

(B. Pharm)
(Semester - IV)

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| Course Code | BP405T |
| Course Title | Pharmacognosy and Phytochemistry I - Theory |

Scope:

The subject involves the fundamentals of Pharmacognosy like scope, classification of crude drugs, their identification and evaluation, phytochemicals present in them and their medicinal properties.

Objectives:

Upon completion of the course the student shall be able to-

1. Know the techniques in the cultivation and production of crude drugs.
2. Know the crude drugs, their uses and chemical nature.
3. Know the evaluation techniques for the herbal drugs.
4. Carry out the microscopic and morphological evaluation of crude drugs.

Course Learning Outcomes (CLO):

At the end of the course, students will be able to -

1. Understand the history and scope of pharmacognosy, various sources of crude drugs and their classification.
2. Describe various aspects of cultivation, collection, processing and storage of herbal drugs.
3. Discuss the technique and applications of plant tissue culture.
4. Explain the role of pharmacognosy in various systems of traditional medicine and classify secondary metabolites.
5. Express the pharmacognostic study of some crude drugs belonging to category of carbohydrates, proteins, lipids, fibres and marine drugs.

Syllabus:

Teaching hours: 45 Hours

UNIT I

10 Hours

Introduction to Pharmacognosy:

Definition, history, scope and development of Pharmacognosy.

Sources of Drugs – Plants, Animals, Marine & Tissue culture.

Organized drugs, unorganized drugs (dried latex, dried juices, dried extracts, gums and mucilages, oleoresins and oleo- gum -resins).

Classification of drugs:

Alphabetical, morphological, taxonomical, chemical, pharmacological, chemo and serotaxonomical classification of drugs.

Quality control of Drugs of Natural Origin:

Adulteration of drugs of natural origin. Evaluation by organoleptic, microscopic, physical, chemical and biological methods and properties.

Quantitative microscopy of crude drugs including lycopodium spore method, leaf constants, camera lucida and diagrams of microscopic objects to scale with camera lucida.

UNIT II

10 Hours

Cultivation, Collection, Processing and storage of drugs of natural origin:

Cultivation and Collection of drugs of natural origin.

Factors influencing cultivation of medicinal plants.

Plant hormones and their applications.

Polyploidy, mutation and hybridization with reference to medicinal plants.

Conservation of medicinal plants.

UNIT III

07 Hours

Plant tissue culture:

Historical development of plant tissue culture, types of cultures, nutritional requirements, growth and their maintenance.

Applications of plant tissue culture in pharmacognosy.

Edible vaccines.

UNIT IV

10 Hours

Pharmacognosy in various systems of medicine:

Role of Pharmacognosy in allopathy and traditional systems of medicine namely, Ayurveda, Unani, Siddha, Homeopathy and Chinese systems of medicine.

Introduction to secondary metabolites:

Definition, classification, properties and test for identification of Alkaloids, Glycosides, Flavonoids, Tannins, Volatile oil and Resins.

UNIT V

08 Hours

Study of biological source, chemical nature and uses of drugs of natural origin containing following drugs.

Plant Products:

Fibers - Cotton, Jute, Hemp

Hallucinogens, Teratogens, Natural allergens

Primary metabolites:

General introduction, detailed study with respect to chemistry, sources, preparation, evaluation, preservation, storage, therapeutic used and commercial utility as Pharmaceutical Aids and/or medicines for the following primary metabolites:

Carbohydrates:

Acacia, Agar, Tragacanth, Honey.

Proteins and Enzymes:

Gelatin, casein, proteolytic enzymes (Papain, bromelain, serratiopeptidase, urokinase, streptokinase, pepsin).

Lipids (Waxes, fats, fixed oils) :

Castor oil, Chaulmoogra oil, Wool Fat, Bees Wax.

Marine Drugs:

Novel medicinal agents from marine sources.

Tutorials

Teaching hours: 15 Hours

Tutorials will be based on above syllabus

Suggested Readings[^]: (Latest Edition)

1. Evans, W.C. *Trease and Evans Pharmacognosy*. London, W.B. Saunders & Co.
2. Tyler, V.E., Brady, L.R. and Robbers, J.E. *Pharmacognosy*. Philadelphia, Lea and Febiger.
3. Wallis, T.E. *Text Book of Pharmacognosy*. London. J&A Churchill Ltd.
4. Ali, M. *Pharmacognosy and Phytochemistry*. New Delhi, CBS Publishers & Distribution.
5. Kokate, C.K. *Text Book of Pharmacognosy*. New Delhi, Nirali Prakashan.
6. Chaudhary, R..D. *Herbal Drug Industry*. New Delhi, Eastern Publisher.
7. Ansari, S.H. *Essentials of Pharmacognosy*. New Delhi. Birla Publications.
8. Kokate, C.K., Gokhale S.B. *Practical Pharmacognosy*. Pune, Nirali Prakashan.
9. Iyengar, M.A., Nayak, S.G. *Anatomy of Crude Drugs*. Career Publications.

L= Lecture, T= Tutorial, P= Practical, C= Credit

[^] this is not an exhaustive list
