WELCOME

TO

This is an Education Platform

We Provide PDF Notes for Pharmacy Students

Web Site http://www.fdspharmacy.in/

You tube https://www.youtube.com/c/FDSpharmacy

Telegram https://t.me/Fdspharmacy

App https://play.google.com/store/apps/details?id=com.FDSPharmacyMedia.FDSPharmacy

E-mail fdspharmacyinfo@gmail.com

PHARMACOGNOSY AND PHYTOCHEMISTRY – I

UNIT 1

TOPIC :

- **Classification of drugs :**

  Alphabetical, morphological, taxonomical, chemical, pharmacological, chemo and sero taxonomical classification of drugs

Classification of Crude Drugs

- Natural drugs are obtained from plants, animals, microbes, marine, and mineral sources. For the purpose of systematic study, crude drugs are classified into different systems. Each classification has its own merits and limitations.

The main types are:

1. Alphabetical Classification
2. Morphological Classification
3. Taxonomical Classification
4. Chemical Classification
5. Pharmacological Classification
6. Chemotaxonomical Classification
7. Serotaxonomical Classification

1. Alphabetical Classification

- Drugs are arranged in alphabetical order of their Latin or English names.
- Followed in various Pharmacopoeias.

Examples of Pharmacopoeias:

- **Indian Pharmacopoeia (IP)**
- **British Pharmacopoeia (BP)**
- **United States Pharmacopoeia (USP)**
- **European Pharmacopoeia (EP)**

Example of drugs:

- A – Aconite
- C – Cinchona
- D – Digitalis

Advantages:

- Very simple and easy to use.
- Avoids repetitive entries.

Disadvantages:

- Does not provide information about drug action or therapeutic use.
- Does not mention the source of drug.

2. Morphological Classification

- Drugs are arranged according to the morphological plant parts from which they are derived.

Types:

- **Organized drugs** – obtained directly from plant parts, have cellular structure.
  - Roots: Rauwolfia, Gentian
  - Barks: Cinnamon, Cinchona
  - Leaves: Digitalis, Senna
  - Flowers: Clove, Rose
  - Fruits: Amla, Coriander
  - Seeds: Nux vomica, Castor
- **Unorganized drugs** – do not possess cellular structure, obtained by exudation or extraction.
  - Dried latex: Opium
  - Dried juice: Aloe
  - Dried extracts: Agar
  - Gums: Acacia
  - Resins: Benzoin

Advantages:

- Easy to classify drugs by visible plant parts.
- Useful in studying plant sources.

Disadvantages:

- Does not include synthetic/semi-synthetic drugs.
- Does not classify drugs by therapeutic action.

3. Taxonomical Classification

- Based on biological taxonomy of the source plant/animal.
- Follows hierarchy: Kingdom → Phylum → Class → Order → Family → Genus → Species.

Example: *Strychnos nux-vomica*

- Kingdom: Plantae
- Phylum: Magnoliophyta
- Class: Magnoliopsida
- Order: Gentianales
- Family: Loganiaceae
- Genus: Strychnos
- Species: nux-vomica

Advantages:

- Helps in drug discovery and evolutionary studies.
- Systematic approach.

Disadvantages:

- Requires knowledge of **taxonomy**.
- Limited to natural sources only.

4. Chemical Classification

- Based on the chief chemical constituents present in the drug.
- Very useful for understanding drug properties, mechanism, and metabolism.

Examples:

- **Alkaloids:** Morphine, Quinine
- **Steroids:** Prednisone, Dexamethasone
- **Glycosides:** Digitalis, Senna
- **Tannins:** Pale catechu, Ashoka
- **Volatile oils:** Clove oil, Peppermint oil
- **Lipids:** Castor oil, Beeswax
- **Carbohydrates:** Acacia, Agar
- **Vitamins:** Vitamin C (Amla), Vitamin D (Cod liver oil)

Advantages:

- Easy to study chemical constituents.
- Helps to predict drug interactions and metabolism.

Disadvantages:

- Does not show therapeutic uses.
- Does not specify the source.

5. Pharmacological Classification

- Drugs are classified according to their pharmacological action or therapeutic use.
- Very practical for prescribers and pharmacists.

Examples:

- **Anti-inflammatory:** Turmeric, Mint, Aloe
- **Anti-asthmatic:** Ephedra, Vasaka
- **Anticancer:** Vinca, Taxus (Paclitaxel)
- **Laxatives:** Isabgol, Agar
- **Purgatives:** Senna, Castor oil
- **Expectorants:** Vasaka, Liquorice

Advantages:

- Explains drug action clearly.
- Useful for physicians and pharmacists.

Disadvantages:

- Does not mention chemical nature or biological source.

6. Chemotaxonomical Classification

- Combines principles of taxonomy (biological classification) and phytochemistry (plant chemistry).
- Plants are grouped based on their chemical constituents and taxonomic features.

Examples:

- **Alkaloid-containing plants:**
  - Family Apocynaceae – Rauwolfia serpentina
  - Family Solanaceae – Atropa belladonna

Advantages:

- Provides a scientific and systematic classification.
- Latest method with good scope in drug discovery.

Disadvantages:

- Complex, requires expertise.
- Limited application to natural products.

7. Serotaxonomical Classification

- Based on serological (immunological) properties of plant proteins and antigens.
- Useful for differentiating closely related plant species.

Example:

- Used in identification of varieties of Cinchona species.

Advantages:

- Accurate for distinguishing closely related species.
- Helpful in quality control.

Disadvantages:

- Requires advanced laboratory techniques.
- Limited routine use in pharmacognosy.