (animal products).[13] The thadhu agents are further classified as: uppu (water-soluble inorganic substances that give out vapour when put into fire), pashanam (agents not dissolved in water but emit vapour when fired), uparasam (similar to pashanam but differ in action), loham (not dissolved in water but melt when fired), rasam (substances which are soft), and ghandhagam (substances which are insoluble in water, like sulphur).[14]

According to the Siddha system, the individual is a microcosm of the universe. The human body consists of the five primordial elements-earth, water, fire, air and space, the three humours-vatha, pitta and kapha and seven physical constituents. Food is the basic building material of the human body and gets processed into humours, tissues and wastes. The equilibrium of humours is considered as health and its disturbance or imbalance leads to a diseased state. Reflecting this theory of cosmic oneness, the five senses are said to correspond with the five elements. Ether (Veli) is responsible for hearing; air (katru) for sense of touch; fire (thee) for sight; water (neer) for taste; and earth (mann) for the sense of smell.

MIND - BODY CONTINUUM:

Siddha is a comprehensive system that places equal emphasis on the body, mind and spirit and strives to restore the innate harmony of the individual. Treatment is aimed at restoring balance to the mind-body system. Diet and lifestyle play a major role not only in maintaining health but also in curing diseases. This concept of the Siddha medicine is termed as pathiam and apathiam, which is essentially a list of do's and don'ts. "Food itself is medicine and medicine itself is food"

MATERIA MEDICA:-

Drugs used by the Siddhars can be classified into three groups: Thaavaram (herbal product), Thaathu (inorganic substances), and Jangamam (animal products).

UNIQUE DIAGNOSTIC METHODOLOGY:

The diagnostic methodology in Siddha treatment is unique as it is made purely on the basis of the clinical acumen of the physician. The pulse, skin, tongue, complexion, speech, eye, stools and urine are examined. This approach is collectively known as "Eight types of examination"; and among the eight, the examination of pulse is very important in confirming the diagnosis.

CONCEPT OF SIDDHA TREATMENT:- Treatment consists of three distinct categories: Deva Maruthuvam, (divine method); Maanida Maruthuvam (rational method); and Asura Maruthuvam (surgical method). In the divine method, medicines like parpam, chenduram, guru, kuligai prepared from mercury, sulphur and pashanams are used. In the rational method, medicines prepared from herbs like churanam, kudineer, vadagam are used. In surgical method, incision, excision, heat application, bloodletting, leech application etc. are practised. The therapeutic treatment in Siddha could be further categorized into Purgative therapy, Emetic therapy, Fasting therapy, Steam therapy, Oleation therapy, Physical therapy, Solar therapy, Blood letting therapy and Yoga therapy. There is also a branch of the traditional science that deals with traumatology and accidental injuries called Varma. This is based on the notion of more than 100 vital points that are junctions of bones, tendons, ligaments, blood vessels and nerves called Varma points. Pranic energy is found concentrated in these points which, upon manipulation, produce curative effect.

Siddha system has enormous pharmacopoeia containing vegetable, animal and mineral products and treatment techniques consisting in use of 32 types of internal medicines and 32 types of external medicines, application of heat and cold, ointments, potions and poultice, blood letting, counter irritation, bath, suction, manipulative processes such as thokkanam, varma, yoga and concentration on hygiene and diet (pathiam), periodical use of purgatives and emetics, use of drugs which include, apart from herbs, preparations from metals and minerals such as copper, silver, gold, lead and preparations from products of animal origin such as brain, liver, bones, blood, skull, horns of various animals, tissues of reptiles and also Kayakalpa to prevent or postpone greying of hair, formation of wrinkles and ageing, prevention or treatment of diseases, and postponement of death (to any desired length of time). Some empirical treatment techniques under the guise of magic exorcism, incantation, pilgrimage, peregrinations, mountaineering and similar activities have also been in practice since ages.

CLASSIFICATION OF SIDDHA MEDICINES:- Siddha medicines may be roughly divided into three classes--- (i) Miracle medicines, (ii) Sophisticated medicines and (iii) Common medicines. Miracle medicines are becoming rare and should be learnt directly from the masters who, having undergone all forms of initiation and hazards of apprenticeship, have reached perfection in all respects. Sophisticated medicines may be scientifically prepared and used by the well trained physicians without much risk. Common medicines are most simple and cheap ones which were in wide use till the beginning of the 20th century and are still in use in remote rural areas of our country.

KUNDALINI YOGA:- The Siddhars have evolved a special technique for attaining spiritual awakening by rousing, with yoga techniques like aasana, praanaayaama and dhyaana (meditation), the Kundalini shakthi (Serpent power) lying dormant at the base of the spinal column in the region of the sacral plexus. Only by caring for his mortal inheritance, man is able to arrive at the realization of his highest potentialities. By working in unison with theology and philosophy, Siddha medicine aids bringing to maturity the quiescent gem of immortal divine being in his mortal body.

SIDDHA EDUCATION:- The Siddha system of education in ancient India was not imparted or organized on the scale of mass education like schools and colleges, but the ideal of education was to treat it as a secret and sacred process, for the reason that the process of an individual growth (especially the inner growth) can only be achieved by a close and constant touch between the teacher and the taught in their personal relationship from which the whole world was excluded. The teaching was imparted in the form of verses, many of them in ambiguous language and handed down to the posterity by the guru-sishya (teacher-disciple) tradition. The sacred medicines and techniques were taught only to a close circle of disciples and this trend continued to exist till recently. Siddha education has turned into a mass institutional education around the middle of the 20th Century and has been catering to the needs of the public. Developments in academic side and also in scientific research have been coming up. A scientific research of available Siddha literature may bring us precious truths, methods of preparation of miracle medicines of mineral, vegetable and animal origin and this would be a valuable contribution to the medical world today. In addition to the literature written in palm leaf manuscripts etc., there are many valuable medicines and treatment techniques in practice. Steps are being taken by the government for collecting, screening, analyzing and codifying the available manuscripts, printed books, traditional recipes, medical secrets and many other things found scattered in disciplines and activities seemingly unconnected with medicine.

CONTEMPORARY RELEVANCE OF SIDDHA: There has been a resurgence of traditional medical systems the world over, based on the holistic nature of their approach to healing. The efficacy of indigenous systems has been proved in various contexts. They tend to use locally available, cost effective materials for treatment. Hence, the Siddha system which also has strong cultural and historical bonds with the people of Tamil Nadu is becoming increasingly relevant.

Siddha today- <https://en.wikipedia.org/wiki/Siddha_medicine>

The Tamil Nadu state runs a 5.5-year course in Siddha medicine (BSMS: Bachelor in Siddha Medicine and Surgery). The Indian Government also gives its focus on Siddha, by starting up medical colleges and research centers like National Institute of Siddha. and Central Council for Research in Siddha. Commercially, Siddha medicine is practiced by siddhars referred in Tamil as vaithiyars.

Practicing Siddha medicine and similar forms of rural alternative medicine in India was banned in the Travancore-Cochin Medical Practitioners' Act of 1953, then reinforced in 2018 by the Supreme Court of India which stated that "A number of unqualified, untrained quacks are posing a great risk to the entire society and playing with the lives of people."[9][18] The Act requires that qualified medical practitioners be trained at a recognized institution, and be registered and displayed on a list of valid physician practitioners, as published annually in The Gazette of India. The Gazette list does not recognize practitioners of Siddha medicine because they are not trained, qualified or registered as valid physicians.

**Common plants used -**

Refer to the website for different important uses of plants- <https://www.planetayurveda.com/>, <https://www.planetayurveda.com/herbs-a-to-z/>

Brahmi, Indian pennywort, herb of grace- *Bacopa monnieri*, Plantaginaceae. Whole plant. It enhances brain strength, memory, concentration, voice, lifespan, functions as rasayan, for skin and blood disorder, for normal bp, jaundice, diabetes, cough, swelling, fever, as antidote, had broncho-dilator effect to treat asthma.

Ashwagandha consists of dried mature roots of *Withania somnifera* Dunal. (Fam.-Solanaceae), a perennial shrub, found in waste land, cultivated field and open grounds throughout India, widely cultivated in certain areas of Madhya Pradesh and Rajasthan ,roots collected in winter, washed and cut into short pieces. THERAPEUTIC USES - Shotha, Kshaya, Daurbalya, Vataroga, Klaibya. It balances tridosha kapha and vatta. Biter and astringent. It provides the strength of a horse or stallion, enhance immune system after illness, enhance spermatogenesis, for sexual disorders of weakness, hormonal disturbances and infertility, is a nerve tonic for anxiety, stress, depression, insomnia, anti-inflammatory properties for joint problems of arthritis, osteoarthritis, has cardiovascular properties for strengthening heart muscles, maintain healthy bp and cholesterol, respiratory system enhance, reduce blood sugar, for thyroid health, has anti-cancerous properties. Has many therapeutic phytochemicals- heterogeneous alkaloids in roots, while leaves have withanolids, and alkaloids of somniferin, somnine, somniferinine.

Ghritkumari- *Aloe vera* (Aloe barbadensis), Liliaceae, a perennial, shrubby, xerophytic plant. Leaves are used. Has various phytochemicals of anthraquinone, amino acids, carbohydtres, hormones gibberellins and auxin with healing and anti-inflammatory properties, vitams A, C, E, folic acid, choline, B12 that nourish blood, body cells and neutralize free radicals, have steroids (campesterol, lupeol, cholestrl, sisosterol) that are analgesic, anti-inflammatory and anti-septic, have inorganic minerals of Cu, Se, Mg, Na, etc. that are useful for metabolic and enzyme activities, have enzymes of catalase, alkaline phosphatase, superoxide dismutase, etc. for catabolism of fats and carbohydrates and reduce inflammation. It is a rasayana- a rejuvenator. It is beneficial for all kinds of skin disease, is an aphrodisiac, flowers vermicidal. Others- for diabetes, skin disorders, wounds, ulcers, treat fungi, allergy, insect bites, jaundice, antiseptic, prevent kidney stones, cholesterol, oxidative stress.

Amalak consists of pericarp of dried mature fruits of *Emblica officinalis* Gaertn. Syn. Phyllanthus emblica Linn. (Fam. Euphorbiaceae); Emblic Myrobalan, Amla, Aonla; mostly collected in winter season after ripening and in Kashmir in summer, a small or medium sized tree, found both in natural state in mixed deciduous forests of the country ascending to 1300 m on hills; cultivated in gardens, home yards or grown as a road side tree. THERAPEUTIC USES - Raktapitta, Amlapitta, Premeha, Daha. Has an edible fruit with lot of Vit C, for keeping healthy skin, enhancing immune system, an antioxidant to prevent ageing and a rejuvenator – a rasayan of cellular structure, enhance vision, cure bleeding disorders, diabetes, infections, is aphrodisiac, effective for heart.

Arjuna – *Terminalia Arjuna*, Combretaceae, large sized deciduous evergreen tree. Bark used. A cardiac tonic, to cure chest injuries, chronic respiratory disorders, reduce cholesterol, diabetes, wound, ulcers, urinary infections, tannins are antioxidants, for fractured bones,

Ativisha consists of dried, tuberous roots of *Aconitum heterophyllum* Wall. ex. Royle (Fam, Ranunculaceae), a perennial herb, native of western Himalayas and found in Garhwal, Kumaon and Kashmir at altitude between 2,500-4,000 m. THERAPEUTIC USES - Krimiroga, Jvara, Kasa, Chardi, Amatisara. It is for digestive problems, sexual health. It has many alkaloids- heterophylline, heterophyllisine, atidine, beta-sitosterol, carotene, etc.

Ashoka consists of dried stem bark of Saraca asoca (Rose.) De. Willd, Syn. Saraca indica Linn. (Fam. Leguminosae), collected in spring from mature, wild or cultivated trees, found in Central and Eastern Himalayas, Western Ghats and Deccan. THERAPEUTIC USES - Shotha, Daha, Asrigdara, Apachi, Raktadosha. It has in its bark- tannins, haematoxylin, flavonoids, saponins, glycosides, catechol, etc.; and its leaves has- tannins, carbohydrates, gallic acid. As analgesic, antidotal, beneficial for female reproductive problems of conception, uterine-ovarian stimulant, reduces uterine pain and discharge , beneficial for digestive problems as astringent, anti-helminthic, for cardiovascular system as cardio tonic, hemostatic, blood purifying, for excretory system as diuretic, is anti-pyretic.

Bilva consists of pulp of entire, unripe or half ripe fruits of Aegle marmelos Carr. (Fam. Rutaceae), Quince, Bael fruit, Bela, Sriphal, Bel. Leaves and fruits used. A tree, attaining a height of 12 m growing wild and also cultivated throughout the country, rind of fruit is removed and pulp is bruised and dried. THERAPEUTIC USES - Pravahika, Agnimandya, Grahani roga. Have anti-diabetic properties by producing more insulin, is anti-inflammatory, relive pain, ripe fruits have laxative properties to prevent constipation, for female reproductive system of leucorrhea, menstrual irregularities, vaginal hemorrhages, for skin diseases, heart problems.

Sarpagandha, Chota chand, *Rauvolfia serpentina*, Apocynaceae. Roots and leaves used. It is a perennial, erect, glabrous, shrub, with tuberos roots having a pale brown corks, long petiole leaves which are tapered, white flowers with red calyx, fruit a drupe, ovate and purplish-black. It is used to dilate blood vessels for high bp, high blood sugar in diabetes, and as a sedative and tranquilizing agent, detoxifies poison of snakes, scorpions, spiders, mouse, manages fever, wound and worm infestation, useful for mental problems, uterine contraction, psychosis, epilepsy, dysentery, skin disorder, for regular menstruation,

Arka consists of dried leaves and roots of *Calotropis gigantea* (Ait.) R.Br. (Fam.-Apocynaceae); Madar Tree, Aak, found wild more or less throughout India. THERAPEUTIC USES - Shvasa, Gulma, Krimiroga, Kandu¸ Kushtha, Vrana, shotha, shleshmodara Roga, Pleeha roga, Arsha. A perennial bush with tender light green stems that give milky white exudates, which is mildly poisonous. The white latex is biter, light oily with hot potency to cure skin disorders, abdominal tumors, and is a purgative. It is aphrodisiac, stimulates digestive system, can cure anorexia, piles, cough, asthma, snake bites, wounds, and worm infestation.

Bakuchi consists of dry ripe fruits of Psoralea corylifolia Linn. (Fam.Fabaceae), an erect, 0.3-1.8 m high annual herb, distributed throughout India, found commonly in Uttar Pradesh, Bengal and Maharashtra. THERAPEUTIC USES - Jvara, Krimiroga, Kushtha, Meha, Shvitra. Seed, fruit, leaves, roots, flowers- whole plant used. Is natural blood purifier, has anti-cancerous, anti-inflammatory, anti-depressant, anti-hyperglycemic properties. Is aphrodisiac, relieves constipation, had cold potency, is appetizer, to cure diarrhea, heart disorder, diabetes, bleeding disorder, asthma, warm infestation, leprosy. Seeds for hair and skin disorders,

Bibhitaki, baheda, Beleric Myrobalan, Bahera, *Terminalia bellirica*, Combretaceae, a large deciduous tree. Pericarp of dried ripe fruits. Fruit pulp is used as purgative, in problems of cough, eye, hair, warm infestation, voice hoarseness, and has mild sedative action so used in insomnia. The plant has sitosterol, galic acid, protein, oxalic acid, tannins, galactose, glucose, chebugalic acid, etc.

Bhringraj, Eclipta alba, Asteraceae, an annual, erect, branched herb. Is considered a rasayana, which is a herb for longevity and rejuvenation. For hair care, cirrhosis, rejuvenates memory, hair, teeth, bones, vision, and hearing. Is anti-oxidant, analgesic, anti-viral, anticancer, antibacterial, and hepato-protectve. Is a tonic for debility. Seed oil and leaf paste to prevent hair fall and its graying. A black dye is obtained for hair dyeing.

Chitraka, ceylon leadwort, consists of dried mature root of Plumbago zeylanica Linn. (Fam. Plumbaginaceae), a large perennial sub-scandent shrub, found throughout India in wile state and occasionally cultivated in gardens. THERAPEUTIC USES - Agnimandya, Grahani Roga, Arsha, Udara shula, Guda roga, Yakrit roga. Leaves and roots. It contains plumbagin that enhances immunity. The herb is used as a rasayana, and to expel out the thick nasal mucus, treating laryngitis, rheumatism, various skin disorders, osteoarthritis, lowering cholesterol, anti-inflammatory. Its roots used for diarrhea, piles, increase appetite, stimulate digestive system, a carminative, to cure spleen enlargement, applied on wounds, ulcers.

Amaltas, Aragvadha consists of pulp obtained from fruits (devoid of seeds, septa and pieces of pericarp) of *Cassia fistula* Linn., Fabaceae; Indian Laburnum, Purging cassia, Amaltas a moderate sized deciduous tree, common throughout India as wild or cultivated plant, fruits collected when ripe. THERAPEUTIC USES - Shula, Gulma, Vibandha, Udavarta, Udararoga, Hridroga, Prameha. Fruit pulp is safe laxative in pregnancy and infants. Is used in fevers, heart disorder, bleeding disorder, bloating, abdominal pain, purgative, indigestion, skin problems,

Guduchi, giloy, *Tinospora cordifolia*, Menispermaceae, a herbaceous, glabrous, spreading climbing shrub. Leaf, barks, stem, root. It is rejuvenating, enhances absorption, strength, digestion, relieves constipation, to cure thirst, weakness, fatigue, burning sensation in any infection,, diabetes, cough, anemia, jaundice, leprosy, bleeding, fever, warm infestation, reduce excess uric acid, reduce stress, is emetic.

Gokshura, puncture vine, Tribulus terrestris, Zygophyllaceae, a small, prostrate, hirsute herb. An aphrodisiac, enhance male sex power, quality of semen, sexual performance, increase luteal hormone in men and women, increase testosterone in men, effective for problems of kidney stones, urinary bladder, urinary tract, obesity, diabetes, bp, gout, arthritis.

Guggul, Indian bdellium, Commiphora wightii, Burseraceae, a small tree with white yellowish bark, stem produces a yellow colored resin. Gum is used. For treating rheumatoid arthritis, constipation, liver disease, los of appetite, chronic cough, as a cardiac tonic to increase hemoglobin, leucocyte, blood quality, increase sexual power, useful in impotency, leucorrhoea, infertility, for diabetes, obesity, thyroid, skin diseases.

Makoy, black night shade, Solanum nigrum, Solanaceae, short lived shrub, is poisonous, whole plant used, fresh leaves. Has steroidal, alkaloidal glycosides, sapogenin, epicatechin, etc. As expectorant, analgesic, relieve constipation, sedative, diaphoretic, skin diseases, anti-inflammatory, antiseptic, anti-diabetic, cardio-tonic, diuretic, as a rasayan for anti-aging and tissue rejuvenation, enhances perspiration that maintains body temperature.

Neem, Indian lilac, Azadirachta indica, Meliaceae, an evergreen tree. Whole plant used. Leaves and bark as blood purifier, for skin problems. Fruits are carminative, purgative, emollient. Flowers are tonic for stomach problems. Wood is hard, resistant to termite, bacteria, and fungi. Bark is biter, has tannin used for dyeing, is astringent and tonic to treat fever, nausea, vomiting and skin ailments. Has azadirachtin, azadirachtol, azadirachnol, nimbolide, nimbiol, beta-sitosterol, etc. it has anti-fungal, anti-bacterial, anti-helminthic, anti-viral, anti-diabetic, properties. For gum swelling, bleeding gums, curing acne, STD, skin diseases.

Nirgundi, sambhalu, chaste tree, Vitex negundo, Lamiaceae, a multi branch bushy plant. Leaves, roots, seeds. It has anti-histamine properties, and muscle relaxant, mild topical analgesic, inducing natural resting. For mental disorders, memory, ear problems, asthma, tuberculosis, fever, warm infestation, rheumatoid arthritis, digestion, normal menstruation, blood circulation, as a rasayan.

Tulsi, holy basil, Ocimum sanctum, Lamiaceae. It has smooth muscle relaxant, hypoglycemic, cardiac depressant, anti-stress, antifertility, imunomodulatng, antibacterial, antifungal, antiviral, anti-diabetic, anti-oxidant, anti-carcinogenic, contraceptive, larvicidl properties, for respiratory problems. It has many phytochemicals eugenol, methyl eugenol, sesquiterpenes, monoterpenes, sitosterol, essential oils, vitamin c, carotene, minerals, etc.

**Scope of medicinal plants**

<http://webcache.googleusercontent.com/search?q=cache:uNxi-aoDh2cJ:nhp.gov.in/introduction-and-importance-of-medicinal-plants-and-herbs_mtl+&cd=2&hl=en&ct=clnk&gl=in>

The term “**medicinal plant**” include various types of plants used in herbalism ("herbology" or "herbal medicine"). It is the use of plants for medicinal purposes, and the study of such uses. The word “**herb**” has been derived from the Latin word, *“herba”* and an old French word *“herbe”.* Now a days, herb refers to any part of the plant like fruit, seed, stem, bark, flower, leaf, stigma or a root, as well as a non-woody plant. Earlier, the term “herb” was only applied to non-woody plants, including those that come from trees and shrubs. These medicinal plants are also used as food, flavonoid, medicine or perfume and also in certain spiritual activities.

Plants have been used for medicinal purposes long before prehistoric period. Ancient Unani manuscripts Egyptian papyrus and Chinese writings described the use of herbs.  Evidence exist that Unani Hakims, Indian Vaids and European and Mediterranean cultures were using herbs for over 4000 years as medicine. Indigenous cultures such as Rome, Egypt, Iran, Africa and America used herbs in their healing rituals, while other developed traditional medical systems such as Unani, Ayurveda and Chinese Medicine in which herbal therapies were used systematically.

Traditional systems of medicine continue to be widely practised on many accounts. Population rise, inadequate supply of drugs, prohibitive cost of treatments, side effects of several synthetic drugs and development of resistance to currently used drugs for infectious diseases have led to increased emphasis on the use of plant materials as a source of medicines for a wide variety of human ailments.

Among ancient civilisations, India has been known to be rich repository of medicinal plants. The forest in India is the principal repository of large number of medicinal and aromatic plants, which are largely collected as raw materials for manufacture of drugs and perfumery products. About 8,000 herbal remedies have been codified in AYUSH systems in INDIA. Ayurveda, Unani, Siddha and Folk (tribal) medicines are the major systems of indigenous medicines. Among these systems, Ayurveda and Unani Medicine are most developed and widely practised in India.

Recently, WHO (World Health Organization) estimated that 80 percent of people worldwide rely on herbal medicines for some aspect of their primary health care needs. According to WHO, around 21,000 plant species have the potential for being used as medicinal plants.

As per data available over three-quarters of the world population relies mainly on plants and plant extracts for their health care needs. More than 30% of the entire plant species, at one time or other were used for medicinal purposes. It has been estimated, that in developed countries such as United States, plant drugs constitute as much as 25% of the total drugs, while in fast developing countries such as India and China, the contribution is as much as 80%. Thus, the economic importance of medicinal plants is much more to countries such as India than to rest of the world. These countries provide two third of the plants used in modern system of medicine and the health care system of rural population depend on indigenous systems of medicine.

Treatment with medicinal plants is considered very safe as there is no or minimal side effects. These remedies are in sync with nature, which is the biggest advantage. The golden fact is that, use of herbal treatments is independent of any age groups and the sexes.

The ancient scholars only believed that herbs are only solutions to cure a number of health related problems and diseases. They conducted thorough study about the same, experimented to arrive at accurate conclusions about the efficacy of different herbs that have medicinal value. Most of the drugs, thus formulated, are free of side effects or reactions. This is the reason why herbal treatment is growing in popularity across the globe. These herbs that have medicinal quality provide rational means for the treatment of many internal diseases, which are otherwise considered difficult to cure.

Medicinal plants such as *Aloe, Tulsi, Neem, Turmeric* and *Ginger*cure several common ailments. These are considered as home remedies in many parts of the country. It is known fact that lots of consumers are using Basil (*Tulsi*) for making medicines, black tea, in *pooja* and other activities in their day to day life.

Medicinal plants are considered as a rich resources of ingredients which can be used in drug development either pharmacopoeial, non- pharmacopoeial or synthetic drugs. A part from that, these plants play a critical role in the development of human cultures around the whole world. Moreover, some plants are considered as important source of nutrition and as a result of that they are recommended for their therapeutic values. Some of these plants include ginger, green tea, walnuts, aloe, pepper and turmeric etc. Some plants and their derivatives are considered as important source for active ingredients which are used in aspirin and toothpaste etc.

Apart from the medicinal uses, herbs are also used in natural dye, pest control, food, perfume, tea and so on. In many countries different kinds of medicinal plants/ herbs are used to keep ants, flies, mice and flee away from homes and offices. Now a days medicinal herbs are important sources for pharmaceutical manufacturing.

Recipes for the treatment of common ailments such as diarrhoea, constipation, hypertension, low sperm count, dysentery and weak penile erection, piles, coated tongue, menstrual disorders, bronchial asthma, leucorrhoea and fevers are given by the traditional medicine practitioners very effectively.

Over the past two decades, there has been a tremendous increase in the use of herbal medicine; however, there is still a significant lack of research data in this field. Therefore since 1999, WHO has published three volumes of the WHO monographs on selected medicinal plants.

**Importance of some herbs with their medicinal values**

* Herbs such as black pepper, cinnamon, myrrh, aloe, sandalwood, ginseng, red clover, burdock, bayberry, and safflower are used to heal wounds, sores and boils.
* Basil, Fennel, Chives, Cilantro, Apple Mint, Thyme, Golden Oregano, Variegated Lemon Balm, Rosemary, Variegated Sage are some important medicinal herbs and can be planted in kitchen garden. These herbs are easy to grow, look good, taste and smell amazing and many of them are magnets for bees and butterflies.
* Many herbs are used as blood purifiers to alter or change a long-standing condition by eliminating the metabolic toxins. These are also known as 'blood cleansers'. Certain herbs improve the immunity of the person, thereby reducing conditions such as fever.
* Some herbs are also having antibiotic properties. Turmeric is useful in inhibiting the growth of germs, harmful microbes and bacteria. Turmeric is widely used as a home remedy to heal cut and wounds.
* To reduce fever and the production of heat caused by the condition, certain antipyretic herbs such as *Chirayta*, black pepper, sandal wood and safflower are recommended by traditional Indian medicine practitioners.
* Sandalwood and Cinnamon are great astringents apart from being aromatic. Sandalwood is especially used in arresting the discharge of blood, mucus etc.
* Some herbs are used to neutralize the acid produced by the stomach. Herbs such as marshmallow root and leaf. They serve as antacids. The healthy gastric acid needed for proper digestion is retained by such herbs.
* Indian sages were known to have remedies from plants which act against poisons from animals and snake bites.
* Herbs like Cardamom and Coriander are renowned for their appetizing qualities. Other aromatic herbs such as peppermint, cloves and turmeric add a pleasant aroma to the food, thereby increasing the taste of the meal.
* Some herbs like aloe, sandalwood, turmeric, sheetraj hindi and khare khasak are commonly used as antiseptic and are very high in their medicinal values.
* Ginger and cloves are used in certain cough syrups. They are known for their expectorant property, which promotes the thinning and ejection of mucus from the lungs, trachea and bronchi. Eucalyptus, Cardamom, Wild cherry and cloves are also expectorants.
* Herbs such as Chamomile, Calamus, Ajwain, Basil, Cardamom, Chrysanthemum, Coriander, Fennel, Peppermint and Spearmint, Cinnamon, Ginger and Turmeric are helpful in promoting good blood circulation. Therefore, they are used as cardiac stimulants.
* Certain medicinal herbs have disinfectant property, which destroys disease causing germs. They also inhibit the growth of pathogenic microbes that cause communicable diseases.
* Herbal medicine practitioners recommend calmative herbs, which provide a soothing effect to the body. They are often used as sedatives.
* Certain aromatic plants such as Aloe, Golden seal, Barberry and Chirayata are used as mild tonics. The bitter taste of such plants reduces toxins in blood. They are helpful in destroying infection as well.
* Certain herbs are used as stimulants to increase the activity of a system or an organ, for example herbs like Cayenne (Lal Mirch, Myrrh, Camphor and Guggul.
* A wide variety of herbs including Giloe, Golden seal, Aloe and Barberry are used as tonics. They can also be nutritive and rejuvenate a healthy as well as diseased individual.
* Honey, turmeric, marshmallow and liquorice can effectively treat a fresh cut and wound. They are termed as vulnerary herbs.

India is one of the richest countries in the world in terms of biodiversity, has 15 agro-climatic zones. Out of the 17000-18000 species of flowering plants, more than 7000 are estimated to have medicinal usage in folk and documented systems of medicine as Ayurveda, Yoga & Naturopathy, Unani, Siddha & Homoeopathy (AYUSH System of Medicine). Medicinal plants are not only a major resource base for the traditional medicine & herbal industry but also provide livelihood and health security to a large segment of Indian population. About 1178 species of medicinal plants are estimated to be in trade of which 242 species have annual consumption levels in excess of 100 metric tons/year. The domestic demand of medicinal plants has been estimated 1,95,000 MT for the year of 2014-2015 and export demand of medicinal plants has been estimated 1,34,500 MT during 2014-2015. Total consumption of herbal raw drug in the country for the year 2014-15 has been estimated at 5,12,000 MT with corresponding trade value of ₹ 5,500 Crore. The major increase has been recorded in export value which has increased from ₹ 345.80 Crore in 2005-06 to ₹ 3211 Crore in 2014-15, registering a nine fold increase in during last decade.

The medicinal plants are closely connected with the traditional knowledge of its use. During the early periods, the knowledge of the medicinal properties of the plants was transferred from one generation to another generation orally and no documentation of the medicinal plants have been maintained. Even though, the herbal formulations are regaining their momentum, the major problem behind the herbal medicine is that there is a lack of standard protocol for their standardization and problem behind carrying out clinical trials. It is essential to evaluate the herbal plant scientifically and documents should be made to know their medicinal properties. To revitalize Indian medicinal heritage, through creative application of the traditional health sciences for the enhancement the quality of health care in rural and urban India, extensive research on plants for natural leads is very essential. Free radicals have found a place in etiology of many diseases and there is a great deal of enthusiasm regarding the role played by the free radicals in many diseases, like in asthma, rheumatoid, hypertension, liver cell injury and carcinogenesis. Extensive scientific research has been carried out all over the world to use the medicinal plants and their extracts/lead molecules from herb as anti-oxidants. So there is a great demand of herbal medicines in the developed as well as developing countries because of their wide biological activities, higher safety margin when compared with synthetic drugs. For the treatment of asthma, there are only fewer herbal products are available in the market. Ventilago maderspatana Gaertn and Ziziphus xylopyrus (Retz) Willd. are traditionally used by rural and tribal peoples of India to cure asthma and these have healing property against various respiratory disorders like cough and cold but there is a lack of scientific data on asthmatic disorder. Some recent work in drug development relates to species of *Commiphora* (used as a hypolipidaemic agent), *Picrorhiza* (which is hepatoprotective), *Bacopa* (used as a brain tonic), *Curcuma* (antiinflammatory) and *Asclepias* (cardiotonic).

In order to promote medicinal plants sector, the Government of India has set up National Medicinal Plants Board (NMPB) in 2000. Currently the board is located in Ministry of AYUSH, Government of India. The primary mandate of NMPB is to develop an appropriate mechanism for coordination between various ministries/ departments/ organizations in India and implements support policies/programs for overall (conservation, cultivation, trade and export) growth of medicinal plants sector both at the Central /State and International level. In recent years cultivation of medicinal plants has started gaining momentum. However, still a significant part of our requirements continue to be met from wild sources. To meet increasing demand for medicinal plants, the NMBP focusses on in-situ & ex-situ conservation and augmenting local medicinal plants and aromatic species of medical significance. The NMPB also promote research & development, capacity building through trainings, raising awareness by promotional activities from the creation of Home/School herbal gardens. NMPB also support programs for quality assurance and standardization through development of Good Agricultural and Collection Practices (GACPs), development of monographs laying down standards of quality, safety and efficacy; development of agro-techniques and credible institution a mechanism for certification of quality of raw drugs, seeds and planting material. Overall, NMPB’s main objective is the development of medicinal plants sector by developing a strong coordination among various ministries/ departments/ organizations for implementation of policies / programs on medicinal plants. The primary functions of NMPB is to develop a proper mechanism for co-ordination between various ministries/ departments/ organization and implementation of support policies/programs for overall (conservation, cultivation, trade and export) growth of medicinal plants sector.

The Central Institute of Medicinal and Aromatic Plants, popularly known as CIMAP, is a frontier plant research laboratory of Council of Scientific and Industrial Research (CSIR). Established originally as Central Indian Medicinal Plants Organisation (CIMPO) in 1959, CIMAP is steering multidisciplinary high quality research in biological and chemical sciences and extending technologies and services to the farmers and entrepreneurs of medicinal and aromatic plants (MAPs) with its research headquarter at Lucknow and Research Centres at Bangalore, Hyderabad, Pantnagar and Purara. CIMAP Research Centres are aptly situated in different agro-climatic zones of the country to facilitate multi-location field trials and research. CIMAP’s contribution to the Indian economy by its MAPs research is well known. Mint varieties released and agro-packages developed and popularised by CIMAP has made India the global leader in mints and related industrial products.

Scope and Functions

1. To pursue developmental, promotional and related work on cultivation, production, processing, utilisation and marketing of medicinal and aromatic plants with specific reference to their practical application and utility
2. To cultivate medicinal and aromatic plants, either in its own farms or through other agencies, and to process wherever necessary, the plant materials for obtaining their end products
3. To carry out, in collaboration with other agencies, introduction, accimilatisation (including measures for prevention and control of pests and diseases) of exotic-species and also production of authentic high-yielding seeds, leaves and other propogating materials of medicinal and aromatic plnats of economic importance
4. To encourage cultivation of medicinal and aromatic plants in suitable regions of the country
5. To carry out surveys of resources of medicinal and aromatic plants and to maintain economic statistics of the raw materials as well as finished products

Salient Contributions of CSIR-CIMAP:-

1. Catalyzing transformation of India from a menthol importing country to the largest producer and exporter of menthol mint oil globally by developing short-duration and high-yielding varieties, and superior agro- and processing- technologies of menthol leading to the spread of Mentha cultivation in more than 300,000 hectares and enhancing the income of nearly 600,000 farming families.
2. Ensured "Making in India" of the anti-malarial drug artemisinin by developing high-yielding varieties of Artemisia annua, chemical process for extraction and derivatization of artemisinin, and promoting cultivation of improved varieties in farmers' field.
3. Profitable utilization of salt-affected and flood-prone coastal and river bank areas by developing and deploying short-duration and high-yielding varieties of Vetiver (Khus).
4. Promotion of lemongrass and palmarosa cultivation in under-utilized rain-deficit areas like Bundelkhand, Vidharbha, Kutch and Marathwada.
5. Developed one of the most successful herbal formulation for the management of diabetes type II (with NBRI) using medicinal plants used in Ayruveda ensuring clinical efficacy and safety.
6. Leading CSIR Aroma Mission to empower Indian farmer and aroma industry by cultivation, processing, value addition and marketing of aromatic crops.
7. Coordinating promotion of exchange of knowledge and commerce of medicinal plants in IORA member states of Indian Ocean rim countries.
8. CIMAP has released several varieties of the MAPs, their complete agro-technology and post harvest packages which have revolutionised MAPs cultivation and business scenario of the country.
9. From CIMAP Lab to Market CIMAP has been documenting and creating scientific knowledgebase relevant to MAPs for its efficient utilisation, facilitating the lab to market journey of medicinal and aromatic crops (MACs) through several important publications. Farm bulletins on various economically important MACs (e.g. Mint, Lemongrass, Palmarosa, Geranium, Withania, Artemisia, etc.) in Hindi, English and regional languages, Training manuals - ‘Aus Saathi’ and ‘MAPs Companion’, Crop calendars, a composite research journal ‘Journal of Medicinal and Aromatic Plants Sciences (JMAPS)’ covering research papers, and trade related information on MACs are published by CIMAP.
10. Major impact making patents which resulted in major marketable technologies from CIMAP are Artemisia cultivation method (US 6,39,376), CIM-Arogya herb processing for artemisinin (IN 176679), development of arteether (IN 173947), artemisinin extraction process (US 5,955,08), CIM-Arogya - genetically tagged high yielding variety of Artemisia annua and its cultivation technology (US 6,393,763), cultivar Himalaya and Kosi of menthol mint (PP 10935, PP 12426) and method of producing mint plant Kushal (US 6,420, 174).
11. Sharing of Expertise and Knowledge, Technical Consultancy & setting up of National Facilities CIMAP Gene Bank established in 1993 as a follow up action taken in the summit of G-15 countries held at Caracas is one of the three National Gene Banks of the country that focuses on the conservation of MAPs of India in the form of seed, field, tissue and DNA banks. CIMAP has been designated by PPVFRA (Protection of Plant Varieties and Farmer’s Rights Authority) as Nodal laboratory for developing National Test Guidelines for plant varieties protection and DUS (distinctiveness, uniformity and stability) testing of medicinal and aromatic plants and seed species.

<https://www.tsijournals.com/articles/the-characteristics-and-roles-of-medicinal-plants-some-important-medicinal-plants-in-nigeria.html>

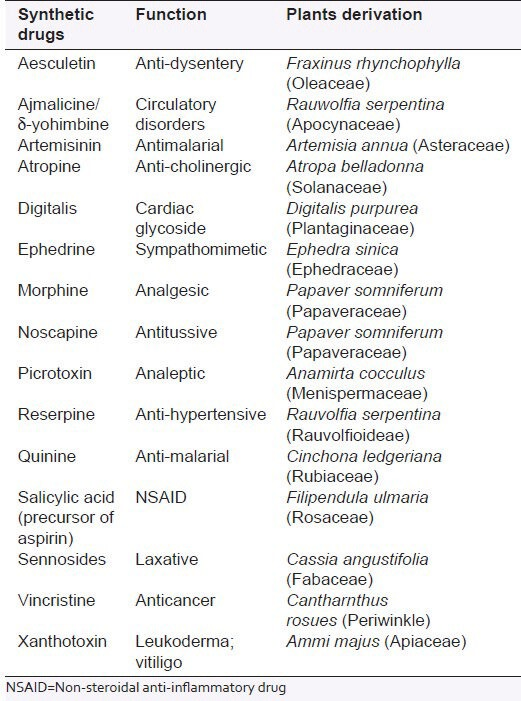
Medicinal plants may be defined as those plants that are commonly used in treating and preventing specific ailments and diseases and that are generally considered to be harmful to humans. These plants are either “wild plant species” those growing spontaneously in self-maintaining populations in natural or semi-natural ecosystems and could exist independently of direct human actions or the contrasting “Domesticated plants species” those that have arisen through human actions such as selection or breeding and depend on management for their existence. Herbal medicines proved to be the major remedy in traditional system of medicine. They have been used extensively in medical practices since ancient times. This prompts the development in the practices of medicinal plants. The reasons are because of their biomedical benefits as well as place in cultural beliefs in many parts of world in the development of potent therapeutic agents. During 1950-1970, approximately 100 plants based new drugs were introduced in the USA drug market including deserpidine, reseinnamine and vincristine which are derived from higher plants. Medicinal plants have provided mankind a large variety of potent drugs to alleviate or eradicate infections and suffering from diseases in spite of advancement in synthetic drugs, some of the plant-derived drugs still retained their importance and relevance. The use of plant-based drugs all over world is increasing. There have been records of advances made in the modern (synthetic) medicine there are still a large number of ailments or infection (diseases) for which suitable drugs are yet to be found. This have brought an urgent need to develop safer drugs (both for man and his environment) for the treatment of inflammatory disorders, diabetes, liver diseases, and gastrointestinal disorder. Through recent researches on herbal plants or medicine, there have been great developments in the pharmacological evaluation of various plants used in traditional systems of medicine. Consequently, plants can be described as a major source of medicines, not only as isolated active principles to be dispensed in standardized dosage form but also as crude drugs for the population. Modern medicines and herbal medicines are complimentarily being used in areas for health care program in several developing countries such as countries in Africa, Asia and some part of Europe. Due to different outcomes on herbal plants, plant products surfaces all over the world due to the belief that many herbal medicines are known to be free from health and environmental effects. The fear of the masses in the utility of synthetic drug or modern drugs is always accompanied with its single or multiple adverse or health effects. The use of plants for treating diseases is as old as the human species. Popular observations on the use and efficacy of medicinal plants significantly contribute to the disclosure of their therapeutic properties, so that they are frequently prescribed, even if their chemical constituents are not always completely known. For example, Senna alata is used traditionally to treat bacterial and fungal infections. They also showed varying degrees of antibacterial and antifungal activities against pathogens.

Flavonoids have been found to exhibit a greater antifungal and antibacterial activity against some human pathogenic fungi and bacteria. The therapeutic potency of a medicinal plant is due to the presence of some bioactive components. These bioactive components are ascertained using phytochemical screening such as phytochemical tests and thin layer chromatography.

Medicinal plants contain a wide variety of secondary metabolites or compounds such as tannins terpernoids, alkaloids, flavonoids; that dictates the therapeutic potency of the plants most especially the antimicrobial activities. Similar phytochemical constituents such as flavonoids and tannins were also revealed to be active against pathogenic bacteria such as *Bacillus cereus, Staphylococcus aurous* amongst others. The tannins present in medicinal plants make it useful in production of antiseptic soap which are commonly used in bathing or cleansing of skin surfaces. It was documented in literature that phytochemicals can be toxic to filamentous fungi, yeasts and bacteria, and also, inhibitory to viral reverse transcriptase. Saponins were reported as a major components acting as antifungal secondary metabolite. A wide range of physiological activity of saponins, steroids, phenols and tannins are found to be more predominant and therefore may be responsible for the antimicrobial action. Tannins have astringent properties which hasten the healing of wounds and inflamed mucous membrane due to their physiological activities such as anti-oxidant, antimicrobial and anti-inflammatory properties. The healing properties of medicinal plants could be due to the presence of tannins. They are known to posses’ astringent, anti-inflammatory, anti-diarrheal, antioxidant and antimicrobial properties. Saponins have been traditionally used in detergents, pesticides and molluscides in addition to their industrial applications such as foaming and surface active agents. They help in controlling cardiovascular diseases and in controlling cholesterol in humans

|  |  |
| --- | --- |
| **Action** | **Alkaloid compound** |
| Analgesic, anesthesia | Morphine |
| Mydriasis | Atropine |
| Miosis | Pilocarpine |
| Blood-pressure increase | Ephedrine |
| Blood-pressure reduction | Reserpine |
| Bronchial expansion | Lobeline |
| Stimulus | Strychnine |
| Antimicrobial | Berberine |
| Antileukemia | Vinblastine |

|  |  |  |
| --- | --- | --- |
| **Drug name** | **Plant resource** | **Feature** |
| Taxol/paclitaxel | Pacific yew tree | Now the first drug of choice in several tumorous cancers including breast cancer |
| Vinblastine | Madagascar periwinkle | The first drug of choice in many forms of leukemia, and since the 1950s. it has increased the survival rate of childhood leukemias by 80% |
| Vincristine | Madagascar periwinkle | Another antileukemic drug |
| Topotecan | *Camptotheca acuminata* | Has been approved by the FDA for the treatment of ovarian and small cell lung cancer |
| Irinotecan | Camptotheca acuminata | Has been approved by the FDA for the treatment of metastatic colorectal cancer |
| Etoposide | *Podophyllum peltatum* | A semisynthetic derivative of a plant chemical epipodophyllotoxin |
| Teniposide | Podophyllum peltatum | Another semisynthetic derivative of a plant chemical |



Although diseases are currently being treated more often through medicines of synthetic origin and specifically developed in laboratories, and their definite effects in the treatment of diseases have contributed to the development of their use, the use of some medications leads to certain damages to the body. Therefore, the importance of medicinal plants and their products is increasingly recognized and the public confidence in their use is constantly strengthened. Currently, the clinical, pharmaceutical and chemical studies of these traditional drugs, which are mainly derived from plants, are the basis of many early drugs such as Aspirin (from willow bark), Digoxin (from Foxglove), Morphine (from Opium poppy), Quinine (from Cinchona skin) and Pilocarpine (from Maranham Jaborandi). Currently, it is estimated that over 50% of the available drugs are somehow derived from medicinal plants. Phytotherapy is widely being used across the world on a constantly growing basis. Therefore, the global trend of synthetic compounds has turned to herbal drugs, which we can refer to it as a return to nature to prevent diseases and pains. Nature has been served as the source of medicinal herbs.

In traditional methods, plant materials are tested for pharmaceutical purposes. If any evidence of activity is observed, the extract is fractioned, and the active compound is isolated and identified. Each step of decomposition and isolation is usually guided by biological tests, which is referred to as bioassay-guided fractionation. Sometimes, a direct product isolation method, regardless of bioactivity, is also used, which leads to the isolation of a number of natural compounds suitable for measuring any biological activity. However, this process can be slow and inefficient, and also does not guarantee isolation of lead compounds from screening would be in chemically successful or even recordable.

The methods of discovering natural drugs by using modern processes including high-throughput screening (HTS) in which, using full and robotic automation, hundreds of molecules can be screened in several tests quickly and with small amounts of compounds. In order to integrate natural products into modern HTS programs, a library of natural compounds should be founded, with the advent of new and advanced technologies for the isolation and identification of natural products. The best result can be obtained from a library of fully naturally identified products that enables scientists to quickly isolate lead compound for faster progression of novel drug formulation, such as full or partial synthesis, *in vivo*experiments and clinical trials.

Medicinal herbs have a hopeful future since there are about half a million plants around the world, most of them have not yet been studied in medical practice, and current and future studies on medical activities can be effective in treating diseases. The use of medicinal plants has a long history; however, the use of the whole plant or raw materials for treatment or experimentation has many drawbacks, including changes in the plant’s compounds in different climates, simultaneous development of synergistic compounds that lead to adverse effects of antagonists, or other unexpected changes in bioactivity, and changes or loss of bioactivity due to the variability and accumulation, storage and preparation of raw materials; therefore, advancing towards the isolation of compounds and the use of pure substances with bioactivity, instead of the plant benefits, has certain benefits including convenient examination of therapeutic effects and determination of toxic doses to control the quality of the therapeutic formulation. The beginning of the development of herbal medicines was concurrent with the development of chemistry and isolation, purification, and determination of plant compounds. In the past, the drug discovery of the biological compounds from plant materials and the process of identifying the structures of active compounds from the extracts were problematic depending on the complexity of the compounds and might take weeks, months or even years. Nowadays, the rate of bioassay-guided fractionation has been significantly enhanced by the development of precision instruments such as high-performance liquid chromatography (HPLC/MS), liquid chromatography-mass spectrometry (LC/MS), magnetic field and nuclear magnetic resonance (NMR) is a recent major breakthrough for the categorization (NMR) is a recent major breakthrough for the categorization of compounds that are extremely limited in quantity in their organisms of origin. Despite the success of research to produce medicinal plants over the past few decades, future efforts face many challenges. The quality of the herbal product has been studied. Standardization of raw materials is an important issue for the plant industry.

Herbaceous plants can be easily infected during growth, processing and collection. Contamination and pollution with heavy metals are two main problems with herbal drugs. It is therefore necessary to improve the quality and quantity of bioactive compounds for the production of herbal drugs while making effort to discover more new herbal drugs. Due to expanding the use of natural substances around the world, the quality and safety of plant-derived medicines should be comprehensively and accurately studied issues and the traditional and the millennial beliefs about these issues cannot be surely trusted; therefore, scientific and enlightening studies are essential to obtain reliable information for the use of medicinal plants in health care. One of the challenges facing medicinal plants is the loss of medicinal plant species due to the non-principled use of these resources. According to the International Union for Conservation of Nature, there are between 50 000 and 80 000 flowering plant species that are used for pharmaceutical purposes around the world. Among these numbers, about 15 000 species are exposed to a risk of extinction due to high harvesting and destruction of habitats and 20% of their wildlife resources are decreasing due to growing human populations and excessive consumption of plants. Therefore, the environmental code of ethics that preserves biodiversity in the processes of exploiting natural resources to discover natural drugs should be considered. Good agricultural practice (GAP) for medicinal plants are planned to regulate production and ensure quality and facilitate the standardization of herbal drugs. GAP is an approach that uses high-quality, safe and non-contaminated (raw drugs) herbal medicines to help solve various problems. GAP includes comprehensive items such as environmental ecology, production locations, germplasm, cultivation, collection and quality aspects of pesticide detection, macroscopic or microscopic validation, chemical identification of active compounds, and checking of metal elements. Many countries seriously implement and promote the GAP.

**Polyherbal formulation (PHF)**

[**https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4127824/**](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4127824/)

The Indian Ayurvedic system has included herbals as one of its most powerful healing ingredients, which are recorded in the literature such as Vedas and Samhitas. Due to the availability of chemical analysis methods in the early 19th century, scientists started to extract and modify active compounds from the herbals, resulting in transition from raw herbs to synthetic pharmaceuticals. This is when the use of herbal medicines started to decline. Synthetic pharmaceuticals, however, are found out to be relatively more expensive and produce numerous undesirable side-effects despite their strong pharmacological action. Thus people nowadays are shifting back to herbal drugs, which are originated from the nature and claim to be safer.

The use of herbals is mentioned in the ancient *Ayurvedic* literature such as *Chakara Samhita* and *Sushruta Samhita*. The discovery of herbals is further complemented with knowledge on the method of isolation, purification, characterization of active ingredients and type of preparation. The term “herbal drug” determines the part/parts of a plant (leaves, flowers, seeds roots, barks, stems and etc.) used for preparing medicines. Each and every part of the herbs are fully utilized for the different pharmacological action they may produce and made into a range of herbal preparations including *Kwatha* (Decoction), *Phanta* (Hot infusion), *Hima* (Cold infusion), *Arka* (Liquid Extract), *Churna* (Powders), *Guggul* (Resins and balsams), *Taila* (Medicated oil) and etc. Due to the scientific advancement today, more and more pharmacologically active ingredients of the *Ayurvedic* medicines as well as their usefulness in drug therapy have been identified. Basically, it is the phytochemical constituent in the herbals which lead to the desired healing effect, such as saponins, tannins, alkaloids, alkenyl phenols, flavonoids, terpenoids, phorbol esters and sesquiterpenes lactones. A single herb may even contain more than one of the aforementioned phytochemical constituents, which works synergistically with each other in producing pharmacological action. There are a few examples of *Ayurvedic* herbs to be pointed out here: Arjuna (*Terminalia arjuna*) contains saponin glycosides, which accounts for its primary activity in improving cardiac muscle function and pumping activity of the heart, whereas the flavonoids afford antioxidant action and vascular strengthening; The volatile oil of ginger (*Zingiber officinale*) on the other hand contains phenolic compounds (shogaols and gingerols) as well as sesquiterpenes (bisapolene, zingiberene and zingiberol) producing analgesic, sedative, antipyretic and antibacterial activities. Both *in vitro* and in animals; clove oil and cinnamon leaf oil obtained from the dried flower buds of *Syzygium aromaticum* and leaves of *Cinnamomoum zeylanicum* respectively, contain eugenol as their main constituent and thus possess antimicrobial activities, i.e. antibacterial and antifungal activities. Another example is lemongrass (*Cymbopogon citrates*) essential oil which contains three major phytoconstituent: Geranial, neral and myrcene. The former two showed *in vitro* antibacterial action individually, but not myrcene. However when mixed with any of the two components, myrcene enhanced their activity. In *Ayurveda*, herbals are known to regulate bodily functions, cleanse and nourish human body.

Drug formulation in *Ayurveda* is based on two principles: Use as a single drug and use of more than one drugs, in which the latter is known as PHF. This key traditional therapeutic herbal strategy exploits the combining of several medicinal herbs to achieve extra therapeutic effectiveness, usually known as polypharmacy or polyherbalism. Historically, the *Ayurvedic* literature “*Sarangdhar Samhita*” dated centuries ago in 1300 A. D. has highlighted the concept of polyherbalism in this ancient medicinal system. In the traditional system of Indian medicine, plant formulations and combined extracts of plants are chosen rather than individual ones. It is known that *Ayurvedic* herbals are prepared in a number of dosage forms, in which mostly all of them are PHF. Even though the active phytochemical constituents of individual plants have been well established, they usually present in minute amount and always, they are insufficient to achieve the desirable therapeutic effects. For this, scientific studies have revealed that these plants of varying potency when combined may theoretically produce a greater result, as compared to individual use of the plant and also the sum of their individual effect. This phenomenon of positive herb-herb interaction is known as synergism. Certain pharmacological actions of active constituents of herbals are significant only when potentiated by that of other plants, but not evident when used alone. There are a few *Ayurvedic* herbs combinations to be cited here: Combination of ginger with black pepper and long pepper enhances their heating and mucous-reducing effects; bitter and cold herbs are combined with warmer herbs (combination of neem and ginger) to positively offset any extreme effects. Cumin, black pepper and asafoetida are used together traditionally to reduce bloating due to weak digestion; whereas guduchi and turmeric combination booster one's immunity.

Based on the nature of the interaction, there are two mechanisms on how synergism acts (i.e., pharmacodynamics and pharmacokinetic). In terms of pharmacokinetic synergism, the ability of herb to facilitate the absorption, distribution, metabolism and elimination of the other herbs is focused. Pharmacodynamic synergism on the other hand, studies the synergistic effect when active constituents with similar therapeutic activity are targeted to a similar receptor or physiological system. Other than that, it is believed that multiplicity of factors and complications cause diseases in most of the cases, leading to both visible and invisible symptoms. Here, combination of herbals may act on multiple targets at the same time to provide a thorough relief. Due to synergism, polyherbalism confers some benefits not available in single herbal formulation. It is evident that better therapeutic effect can be reached with a single multi-constituent formulation. For this, a lower dose of the herbal preparation would be needed to achieve desirable pharmacological action, thus reducing the risk of deleterious side-effects. Besides, PHFs bring to improved convenience for patients by eliminating the need of taking more than one different single herbal formulation at a time, which indirectly leads to better compliance and therapeutic effect. All these benefits have resulted in the popularity of PHF in the market when compared to single herbal formulation.

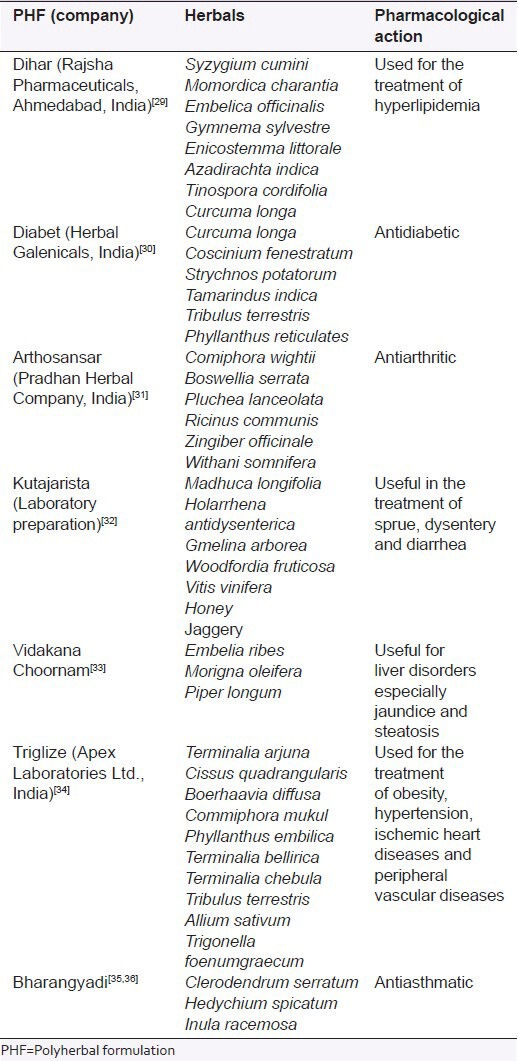
As mentioned before, PHF starts to gain its popularity recently worldwide, owing to the fact that PHF possesses some advantages which is not available in allopathic drugs. One, PHFs are known to express high effectiveness in a vast number of diseases. As aforementioned, the therapeutic effect of herbal medicines are exerted due to the presence of different phytoconstituents and the effects are further potentiated when compatible herbals are formulated together in PHFs. Until date, many researches have been done on PHF to evaluate their effectiveness and these are published on international journals. For instance, a number of anti-diabetic PHFs such as Dihar, Diabet, Diasol, Dianex, DRF/AY/5001, Diashis, Diabrid, Diakyur, Diasulin and etc., which are confirmed to have compatible effect as those of standard allopathic drug. In a statistical study performed in UK, it was found out that the main reason underlying the use of medical herbalism is the effectiveness and favorable outcomes of the treatment. Secondly, PHFs are usually found to have wide therapeutic range. Most of them are effective even at a low dose and safe at high dose, thus they have superior risk to benefit ratio. A good example will be the hypoglycemic PHF “Diakyur” used in diabetes. Diakyur at a high dose of 12800 mg/kg p.o. shows no toxic symptoms in the experimental animals up to 72 h; whereas subacute toxicity test reveals that this PHF is safe for long term treatment at the dose of 1600 mg/kg p.o. Their subsequent study also proved that the PHF shows hypoglycemic and antioxidant at the dose of 1600 mg/kg (p.o.). This is in contrast with sulfonylureas, the allopathic hypoglycemic drugs such as tolbutamide, glipizide and glicazide which are known to have narrow therapeutic index.

Often, PHFs (confined to those appropriately manufactured and used) result in fewer side effects as compared to allopathic drugs. Although modern allopathic drugs are designed for efficacious therapeutic results, administration of most of them come with unwanted side-effects, such as insomnia, vomiting, fatigue, dry mouth, diarrhea, seizures, impotency, confusion, hair loss, organ toxicities. Patients prescribed with non-steroidal anti-inflammatory drugs for rheumatoid arthritis (RA) treatment may experience mainly gastrointestinal and renal side effects, including dyspepsia, gastric ulceration, salt and fluid retention, as well as hypertension. For this, they may opt for *Ayurvedic* treatment in which these side effects are absent or minimal. Through study, one year *Ayurvedic* treatment using internal herbal medicines was shown to result in a positive effect in RA patients, without evidence of organ toxicities.

Due to the fact that PHFs are a product of the nature, they are relatively cheaper, eco-friendly and readily available than allopathic drugs. Their better affordability and greater accessibility account for increasing demand globally, especially in rural areas and some developing countries, where costly modern treatments are not available. Moreover, throughout the history, polyherbal remedies have long stand as traditional beliefs, norms and practices in certain tribes, which are based on centuries’ old experience of trials and errors. Put it simply, PHF are more readily acceptable culturally and socially.

All the above reasons: Effectiveness, safety, cheap, ubiquity and better acceptance, made PHF an ideal treatment of choice, hence higher compliance by the patients and excellent therapeutic effect is ensured.

Many of the PHF have been pharmacologically and clinically proven to possess therapeutic activities as desired.



Refrnce

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