DESDE 1902
INSTITUTO DE HIGIENE E
MEDICINA TROPICAL
UNIVERSIDADE NOVA DE LISBOA

MEDICINAL PLANTS AND NATURAL PRODUCTS IN PARASITOLOGY

Curricular Unit (CU) characterization

CU name:
Medicinal Plants and Natural Products In Parasitology

Scientific area acronym:
PM
Duration:
Modular
Working hours:
56
Contact hours:
32
ECTS:
2

Observations:
Optional CU

Teachers in charge of CU:
Sofia Cortes - 18 hours

Other teachers:
Fátima Nogueira - 3 hours
Maria Luísa Lobo - 4 hours
Pedro Ferreira - 8 hours
Invited teachers - 5 hours

Intended learning outcomes:
At the end of this curricular unit, students should be able to:

1. Evaluate the importance of ethnobotany of medicinal plants.
2. Identify different methods of treating biological material to isolate and characterize biological extracts and identify natural products.
3. Describe different applications of medicinal plants with an emphasis on parasitology.
4. Perform and interpret bioassays, specifically tests to evaluate antiparasitic activity.
5. Critically analyse scientific ethnopharmacological studies on the use of medicinal plants applied to parasitology, understanding the challenges for the development of new phytotherapeutics.

CU contents:

I. Traditional medicine, ethnobotany, and phytotherapy with application in Medical Parasitology.
II. Isolation, purification, and identification of natural products.
III. Libraries of extracts, natural products, and other chemical compounds.
IV. Search for therapeutic targets in Medical Parasitology.
V. Bioassays of plant extracts in models of helminthology and protozoology.
VI. Elaboration of theoretical-practical exercises to consolidate acquired knowledge.
VII. Presentation of studies using natural products in different areas of parasitology (helminthology, protozoology, and entomology).
VIII. Seminar on the use of natural products in various areas of research and biomedicine.
VII. Practical exercises and final exam to consolidate and evaluate acquired knowledge.

Evidence of the syllabus coherence with the CU intended learning outcomes:

Learning objectives 1, 2, and 3 are interrelated with content I to IV and VII; objective 4 is related to content V and VI through the performance of laboratory techniques in the practical component of the CU; objective 5 reflects content VII and VIII where examples and applications of natural products in Parasitology are presented.

Teaching methodologies and Assessment:

This CU aims to transmit theoretical knowledge and practical skills on several tools used in the processing and use of natural products with emphasis in medical parasitology, through expository, interrogative, demonstrative and active methodologies.
The CU will consist of theoretical classes (9h), theoretical-practical (3h), practical laboratory (6h), tutorials (8h) and seminar (6h). In the theoretical-practical classes there will be use of online tools, gamification and exercises will be carried out in class and/or on moodle to consolidate knowledge. In the practical sessions, students, in groups, will have the opportunity to perform different laboratory techniques and discuss the results. The Seminar will be an opportunity for students to select and present studies with application of natural products in parasitology integrating with the concepts acquired in the CU.

The final evaluation of the CU consists of:

- Active participation in practical classes with execution of exercises and/or proposed report (weighting of 20%);
- Active participation in the Lecture presentation of studies with natural compounds (weighting 10%);
- Presentation of a scientific article related to the area of the CU, in poster format, in the context of the Seminar (weighting 70%).

To obtain attendance in the Curricular Unit, attendance in at least 75% of the taught classes and a final average ≥ 10 values is mandatory.
For students who fail or want to improve, there will be a second-chance exam that will count 100% of the UC grade.

The grade for the practical component can be carried over to the following year in case of failure in the CU.

References for consultation / mandatory existence:

- Beneke T., et al (2017). A CRISPR Cas9 high-throughput genome editing toolkit for kinetoplastids. Royal Society Open Science 10.1098/rsos.170095. https://doi.org/10.1098/rsos.170095
- Rocha, R., Pereira, A., & Maia, C. (2023). A global perspective on non-autochthonous canine and feline Leishmania infection and leishmaniosis in the 21st century. Acta tropica, 237, 106710. https://doi.org/10.1016/j.actatropica.2022.106710
- Alten B et al. (2016). Seasonal dynamics of Phlebotomine sand fly proven vectors of Mediterranean Leishmaniasis caused by *Leishmania infantum*. *Plos NTD*, 10, 2. http://dx.doi.10.1371/journal.pntd.0004458
- Van der Auwera G et al. (2016). Comparison of Leishmania typing results obtained from 16 European clinical laboratories in 2014. Euro surveillance: bulletin Europeen sur les maladies transmissibles = European communicable disease bulletin, 21(49), 30418. https://doi.org/10.2807/1560-7917.ES.2016.21.49.30418
- Maia C et al. (2009). Diagnosis of canine leishmaniasis: Conventional and molecular techniques using different tissues. Vet J, 179: 142-144. DOI: 10.1016/j.tvjl.2007.08.009

Teaching language:

Portuguese

Classrooms/institution:

IHMT