

PHARMACOGNOSY – THEORY

Course Code: ER20-13T

75 Hours (3 Hours/week)

Scope: This course is designed to impart knowledge on the medicinal uses of various drugs of natural origin. Also, the course emphasizes the fundamental concepts in the evaluation of crude drugs, alternative systems of medicine, nutraceuticals, and herbal cosmetics.

Course Objectives: This course will discuss the following aspects of drug substances derived from natural resources.

1. Occurrence, distribution, isolation, identification tests of common phytoconstituents
2. Therapeutic activity and pharmaceutical applications of various natural drug substances and phytoconstituents
3. Biological source, chemical constituents of selected crude drugs and their therapeutic efficacy in common diseases and ailments
4. Basic concepts in quality control of crude drugs and various system of medicines
5. Applications of herbs in health foods and cosmetics

Course Outcomes: Upon successful completion of this course, the students will be able to

1. Identify the important/common crude drugs of natural origin
2. Describe the uses of herbs in nutraceuticals and cosmeceuticals
3. Discuss the principles of alternative system of medicines
4. Describe the importance of quality control of drugs of natural origin

Chapter	Topic	Hours
1	Definition, history, present status and scope of Pharmacognosy	2
2	Classification of drugs: <ul style="list-style-type: none">● Alphabetical● Taxonomical● Morphological● Pharmacological● Chemical● Chemo-taxonomical	4
3	Quality control of crude drugs: <ul style="list-style-type: none">● Different methods of adulteration of crude drugs● Evaluation of crude drugs	6

4	Brief outline of occurrence, distribution, isolation, identification tests, therapeutic activity and pharmaceutical applications of alkaloids, terpenoids, glycosides, volatile oils, tannins and resins.	6																																						
5	<p>Biological source, chemical constituents and therapeutic efficacy of the following categories of crude drugs.</p> <table border="1" data-bbox="352 445 1289 1693"> <tr> <td data-bbox="352 445 715 488">Laxatives</td> <td data-bbox="715 445 1289 488">Aloe, Castor oil, Ispaghula, Senna</td> </tr> <tr> <td data-bbox="352 488 715 530">Cardiotonic</td> <td data-bbox="715 488 1289 530">Digitalis, Arjuna</td> </tr> <tr> <td data-bbox="352 530 715 663">Carminatives and G.I. regulators</td> <td data-bbox="715 530 1289 663">Coriander, Fennel, Cardamom, Ginger, Clove, Black Pepper, Asafoetida, Nutmeg, Cinnamon</td> </tr> <tr> <td data-bbox="352 663 715 745">Astringents</td> <td data-bbox="715 663 1289 745">Myrobalan, Black Catechu, Pale Catechu</td> </tr> <tr> <td data-bbox="352 745 715 878">Drugs acting on nervous system</td> <td data-bbox="715 745 1289 878">Hyoscyamus, Belladonna, Ephedra, Opium, Tea leaves, Coffee seeds, Coca</td> </tr> <tr> <td data-bbox="352 878 715 920">Anti-hypertensive</td> <td data-bbox="715 878 1289 920">Rauwolfia</td> </tr> <tr> <td data-bbox="352 920 715 963">Anti-tussive</td> <td data-bbox="715 920 1289 963">Vasaka, Tolu Balsam</td> </tr> <tr> <td data-bbox="352 963 715 1005">Anti-rheumatics</td> <td data-bbox="715 963 1289 1005">Colchicum seed</td> </tr> <tr> <td data-bbox="352 1005 715 1048">Anti-tumour</td> <td data-bbox="715 1005 1289 1048">Vinca, Podophyllum</td> </tr> <tr> <td data-bbox="352 1048 715 1090">Antidiabetics</td> <td data-bbox="715 1048 1289 1090">Pterocarpus, Gymnema</td> </tr> <tr> <td data-bbox="352 1090 715 1133">Diuretics</td> <td data-bbox="715 1090 1289 1133">Gokhru, Punarnava</td> </tr> <tr> <td data-bbox="352 1133 715 1176">Anti-dysenteric</td> <td data-bbox="715 1133 1289 1176">Ipecacuanha</td> </tr> <tr> <td data-bbox="352 1176 715 1258">Antiseptics and disinfectants</td> <td data-bbox="715 1176 1289 1258">Benzoin, Myrrh, Neem, Turmeric</td> </tr> <tr> <td data-bbox="352 1258 715 1301">Antimalarials</td> <td data-bbox="715 1258 1289 1301">Cinchona, Artemisia</td> </tr> <tr> <td data-bbox="352 1301 715 1344">Oxytocic</td> <td data-bbox="715 1301 1289 1344">Ergot</td> </tr> <tr> <td data-bbox="352 1344 715 1386">Vitamins</td> <td data-bbox="715 1344 1289 1386">Cod liver oil, Shark liver oil</td> </tr> <tr> <td data-bbox="352 1386 715 1469">Enzymes</td> <td data-bbox="715 1386 1289 1469">Papaya, Diastase, Pancreatin, Yeast</td> </tr> <tr> <td data-bbox="352 1469 715 1601">Pharmaceutical Aids</td> <td data-bbox="715 1469 1289 1601">Kaolin, Lanolin, Beeswax, Acacia, Tragacanth, Sodium alginate, Agar, Guar gum, Gelatine</td> </tr> <tr> <td data-bbox="352 1601 715 1693">Miscellaneous</td> <td data-bbox="715 1601 1289 1693">Squill, Galls, Ashwagandha, Tulsi, Guggul</td> </tr> </table>	Laxatives	Aloe, Castor oil, Ispaghula, Senna	Cardiotonic	Digitalis, Arjuna	Carminatives and G.I. regulators	Coriander, Fennel, Cardamom, Ginger, Clove, Black Pepper, Asafoetida, Nutmeg, Cinnamon	Astringents	Myrobalan, Black Catechu, Pale Catechu	Drugs acting on nervous system	Hyoscyamus, Belladonna, Ephedra, Opium, Tea leaves, Coffee seeds, Coca	Anti-hypertensive	Rauwolfia	Anti-tussive	Vasaka, Tolu Balsam	Anti-rheumatics	Colchicum seed	Anti-tumour	Vinca, Podophyllum	Antidiabetics	Pterocarpus, Gymnema	Diuretics	Gokhru, Punarnava	Anti-dysenteric	Ipecacuanha	Antiseptics and disinfectants	Benzoin, Myrrh, Neem, Turmeric	Antimalarials	Cinchona, Artemisia	Oxytocic	Ergot	Vitamins	Cod liver oil, Shark liver oil	Enzymes	Papaya, Diastase, Pancreatin, Yeast	Pharmaceutical Aids	Kaolin, Lanolin, Beeswax, Acacia, Tragacanth, Sodium alginate, Agar, Guar gum, Gelatine	Miscellaneous	Squill, Galls, Ashwagandha, Tulsi, Guggul	30
Laxatives	Aloe, Castor oil, Ispaghula, Senna																																							
Cardiotonic	Digitalis, Arjuna																																							
Carminatives and G.I. regulators	Coriander, Fennel, Cardamom, Ginger, Clove, Black Pepper, Asafoetida, Nutmeg, Cinnamon																																							
Astringents	Myrobalan, Black Catechu, Pale Catechu																																							
Drugs acting on nervous system	Hyoscyamus, Belladonna, Ephedra, Opium, Tea leaves, Coffee seeds, Coca																																							
Anti-hypertensive	Rauwolfia																																							
Anti-tussive	Vasaka, Tolu Balsam																																							
Anti-rheumatics	Colchicum seed																																							
Anti-tumour	Vinca, Podophyllum																																							
Antidiabetics	Pterocarpus, Gymnema																																							
Diuretics	Gokhru, Punarnava																																							
Anti-dysenteric	Ipecacuanha																																							
Antiseptics and disinfectants	Benzoin, Myrrh, Neem, Turmeric																																							
Antimalarials	Cinchona, Artemisia																																							
Oxytocic	Ergot																																							
Vitamins	Cod liver oil, Shark liver oil																																							
Enzymes	Papaya, Diastase, Pancreatin, Yeast																																							
Pharmaceutical Aids	Kaolin, Lanolin, Beeswax, Acacia, Tragacanth, Sodium alginate, Agar, Guar gum, Gelatine																																							
Miscellaneous	Squill, Galls, Ashwagandha, Tulsi, Guggul																																							
6	<p>Plant fibres used as surgical dressings: Cotton, silk, wool and regenerated fibres</p> <p>Sutures – Surgical Catgut and Ligatures</p>	3																																						
7	<p>● Basic principles involved in the traditional systems of medicine like: Ayurveda, Siddha, Unani and Homeopathy</p> <p>● Method of preparation of Ayurvedic formulations like: Arista, Asava, Gutika, Taila, Churna, Lehya and Bhasma</p>	8																																						

8	Role of medicinal and aromatic plants in national economy and their export potential	2
9	Herbs as health food: Brief introduction and therapeutic applications of: Nutraceuticals, Antioxidants, Pro-biotics, Pre-biotics, Dietary fibres, Omega-3-fatty acids, Spirulina, Carotenoids, Soya and Garlic	4
10	Introduction to herbal formulations	4
11	Herbal cosmetics: Sources, chemical constituents, commercial preparations, therapeutic and cosmetic uses of: Aloe vera gel, Almond oil, Lavender oil, Olive oil, Rosemary oil, Sandal Wood oil	4
12	Phytochemical investigation of drugs	2

PHARMACOGNOSY – PRACTICAL

Course Code: ER20-13P

75 Hours (3 Hours/week)

Scope: This course is designed to train the students in physical identification, morphological characterization, physical and chemical characterization, and evaluation of commonly used herbal drugs.

Course Objectives: This course will provide hands-on experiences to the students in

1. Identification of the crude drugs based on their morphological characteristics
2. Various characteristic anatomical characteristics of the herbal drugs studied through transverse section
3. Physical and chemical tests to evaluate the crude drugs

Course Outcomes: Upon successful completion of this course, the students will be able to

1. Identify the given crude drugs based on the morphological characteristics
2. Take a transverse section of the given crude drugs
3. Describe the anatomical characteristics of the given crude drug under microscopical conditions
4. Carry out the physical and chemical tests to evaluate the given crude drugs

Practicals

1. Morphological Identification of the following drugs:

Ispaghula, Senna, Coriander, Fennel, Cardamom, Ginger, Nutmeg, Black Pepper, Cinnamon, Clove, Ephedra, Rauwolfia, Gokhru, Punarnava, Cinchona, Agar.

2. Gross anatomical studies (Transverse Section) of the following drugs:

Ajwain, Datura, Cinnamon, Cinchona, Coriander, Ashwagandha, Liquorice, Clove, Curcuma, Nux_vomica, Vasaka

3. Physical and chemical tests for evaluation of any FIVE of the following drugs:

Asafoetida, Benzoin, Pale catechu, Black catechu, Castor oil, Acacia, Tragacanth, Agar, Guar gum, Gelatine.

Assignments

The students shall be asked to submit the written assignments on the following topics (One assignment per student per sessional period. i.e., a minimum of THREE assignments per student)

1. Market preparations of various dosage forms of Ayurvedic, Unani, Siddha, Homeopathic (Classical and Proprietary), indications, and their labelling requirements
2. Market preparations of various herbal formulations and herbal cosmetics, indications, and their labelling requirements
3. Herb-Drug interactions documented in the literature and their clinical significances

Field Visit

The students shall be taken in groups to a medicinal garden to witness and understand the nature of various medicinal plants discussed in theory and practical courses. Additionally, they shall be taken in groups to the pharmacies of traditional systems of medicines to understand the availability of various dosage forms and their labelling requirements. Individual reports from each student on their learning experience from the field visit shall be submitted.