UNIT-I

Introduction to Pharmacognosy:

Definition, history, scope and development of Pharmacognosy

History Pharmacognosy.

- The medicines originated in Egypt and India. Medicines were recorded both in Papyrus Ebers of Egypt about 1,500 B.C. and later in Ayurveda of India. Papyrus Ebers(1600B.C) is an oldest documents containing 700 medicinal herbs and more than 870 formulae.
- A large portion of the Indian population even today depends on the Indian System of Medicine - Ayurveda, 'An ancient science of life'. The well known treatises in Ayurveda are Charaka Samhita and Sushrutha Samhita. Ayurveda was evolved 4000 and 600 B.C and objective of Ayurveda is not merely to cure the disease but to preserve the health also.
- The treatise dealing with Ayurveda are Sushruta Samhita and Charak Samhita both were complied between 500-300 B.C. Charak Samhita deals mostly with plants and Sushruta Samhia deals with surgery.
- Hippocrates "Father of medicine" (460-360 B.C) gave his contribution on anatomy and physiology of human begins.

- Aristotle "Father of natural history" (384-322 B.C) was a philosopher and he wrote on animal kingdom which is considered authoritative even in twenty first century.
- Theophrastus (370-287 B.C.) is known for his studies on plant kingdom.
- The Greek physician Dioscorides (370-287 A.D.) described about medicinal plants like opium, belladona, colchicum, ergot and these are used even now days.
- Galen (131-200 A.D.) known as first pharmacist described the different method of preparation containing active constituents of crude drugs. The branch dealing with extraction of plant and animal drugs is still known as Galenical Pharmacy.
- The French apothecary N. Le' mary (1945-1715) reported the importance of extraction method and alcohol to be used as an **ideal solvent**. The advent of modern techniques of isolation and characterization were isolated.
- In 1806 the German chemist Serturner isolated morphine from opium.
- In 1811 the portugese chemist Gomeriz isolated cinchonine from cinchona bark.
- The French chemist Pelletier and Caventou isolated strychnine(1817) and brucine (1819) from nux vomica seeds.

- Similarly in the consecutive years quinine (Pelletier 1820), veratramine (Meissner 1820), nicotine(Posselt and Reiman 1828), amygdalin (1830), pilocarpine (Hardy and Gerrad 1875), ephedrine (Nagai 1887) and emetine (1894) were isolated.
- Stass and Otto in 1852 developed a new process of extraction for alkaloids. Some of the important constituents like reserpine, digoxin, ergometrine, quinidine etc. were isolated in twentieth century.
- The great Swedish biologist Linnaeus (1707-1778) classified the plants and introduced the binomial system of plants which is still followed. Plant classification was further developed by Bentham and Hooker (1862-1883), Eicher (1883), Engler and Prandtle (1887-1889).
- The microscopical and chemical studies of crude drugs helped to publish a number of of atlases of powdered vegetable drug.
- Berg in 1865 published anatomical atlas of crude drugs.

- **Definition:**
- Initially in 19th century the term Materia Medica was used for the subject now known as pharmacognosy .

  The word "Pharmacognosy " was coined by German scientist C.A. Seydler in 1815 in his work Analecta Pharmacognostica.
- The word pharmacognosy is derived from two words, pharmakon means medicine (drug) and gignosco means to acquire knowledge of something.
- "Pharmacognosy is systematic study of crude drugs obtained from natural origin like plant, animal and minerals.
- Pharmacognosy can be defined as branch of science which involves detail study of drugs obtained from natural origin including name, habitat, collection, cultivation, macroscopy, microscopy, physical properties, chemical constituents, therapeutic actions, uses and adulterants."

- # Scope of Pharmacognosy and Phytochemistry
- Pharmacognosy is critical in development of different disciplines of science. The knowledge of plant taxonomy, plant breeding, plant pathology and plant genetics is helpful in the development of cultivation technology for medicinal and aromatic plants. Plant chemistry (phytochemistry) has undergone significant development in recent years as a distinct discipline. It is concerned with the enormous variety of substances that are synthesized and accumulated by plants and the structural elucidation of these substances.
- Extraction, isolation, purification and characterization of phytochemicals from natural sources are important for advancement of medicine system. The knowledge of chemotaxonomy, biogenetic pathways for formation of medicinally active primary and secondary metabolites, plant tissue culture and other related fields is essential for complete understanding of Pharmacognosy.
- One should have the basic knowledge of biochemistry and chemical engineering is essential for development of collection, processing and storage technology of crude drugs.

- Pharmacognosy is important branch of pharmacy which is playing key role in new drug discovery and development by using natural products. Pharmacognosy has given many leads for new drug discovery and development.
- It is an important link between modern medicine systems (allopathy) and traditional system of medicine. It is part medicinal system which is affordable as well as accessible to common man. As part of integrative system of medicine, pharmacognosy can help to increase effectiveness of modern medicine system.
- It is acting as bridge between pharmacology, medicinal chemistry and pharmacotherapeutics and also pharmaceutics. It also bridges pharmaceutics with other pharmacy subjects.
- More than 60 percent of world population is still using natural product for their primary healthcare needs. Pharmacognosy can provide safe and effective drugs in combination with modern medicine system.
- Pharmacognosy includes knowledge about safe use of herbal drugs including toxicity, side effects, drug interaction thereby increasing effectiveness of modern medicine

- Pharmacognosy is the base for development of novel medicines. Most of the compounds obtained from natural product serve as prototype or base for development of new drug which are more active and less toxic.
- By means of pharmacognosy, natural products can be dispensed, formulated and manufactured in dosage forms acceptable to modern system of medicine.
- There are vast number of plant and animal species which are not studied systematically.
- Development of pharmacognosy also leads to development of botany, taxonomy, plant biotechnology, plant genetics, plant pathology, pharmaceutics, pharmacology, phytochemistry and other branches of science