



UNIVERSITY OF NICOSIA

ΠΑΝΕΠΙΣΤΗΜΙΟ ΛΕΥΚΩΣΙΑΣ

Course Code PHAR-360	Course Title Pharmacognosy and Chemistry of Natural Products I/Φαρμακογνωσία και Χημεία Φυσικών Προϊόντων I	Credits (ECTS) 6
Department Life & Health Sciences	Semester Fall	Prerequisites PHAR151
Type of Course Required	Field Pharmacy	Language of Instruction Greek/English
Level of Course 1 st Cycle	Year of Study 3 rd year	Lecturer Christos Petrou/ Staff
Mode of Delivery face-to-face	Work Placement N/A	Co-requisites None

Objectives of the Course:

Drugs important in Pharmacy and medicine which are derived from natural products. This course covers their isolation (extraction), chemical constitution, biochemical nature, and physiological actions. The course will also incorporate the study of herbal medicine.

The module includes main topics of Botany.

Learning Outcomes:

After completion of the course students are expected to:

1. to explain the origin of drugs from natural sources.
2. to explain the role of natural products as the source of many drugs and pharmaceutical ingredients
3. to identify some drugs available in the healthcare system that are obtained or sourced from natural products.
4. to discuss the occurrences of side effects, overdose and interactions with Herbal products which occur frequently for which a patient may seek medical care
5. to discuss the processes of standardization of natural products following WHO and other existing guidelines
6. The students will be able to explain the role of the pharmacist in the use of Herbal medicine and other natural products including nutraceuticals.
7. to describe and prepare a herbarium specimen
8. Know the important natural products, their origin, properties and biological activity;
9. Know the common adulterations;
10. Know the contribution of natural products in drug design and development of new drugs with hemisynthetic routes or with total synthesis

Course Contents:

Appearance, anatomical, histochemical characteristics of each plant product, distribution in the plant, binomial botanical name of the producing plant and its family. Description of the plant and its phytogeography. Action and use of the plant products and their main active constituents. Control and assays for detecting adulteration, i.e. physical state, appearance, anatomical characteristics and chemical analysis. Emphasis will be given to plants used as crude therapeutic agents for extraction of the active material, or used as such, e.g. for obtaining anticancer, antiviral or antineurodegenerative drugs.

Primary metabolites such as carbohydrates and derivatives, e.g. glycosides, proteins, lipids, and secondary metabolites, such as terpenoids, steroids, polyphenols (phenolic acids, alcohols, esters, flavonoids, coumarins, anthraquinones, tannins), essential oils, alkaloids, pigments, vitamins. Appearance, anatomical, histochemical characteristics of each plant product, distribution in the plant, binomial botanical name of the producing plant and its family.

Medicinal and aromatic plants of Cyprus.

a) Laxatives: Aloes, Rhuburb, Castor oil, Ispaghula, Senna

b) Cardiotonics – Digitalis, Arjuna

c) Carminatives & G.I. regulators – Umbelliferous fruits, Coriander, Fennel, Ajowan, Cardamom, Ginger, Black pepper, Asafoetida, Nutmeg, Cinnamon, Clove.

d) Catechu

e) Resins: Study of Drugs Containing Resins and Resin Combination like Colophony, podophyllum, jalap, cannabis, capsicum, myrrh, asafoetida, balsam of tolu, balsam of peru, benzoin, turmeric, ginger

Indicative lab exercises

Exercises 1: Microscopic and physicochemical properties of starch; Microscopic and chemical examination of fibres;

Exercise 2-4: Isolation of hesperidin, narignin and pectin from citrus species

Exercise 5: Identification of carbohydrates

Exercise 6: Isolation of the dyes contained to spinach.

Learning Activities and Teaching Methods:

Lectures, class discussion, assignments

Assessment Methods:

Final Examination, Course work

Required Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
G. Samuelson	Drugs of Natural Origin, A textbook of Pharmacognosy	Μετάφραση στα Ελληνικά, Πανεπιστημιακές Εκδόσεις Κρήτης		
X. Σουλελής	Φαρμακογνωσία	Εκδόσεις	2000	

		Πήγασος		
M. Heinrich, J. Barnes, S. Gibbons, E. Williamson	Fundamentals of Pharmacognosy and Phytotherapy	Churchill Livingstone	2006	

Recommended Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
K.B.G. Torsell	"Natural Product Chemistry A mechanistic, biosynthetic and ecological approach	Swedish Pharmaceutical Society		