

POLI ESCOLA SUPERIOR SAÚDE TÉCNICO GUARDA	SUBJECT DESCRIPTION	MODELO PED.015.03
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<i>Course</i>	Pharmacy					
<i>Subject</i>	Pharmacognosy					
<i>Academic year</i>	2023/2024	<i>Curricular year</i>	2nd	<i>Study period</i>	1st semester	
<i>Type of subject</i>	Compulsory	<i>Student workload (H)</i>	Total: 94,5	Contact: 55	<i>ECTS</i>	3.5
<i>Professors</i>	Karolline Krambeck e Sandra Cristina do Espirito Santo Ventura					
<input checked="" type="checkbox"/> <i>Area/Group Coordinator</i> <input type="checkbox"/> <i>Head of Department</i>		Sandra Cristina do Espirito Santo Ventura				

PLANNED SUBJECT DESCRIPTION

1. LEARNING OBJECTIVES

Students are expected to achieve the following educational goals:

- O1 – Recognize Pharmacognosy as a multidisciplinary science that studies drugs of natural origin;
- O2 – Identify the role of drugs of natural origin in current therapy, either as sources of new drugs or as prototypes or leader compounds.
- O3 – Recognize the main metabolic pathways for obtaining secondary metabolites, which have biological and pharmacological activities;
- O4 – Classify secondary metabolites into classes and subclasses of compounds, according to the proper nomenclature;
- O5 – Identify and characterize the chemical constituents present in the studied drugs of natural origin.
- O6 – Relate the chemical composition with the different activities of drugs of natural origin.

2. PROGRAMME

- 1) Introduction to Pharmacognosy. Importance of drugs of natural origin in therapy.
- 2) Biosynthesis of primary and secondary metabolites.
 - a) Sugars as first metabolites: Calvin cycle
 - b) Shikimic acid route.
 - c) Acetate-malonate route.
 - d) Acetate-mevalonate route.
 - e) Formation of alkaloids.
- 3) Chemical constituents of natural drugs.
 - a) Drugs with aliphatic acids.
 - b) Fatty drugs.
 - c) Drugs with essential oils.
 - d) Resin drugs.
 - e) Vegetable tars and coals.
 - f) Drugs containing anthraquinones.
 - g) Drugs containing saponins.
 - h) Drugs containing holosides and heterosides.
 - i) Drugs containing alkaloids.
 - j) Drugs containing phenolic compounds.
- 4) Monographic study of selected plants.

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LABORATORIAL CONTENT

PL1 – Methods of Extraction of bioactive compounds from selected plants

PL2 – Identification and qualitative analysis of flavonoids and anthraquinones in selected plants. Analysis of honey.

PL3 - Extraction of caffeine from tea (*Camellia sinensis*) and coffee plants

PL4 - Sensory analysis of selected aromatic plants

3. COHERENCE BETWEEN PROGRAMME AND OBJECTIVES

In order for students to understand and identify the importance of pharmacognosy and drugs of natural origin (point 1; O1 and O2), it is essential that they understand the formation of secondary metabolites and their chemical characterization (point 2; O3) to that, later, correlate the chemical structures with the biological and/or pharmacological activity (point 3; O4). The study of the monographs of selected plants allows the correct characterization of drugs of natural and plant origin (point 4; O5 and O6), namely as to their origin and methods of obtaining them, their chemical composition, structure and the amount of active constituents present, its pharmacological action and therapeutic indications, according to the pharmaceutical forms and routes of administration of the drug. Practical and laboratory classes allow the consolidation of knowledge acquired in theoretical and theoretical-practical classes (O3 to O6).

4. MAIN BIBLIOGRAPHY

Proença da Cunha A. (2006). Farmacognosia e Fitoquímica. Fundação Calouste Gulbenkian.

Proença da Cunha A., Pereira da Silva A., Roque O. (2012). Plantas e produtos vegetais em fitoterapia. Fundação Calouste Gulbenkian.

Costa A. (2002). Farmacognosia, vols. I e II, Fundação Calouste Gulbenkian.

Bruneton J. (1999). Pharmacognosie, phytochimie. Plantes medicinales, 3^a ed., Paris. Tec & Doc.

Williamson E, Driver S and Baxter K. (2009). Stockley's Herbal Medicines Interactions. Pharmaceutical Press.

Samuelsson G. (2004). Drugs of Natural Origin. A textbook of Pharmacognosy. 5th Ed. Swedish Pharmaceutical Press.

5. TEACHING METHODOLOGIES (INCLUDING EVALUATION)

The teaching methodologies are suitable for theoretical teaching, with masterly exposition of contents, theoretical-practical teaching, with targeted content research, and practical teaching, with the development of laboratory activities for the application of knowledge.

The UC has a theoretical, theoretical-practical and practical assessment. Theoretical assessment results from the completion of written tests that focus on the theoretical contents taught (70%). The theoretical-practical evaluation results from the presentation of a work related to drugs of natural origin and its bioactive compounds (14%). The practical and laboratory evaluation results from the performance of laboratory activities and the delivery of written reports on the developed experiences (16%).

Approval for attendance in the curricular unit is obtained with a final grade of at least 10 values, on a scale from 0 to 20, obtained from the sum of the partial evaluations.

6. COHERENCE BETWEEN TEACHING METHODOLOGIES AND OBJECTIVES

The curricular unit is structured in theoretical classes (30h), theoretical-practical (15h) and practical and laboratory classes (10h). In lectures, an expository methodology is used, encouraging participation and critical analysis of the themes and facts presented. The study of secondary metabolic pathways for obtaining

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active metabolites in plants and the study of drug monographs is done in a masterly and expository way, using audiovisual means. The use of images allows to elucidate the relevant chemical structures for a correct correlation with their activity. In the theoretical-practical classes an applied methodology is used, encouraging students to research, investigate and develop methodologies suitable for the learning process. The search for scientific articles and technical and scientific information in selected databases allows the development of research, investigation and knowledge application skills in the proposed activities. The realization of experiences in practical and laboratory classes allow the integration and consolidation of knowledge acquired in theoretical and theoretical-practical classes.

As active learning activities, questions are raised for the integration of the contents presented, creating a space for debate and for solving doubts. At the beginning of each class, the key points of the summary will be identified, highlighting the importance of the contents as learning objectives, and a brief summary of the contents presented and studied in the previous class will be made. The recommended bibliography can be complemented with suggestions for reading scientific articles adapted to each theme.

The assessment system, defined to assess the skills developed and the knowledge acquired, includes the assessment of the different components and highlights the close correlation between the contents taught and the teaching/learning methodologies used.

A written evaluation, with direct questions and development, allowed evaluating the knowledge acquired by the students, and the theoretical-practice evaluation, the integration of the knowledge, allowing students to develop critical thinking and apply the knowledge acquired.

7. ATTENDANCE

The theoretical-practical (TP) and laboratory practices (PL) classes were mandatory, with the absence limit being 25% of the number of hours assigned to each class. Students with special status (student workers, association directors and others included in the regulation) were also subject to the same type of mandatory presence in classes.

8. CONTACTS AND OFFICE HOURS

Karolline Krambeck (karolline@ipg.pt)

Office hours: Tuesday: 13.30-15:30pm

Sandra Cristina Ventura; scventura@ipg.pt; Office 9 in ESS-IPG


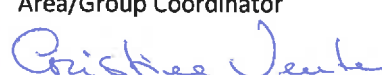
Office hours: Tuesday: 9-11 am and Thursday: 9.30-11.30am

DATE


12 de outubro de 2023

SIGNATURES

Area/Group Coordinator

 
 (Sandra Cristina Espirito Santo Ventura)

Professor

 
 (Karolline Krambeck)

