

- Introduction to  
Pharmaco-  
therapeutics

- Dr. Naser Ashraf
- Objectives
- Discuss the history of Pharmacology
- Describe the nature and sources of drugs
- Define various disciplines of Pharmaco-therapeutics
- Hadith
- Abdullah ibn Mas'ud reported: The Messenger of Allah, peace and blessings be upon him,

said, “**Allah the Exalted has not sent down any disease except that He also sent down its cure. Those who know it will know it, and those who do not know it will not know it.**”

- Source: Musnad Ahmad 3912
- History of Pharmacology
- History of pharmacology
- **Hippocrates** (460Bc to 377BC)-  
Father of Medicine
- **Francois magendie**-  
experimental pharmacology

- **Claude bernade**- Father of Modern experimental pharmacology
- **Oswald schmeideberg**- founder of modern pharmacology
- **Jacob Abel** Father of American Pharmacology

**Ancient Books** - dhanavantari,  
chinese materia medica,  
egyptian eber papyrus

- **Oswald Schmiedeberg**
  - **Father of Pharmacology**
- **The nature of drugs**

**Drugs vary in size.** Molecules as small as lithium (MW-7) and as large as alteplase (MW-59050). However, majority of drugs molecular weight range is 100-1000.

**Drugs vary in shape.** the shape of the drug must be complementary to the shape of the receptor to produce an optimum effect.

**Drugs also vary in their chemical nature.** Many drugs are weak acids or weak bases.

- **The nature of drugs**

Drugs may be

- ***Alkaloids***: they are basic nitrogenous substances such as atropine.
- ***Glycosides***: they are consisting of two parts sugar part and nonsugar part e.g. digitalis.
- ***Tannins***: they are basic phenolic non nitrogenous substances such as tannic acid in tea.
- ***Oils***: they include fixed oils such as olive oil and volatile oils such as peppermint oil.

- ***Plant exudates:*** such as resins and gums.
- Sources of drugs
- **Natural**
  - Plants
  - Animals
  - Micro-organisms
  - Minerals
- **Synthetic/semisynthetic**
- **Genetic Engineering  
(Recombinant DNA  
technology)**
- **Drugs obtained from plant  
source**
- Digoxin from digitalis leaves.

- Emetine from ipecacac roots.
- Quinine from cinchona bark.
- Morphine from papaver fruits
- Strychnine from nux vomica seeds
  
- Drugs obtained from animal source
  - Insulin: pig and beef pancreas
  - Thyroid extracts: pig and beef thyroid
  - Heparin: pig intestines and lungs
  - Gonadotropins
  - Anti-toxic sera
  
- Drugs obtained from micro-organisms  
(Antibiotics)

- Penicillin G
  - Cephalosporins
  - Tetracycline, chloramphenicol
  - Polymyxin, aztreonam, Colistin
  
- Drugs obtained from Mineral Source
  - Liquid paraffin: refined white mineral oil
  - Magnesium sulfate
  - Magnesium trisilicate
  - Iron
  
- Human Source
- Immunoglobulin from blood,
- HCG from urine of pregnant women



- 2. Synthetic source
- Advantages:
  - Can control quality
  - Easier & cheaper
- Eg:
  - Aspirin,
  - Paracetamol
  - Phenytoin
  - Amphetamine
  - Sulfonamides
- Recombinant DNA technology (Genetic Engineering)
  - Growth Hormone
  - Insulin

- Hepatitis B Vaccine
  - Interferons
  - Monoclonal antibodies
- IMPORTANT Definitions
- Pharmacology
- It is the Science that deals with study of drugs
- Derived from two Greek words
  - Pharmakon: Drug
  - Logos: Study
- Pharmacy
- Branch of science deals with study of collection, compounding and dispensing

of drugs so as to make them fit for administration to patient.

- Pharmacotherapeutics
- It deals with use of drugs in prevention and treatment of diseases
- PHARMACOGNOSY
- Science of the identification of drug
- Drug
- WHO defines drug as any substance or product that is used or intended to be used to modify or explore physiological systems or pathological states for the benefit of the recipient

- Essential drugs
- According to WHO, essential drugs are those that satisfy the health care needs of majority of the Population ; they should be available at all times in adequate amounts and in appropriate dosage forms
- Orphan drug
- Drugs that are used for the diagnosis, treatment or prevention of rare diseases
- Example: Digoxin antibody, Liothyronine
- Various disciplines of Pharmaco-therapeutics

- **Chemotherapy**- deals with the drugs that kills or inhibit the growth of microorganisms dividing in the body
- **Gene therapy** is the insertion of usually genetically altered genes into cells especially to replace defective genes in the treatment of genetic disorders
- **Stem-cell therapy** is an intervention strategy that introduces new adult **stem cells** into damaged tissue in order to treat disease or injury.

- **Pharmaco-epidemiology-** study of utilization & effect of drugs on large population
- **Pharmacogenomics-** Influence of genetic variation in drug response
- **Pharmacovigilance-** is defined as the science and activities relating to the detection, assessment, understanding and prevention of adverse effects or any other drug-related problem

- **Clinical pharmacology**- study of drugs in human beings
- History of Pharmacology
- Nature and sources of drugs
- Definitions