

1. Definition of Pharmacognosy

Pharmacognosy is the branch of pharmaceutical science that deals with the **study of crude drugs obtained from natural sources**, such as **plants, animals, microbes, and minerals**. It includes the study of their **biological, chemical, biochemical, and physical properties, biosynthesis, methods of extraction, and uses in medicine**.

In simple terms:

Pharmacognosy is the study of natural drugs and their constituents.

Etymology

The term *pharmacognosy* comes from two Greek words:

- “**Pharmakon**” = drug or medicine
- “**Gnosis**” = knowledge

So, pharmacognosy literally means “**knowledge of drugs.**”

2. History of Pharmacognosy

Early Beginnings

- **Ancient Civilizations:** The use of natural substances as medicines dates back to ancient times.
 - **Egyptians (around 1500 BC):** *Ebers Papyrus* lists more than 800 medicinal formulations.
 - **Chinese:** *Pen T'sao* by Emperor Shen Nung (around 2700 BC) documented hundreds of herbs.
 - **Indians:** *Ayurveda* and texts like *Charaka Samhita* and *Sushruta Samhita* described medicinal plants.
 - **Greeks:** *Dioscorides* (1st century AD) wrote *De Materia Medica*, an early pharmacognosy text.
 - **Romans:** *Galen* developed methods for preparing plant-based medicines (*Galenicals*).

Middle Ages to Renaissance

- Medicinal plants were cultivated in **monastery gardens** in Europe.
- *Paracelsus* (1493–1541) introduced the idea of active principles in drugs.

Modern Era

- **1811:** The term *Pharmacognosy* was first coined by **Johann Adam Schmidt**, a German scientist, and later used by **C.A. Seydler** in 1815 in his book *Analecta Pharmacognostica*.
 - **19th Century:** Isolation of active constituents like **morphine (1806)**, **quinine**, and **digitalis glycosides**.
 - **20th–21st Century:** Development of **phytochemistry**, **standardization**, and **biotechnology** in drug discovery.
 - Today, pharmacognosy integrates **traditional knowledge** with **modern analytical and molecular techniques**.
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3. Scope of Pharmacognosy

Pharmacognosy has a wide scope in pharmaceutical sciences and medicine. It covers:

A. Sources of Drugs

- **Plant drugs:** Leaves, roots, bark, flowers, seeds, etc. (e.g., *Aloe vera*, *Digitalis*, *Cinchona*).
- **Animal drugs:** Products like *honey*, *cod liver oil*, *gelatin*.
- **Mineral and marine sources.**

B. Study Areas

1. **Identification and Authentication** of crude drugs.
2. **Phytochemistry:** Study of chemical constituents (alkaloids, glycosides, tannins, etc.).
3. **Pharmacological Screening:** Testing for biological activity.
4. **Quality Control and Standardization:** Ensuring purity and efficacy.
5. **Biotechnology:** Use of plant tissue culture and genetic engineering for drug production.
6. **Ethnopharmacology:** Study of traditional medicinal systems and indigenous knowledge.
7. **Drug Discovery and Development:** Finding new lead molecules from natural sources.

C. Importance

- Provides raw materials for pharmaceuticals.
- Basis for the discovery of new drugs.
- Supports herbal medicine and natural product research.
- Ensures safety and standardization of herbal formulations.