

PHARMACOGNOSY- BP405T

UNIT : 1(INRODUTION TO PHARMACOGNOSY)

CLASS:5

TOPIC: Classification of crude Drugs :

Chemical Classification

Depending upon the active constituents, the crude drugs are classified.

The plants contain various constituents in them like alkaloids, glycosides, tannins, carbohydrates, saponins, etc.

Irrespective of the morphological or taxonomical char grouped into the same group.

The examples are characterize certain classes of plants.

This gives birth to entirely a new concept of chemotaxonomy that utilizes chemical facts/characters for understanding the taxonomical status, relationships and the evolution of the plants.

For example :

- Glycosides - Digitalis, senna, cascara, liqourice
- Alkaloids - Nux vomica, ergot, cinchona, datura
- Tannins - Myrobalan, pale catechu, ashoka
- Volatile oils - Peppermint, clove, eucalyptus, garlic
- Lipids - Castor oil, bees wax, lanolin, cod liver oil, kokum butter
- Carbohydrates - Acacia, agar, guar gum, pectin, honey, isapghula
- Resins & resin - Colophony, jalap, Balsam of Tolu
- Vitamins Yeast, Shark liver oil, Oxytocin, Hormones insulin
- Proteins - casein, gelatine, papain, trypsin.
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● **Advantages:**

It s popular approach phytochemical studies

- **Dis advantages:**

This method does not give any idea about source of drug.

5. pharmacological (therapeutic) classification:-

This system of classification involves the grouping of crude drugs, according to the pharmacological action of their chief active constituents or their therapeutic uses

The drugs differing in mechanism of action but with the same pharmacological effect is grouped together

Eg :Bulk purgatives, irritant purgatives, emollient purgative etc.

1, Drugs acting on gastro-intestinal :

Anti-amoebic - Korché, ipecacuanha

Bulk laxatives - Ispaghula, Banana

peptic ulcer treatment-Deneutralizing of hydrochloric Acid (liquorice); Raw banana.

2,Drugs acting on respiratory system.

Anti tussives- Opium (Codeine, Noscapine)

Bronchodilator - Ephedra, Tea (Theophylline)

3, Drugs acting on cardio-vascular system.

Cardio tonics : Digitalis, squill, strophanthus

Vaso contraction - Ergot (ergotamine). Ephedra

Antihypertensive - Rawolfia.

4. Drugs acting on autonomic nervous system :

Adrenergics - Ephedra

Anticholinergics - Belladonna, Datura.

5.Drugs acting on central nervous system.

CNS stimulant - coffee (caffeine).

CNS depressant - Hyoscyamus, Belladonna, opium (morphine)

Anti spasmodic - Smooth muscle relaxants: opium (Papaverine), Datura, Hyoscyamus

Skeletal muscle relaxants : Curare

6 .Anti cancer - Vinca, padophyllum, camptothera, Taxus.

7. Antirheumatics - Aconite, colchicum, Gruggul

8. Anthelmintics - Quassia, Male fern, Vidang

9. Immuno-modulatory agent: Talsi, Ginseng, Asparagus, picrorrhiza kurroa

Advantages : If we know the pharmacological can easily studied codeine .

Dis advantages : Didn't consider their Morphology, taxonomy & chemical relationship

6, chemotaxonomic classification:

The expanding knowledge of phytochemical screening has revealed existence of close relationship between constituents or plants and their taxonomical status

chemotaxonomy establishes a relationship between position of the plant & attempts to utilize chemical facts for more exact understanding of the biological evolution and relationship

The characters more often studied in chemotaxonomy are secondary metabolites of pharmaceutical significance such as alkaloids, glycosides, flavonoids etc.)

*This classification establishes relationship between chemistry & taxonomy by exact choice of group, sound sampling, analysis of chemical content, interpretation & comparison

Eg:- plants of umbelliferae contain volatile oils- Fennel, coriander, Dill

plants & solanace contain - Belladonna, datura, hyoscyamus.

7. serotaxonomical classification:

Serotaxonomical classification of crude drugs uses serology, the study of antigen-antibody reactions, to identify and classify plants based on protein differences, aiding in taxonomy and understanding relationships between species.

This classification involves phytochemistry which contain in-vitro immuno chemical reaction of plant proteins (Antigen/agglutinin) to detect taxonomical logy based on antibodies (agglutinating products) in animals

This method is not gained much importance in plant classification.

The most common approach in Serotaxonomic classification, of plant is 'precipitin reacts' precipitation is antibody that precipitation Commonly used serotaxonomical Agars gels, Rockets Immunoelectrophoresis & Enzyme linked immune - sorbed Assay (ELISA).

QUALITY CONTROL OF DRUGS OF NATURAL ORIGIN :

Quality of herbal drugs are defined as the status of a drug that is determined by its evaluation in terms of identity, purity, content and other physical, chemical and biological properties and manufacturing processes for formulated drugs.

Whereas, quality control involves in processes, involve in maintaining the quality and validity of manufactured products especially for herbal products.

As per Pharmacopoeial definition, the quality control of herbal drugs are based on three terms likely Identity, Purity and Assay.

Identity:

Authentication of the plant is very important to know their particular species.

It is achieved by correct morphology and microscopic examinations.

Identity helps us to recognize the required plant species for the particular experimentation.

Purity: It is mainly safety use of drugs.

The experiments that are required to know the purity is ash values, foreign matters, heavy metals, microbial contamination, aflatoxins, radioactivity, pesticide residue etc.

To determine all these generally chromatographic methods such as Thin Layer Chromatography (TLC), High Performance Liquid

Chromatography (HPLC), Gas Chromatography (GC) are used as analytical methods.

Assay: The content or assay is the most important and difficult part of quality control to perform because the active constituents of most of the herbal drugs are unknown.

Sometimes to determine assay the biomarkers are used as standard drugs but where chemical nature of plants are unknown as well standards are not available then percentage extractable matters with a solvent is used as a form of an assay. Pesticide determination is also required for the safety of the herbal drugs.

. Various impurities are removed by partition and/or adsorption and individual pesticides are measured by GC, MS or GC/MS.

Various parameters for determination of quality control of herbal drugs:

- Macro and microscopic examination.
- Determination of ash value.
- Determination of foreign matters by Lycopodium spore method.
- Determination of heavy metals by atomic absorption spectrophotometer.
- Determination of pesticide residue.

- Determination of microbial contamination.
- Determination of aflatoxin.

Short Answer questions::

- 1.Explain taxonomic classification of crude drugs.
2. Note on Serotaxonomy.
- 3.Define quality of crude drugs.
4. .Define Purity of crude drugs.