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PHARMACOGNOSY AND PHYTOCHEMISTRY – I

UNIT 4

TOPIC :

- **Pharmacognosy in various systems of medicine :**

Role of Pharmacognosy in allopathy and traditional systems of medicine namely, Ayurveda, Unani, Siddha, Homeopathy and Chinese systems of medicine.



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Pharmacognosy in Various Systems of Medicine

Allopathic System of Medicine

The Allopathic system of medicine is the conventional/modern medical system that treats diseases using drugs or other interventions to produce effects opposite to the symptoms.

- The term “Allopathy” was introduced by Samuel Hahnemann (the founder of Homeopathy) to describe the prevailing medical practices of his time.
- In simple terms: *Allopathy* = “*opposite cures opposite*” and relies on scientific research, pharmacology, surgery, and clinical methods.



Key Characteristics of Allopathy

1. **Scientific and Evidence-Based**
 - Follows research-based principles.
 - Treatments depend on clinical trials, pharmacology, pathology, physiology, and biochemistry.
2. **Symptom-Oriented Approach**
 - Focuses on treating symptoms or underlying causes by using drugs that oppose disease effects.
 - Example:
 - Antipyretics (Paracetamol) → reduce fever.
 - Antibiotics (Penicillin) → kill bacteria.

3. Use of Synthetic and Natural Drugs

- Drugs may be synthetic (chemically prepared) or derived from natural sources (plants, animals, minerals).
- Allopathic medicines are purified, standardized, and tested for safety, dose, and efficacy.

4. Curative and Emergency-Oriented

- Provides quick relief and life-saving treatments.
- Most effective in acute conditions like infections, trauma, surgery, accidents.

5. Involves Specialization

- Branches include Cardiology, Neurology, Dermatology, Psychiatry, Pediatrics, Oncology, Orthopedics etc.

6. Technology-Driven

- Uses modern diagnostic and therapeutic tools:
 - MRI, CT scan, Laparoscopic surgery, Robotic surgery, Advanced monitoring systems.

Relevance of Allopathy in Pharmacognosy

Pharmacognosy (study of drugs from natural sources) is closely linked with allopathy because:

- Many modern allopathic drugs are derived from medicinal plants.
- Pharmacognosy provides the foundation of drug discovery and development in allopathy.

Examples:

- Morphine → from *Papaver somniferum* (Opium poppy).
- Quinine → from *Cinchona bark*.
- Digoxin → from *Digitalis purpurea*.
- Atropine → from *Atropa belladonna*.
- Reserpine → from *Rauwolfia serpentina*.

Indian Systems of Medicine

- The Indian Systems of Medicine (ISM) represent traditional medical practices that originated and evolved in India over thousands of years.
- These systems are based on holistic healing, focusing on the balance of body, mind, and spirit.
- ISM forms the backbone of traditional healthcare and plays a major role in drug discovery, herbal formulations, and pharmacognosy.



Major Recognized Indian Systems of Medicine

1. Ayurveda

- *Meaning:* "Science of Life".
- Based on the balance of three doshas:
 - Vata (air & space),
 - Pitta (fire & water),
 - Kapha (earth & water).
- Uses diet, lifestyle changes, herbal remedies, detoxification therapies (Panchakarma).
- Important herbs: *Ashwagandha, Amla, Turmeric, Neem, Brahmi.*
- Focus: Prevention + cure + rejuvenation.

2. Siddha

- One of the oldest systems, mainly practiced in Tamil Nadu (South India).
- Emphasizes herbs, minerals, and metals, combined with yogic practices.
- Important drugs: *Thuthuvalai* (*Solanum trilobatum*), *Kostham* (*Saussurea lappa*).
- Focus: Longevity, detoxification, spiritual healing.

3. Unani

- Derived from Greek medicine, developed in India under Islamic influence.
- Based on the concept of four humors:
 - Blood, Phlegm, Yellow bile, Black bile.
- Treatments: Herbal drugs, dietary regulation, regimental therapies (massage, cupping, exercise).
- Important drugs: *Asgandh* (*Withania somnifera*), *Isapgol* (*Plantago ovata*).

4. Yoga & Naturopathy

- **Yoga:** Uses *asanas* (postures), *pranayama* (breathing exercises), and *meditation* for physical & mental health.
- **Naturopathy:** Uses *natural agents* like air, water, diet, fasting, lifestyle modifications.
- Focus: Preventive healthcare, immunity, stress relief.

5. Homeopathy

- Though of European origin, it is widely practiced and officially recognized in India.
- Principle: “*Like cures like*”.
- Uses highly diluted substances to stimulate the body’s natural healing response.
- Example: *Arnica montana*, *Nux vomica*, *Belladonna*.

Administration & Regulation

- In India, these systems are regulated by the Ministry of AYUSH:
 - A → Ayurveda
 - Y → Yoga & Naturopathy
 - U → Unani
 - S → Siddha
 - H → Homeopathy
- AYUSH promotes integration of traditional systems with modern medicine for preventive, promotive, and curative healthcare.

Relevance in Pharmacognosy

- Provides a huge source of medicinal plants for drug development.
- Many crude drugs used in Ayurveda, Siddha, and Unani are directly studied in pharmacognosy.
- Helps in standardization of herbal drugs, identification of active principles, and quality control.

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Ayurveda System of Medicine

- Ayurvedic medicine system was established by the Hindus in India several thousand years ago.
- The Vedic period started with the Aryans.
- The four holy books (written in Sanskrit) invented with divine inspiration were included in the Vedas, which means wisdom.
- These Vedas were initially conveyed to the students by their teachers in a verbal manner.
- But during the period of 2500-1500 BC ' the Vedas were available in written forms on birch bark.
- Later, they were even available written on papers.
- Rig Veda (the oldest Veda) has drugs and diseases mentioned in it. Atharva Veda (the fourth Veda) has ideologies for maintaining health and the medicinal effects of health mentioned in it.



Principle of Ayurveda

a) Panchamahabhuta (Five Elements)

- All matter, including the human body, is composed of five basic elements:

Element	Meaning
Akasha	Ether / Space
Vayu	Air
Agni	Fire
Jala	Water
Prithvi	Earth

- These elements combine in different ways to form the Tridoshas (biological energies).

b) Tridosha Theory (Three Biological Energies)

Dosha	Elements	Functions
Vata	Air + Ether	Movement, breathing, circulation, nervous system
Pitta	Fire + Ether	Digestion, metabolism, heat regulation
Kapha	Water + Earth	Structure, lubrication, stability, immunity

- Prakriti (Body Constitution)**
 - Each individual has a unique combination of the three doshas.
 - Determines: physical traits, mental characteristics, disease susceptibility, suitable diet & lifestyle.
 - Key for personalized treatment in Ayurveda.

c) Dhatus (Body Tissues)

- Seven fundamental tissues that sustain the body:

Dhatu	Function
Rasa	Plasma / lymph
Rakta	Blood
Mamsa	Muscle
Meda	Fat / adipose tissue
Asthi	Bone
Majja	Bone marrow & nervous tissue
Shukra	Reproductive tissue

- Health is maintained when dhatus are balanced.

d) Agni (Digestive Fire)

- Governs digestion, absorption, metabolism.
- Jatharagni – main digestive fire in the stomach.

Condition	Effect
Balanced Agni	Good health
Weak / Imbalanced Agni	Formation of toxins (Ama) → disease

e) Malas (Waste Products)

- The body eliminates waste through three malas:

Mala	Excretion
Purisha	Feces
Mutra	Urine
Sweda	Sweat

- Proper elimination is essential for maintaining health.

3. Methods of Diagnosis in Ayurveda

1. **Nadi Pariksha** – Pulse diagnosis
2. **Jihva Pariksha** – Tongue examination
3. **Mala / Mutra Pariksha** – Stool & urine analysis
4. **Sparsha** – Touch / palpation
5. **Darshana** – Observation
6. **Prashna** – Interrogation / questioning



Unani System of Medicine

- Unani (or Yunani or Unani-tibb) is a traditional medicine system practiced in India and Indian subcontinent.
- It refers to practice of Graeco-Arabic medicine, which relies on the teachings of Hippocrates and Galen (physicians of Greece and Rome, respectively).
- The Unani medicine was developed into an elaborate medical system by Rhazes (Arab and Persian physicians)
- The base of Unani medicine system is formed by the concepts of four humours, Phlegm (Balgham), Blood (dam), Yellow bile (safra), and Black bile (sauda)



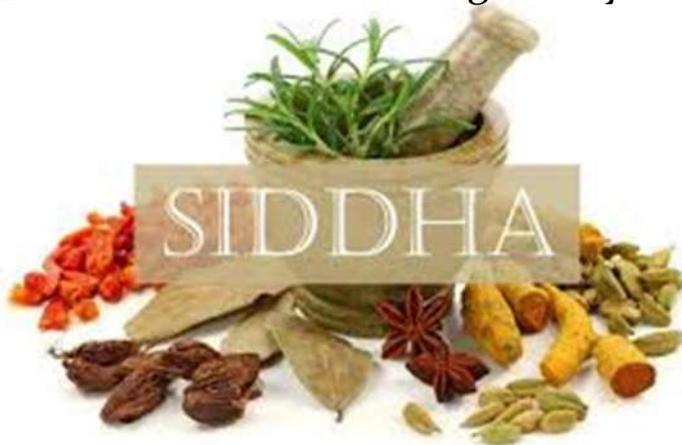
Basic principle involved

- The principles of Hippocrates formed the base of unani medicine system.
- Hippocrates laid the facts that disease is a nature process, symptoms are the reaction that body produces towards the diseases and physicians role is to help the natural forces of the body.
- He introduced the method of checking patients medical history He also brought the Humoral theory Which is his most essential contribution towards the medical kingdom
- The components whose loss in human body can cause a disease or even death are as follows:
 1. Al-Arkan (Element),
 2. Al-Mizaj (body fluids),
 3. Al-Akhalt (Body Fluid),
 4. Al-A'za' (Organ),
 5. Al-Arwah (pneuma)
 6. Al-Quwa (Power),
 7. Al-At'al (Function)

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Siddha System of Medicine

- Siddha medicine system was founded by the Dravidian culture of the pre-Vedic period.
- It is the oldest medicine system, which utilises drugs obtained from vegetables.
- Siddha medicine system deals with the human body as well as with the inner soul.
- This medication system should not be used for earning money as it is a divine art based on truth.



Basic Principles Involved

- The universe is made up of matter and energy (two essential entities). The Siddhas call them Siva (male) and Shakti (female, creation). Matter cannot exist without energy in-built in it and vice versa. Matter and energy co-exist and cannot be separated. There are 5 primitive elements (bhutas), i.e., munn (solid), neer (fluid), thee (radiance), vayu (gas), andaakasam (ether). These elements should not be confused with modern chemistry. Different proportions of them are present in every substance. Earth, water, fire, air, and ether are the manifestations of these elements.
- The human body is made up of different combinations of these elements. There are 3 substances (dravyas), i.e., vatham, pitham, and karpam which facilitate the body's physiological functions.
- Tridoshas According to Siddha Medicine All the body functions (physical, mental, and emotional) are controlled by the tridoshas:

1) Vatham

- It is dry, light, cold, and motile.
- It is formed by aakasam and vayu.
- It controls the nervous actions (movement, activity, sensation, etc.).
- It predominates in the bone.
- It dominates in first one-third phase of life when activities like growth, sharpness of function of sense are greater.

2) Pitham

- It indicates heat.
- It is formed by thee.
- It controls the metabolic activity of the body, digestion, assimilation, warmth, luster, intellect, etc.
- It predominates in the tissue blood.
- It dominates in the second one-third phase of life.

3) Karpam

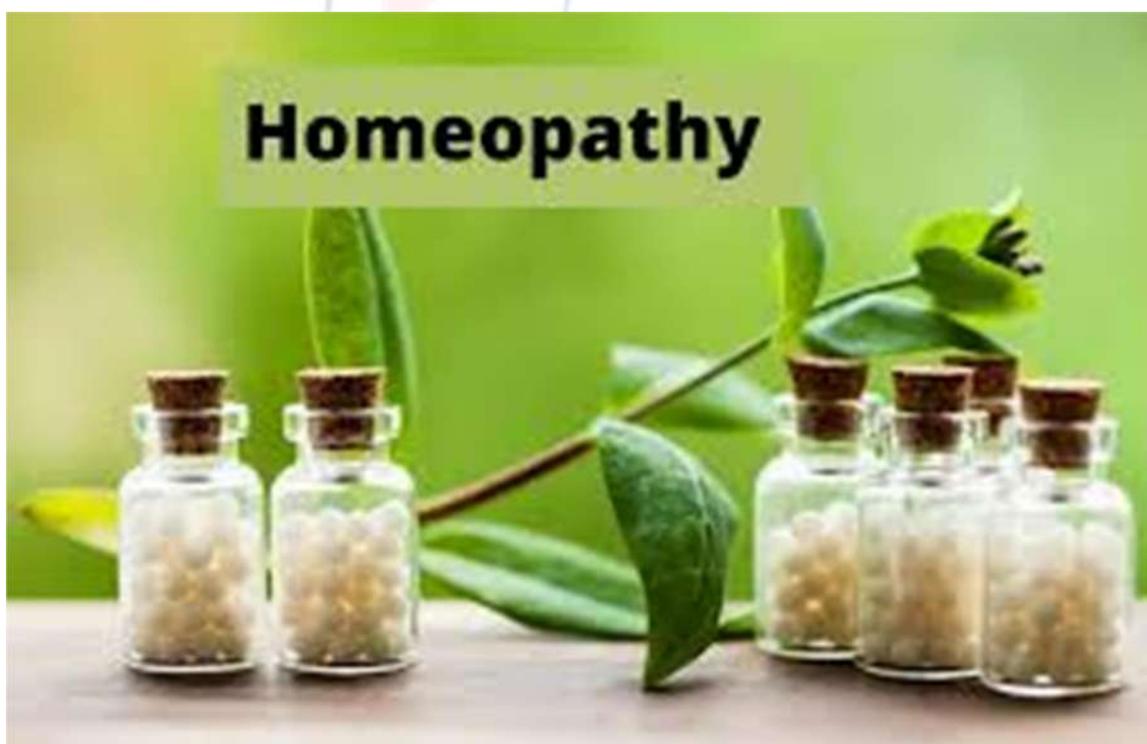
- It is smooth, firm, viscid, and heavy.
- It is formed by munn and neer.
- It controls the stability of body such as strength, potency, and smooth working of joints.
- It predominates in other tissues.
- It dominates in the last one-third phase of life.

Given below are the 7 dhatus:

1. Rasa (lymph),
2. Kurudhi (blood),
3. Tasai (muscle),
4. Kozhuppu (adipose tissue),
5. Elumbu (bone),
6. Majjai (marrow), and
7. Sukkilam and artavam (male and female hormones).

Homeopathy System of Medicine

- Homeopathic medication are prepared by successive dilutions with forcefully shaking and striking (succession).
- It was believed by the Homeopaths that after each dilution the effect of medication is enhanced : and this preparation process was named potentisation.
- Dilution is carried on till the original substance completely fades away.
- Before recommending any medicine, the Homeopaths ask the patients about their symptoms, physical and psychological state



Basic Principles Involved

- Every science guides the whole system by their some specific basic principles. Similarly, Homoeopathy being a science of medical treatment has its own philosophy, and its therapeutics relies on certain principles which are much different from those of other school of medical science.

- **Hahnemann discussed these fundamental principles in different sections of his medicine and philosophy as follows :**
1. **Law of Similia :** Homoeopathy medicine system relies on the therapeutic law, Similia Similibus Curentur, which means 'let likes be cured by likes'. In this healing system, the patient is given such a medicine which will produce the same symptoms (as found in the patient) if given to a healthy person also. Thus, the symptoms of the patient are matched with the pathogenesis of the medicine; and the medicines which show greater degree of similarity, viz. Simillimum are selected and administered to cure the patient.
 2. **Law of Simplex :** As per this law, simple and single drugs should be prescribed at a particular time. Thus, medicines act on healthy human beings individually and in simple form without the addition of any other substance.
 3. **Law of Minimum :** As per this law, drugs are administered in minimum quantity because of hypersensitivity in disease. The drug action is always directed towards normal as a result of altered receptivity

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Chinese System of Medicine (Traditional Chinese Medicine – TCM)

- Ancient medical system originating in China over 2500 years ago.
- Focuses on holistic and natural healing to maintain balance of body, mind, and spirit.
- Emphasizes prevention and restoration of internal balance.



Basic Principles

Principle	Description
Yin and Yang	Opposing forces that must remain balanced for health. Yin: cold, passive Yang: hot, active
Five Elements (Wu Xing)	Wood, Fire, Earth, Metal, Water – govern body organs and their interrelationships.
Qi (Vital Energy)	Life energy that flows through the body via meridians. Blockage or imbalance of Qi leads to disease.

Key Therapies in TCM

Therapy	Description / Example
Herbal Medicine	Uses plants, animals, and minerals to treat disease. Examples: Ginseng, Ginger, Licorice, Ephedra (Ma Huang)
Acupuncture	Insertion of thin needles at specific meridian points to restore energy flow
Moxibustion	Burning herbs near the skin to warm meridian points
Cupping Therapy	Glass cups create suction to improve blood circulation
Tai Chi and Qigong	Gentle exercises combining movement, breathing, and meditation

Applications

- Treats acute and chronic diseases.
- Commonly used for digestive problems, arthritis, stress, and respiratory issues.

Advantages

- Focuses on prevention and overall well-being.
- Uses natural products and non-invasive therapies.
- Can be integrated with other systems for holistic care.

Limitations

- Some treatments lack scientific validation.
- Herbal drugs may interact with allopathic medicines.