

Course Unit	Evaluation of biological activity	Field of study	Biotechnology
Master in	Applied Health Sciences - Biotechnology	School	School of Health
Academic Year	2023/2024	Year of study	1
Type	Semestral	Semester	2
Level	2-1	ECTS credits	4.5
Code	5055-669-1201-00-23		
Workload (hours)	121,5	Contact hours	T - TP - PL - TC - S - E - OT - O 42

T - Lectures; TP - Lectures and problem-solving; PL - Problem-solving, project or laboratory; TC - Fieldwork; S - Seminar; E - Placement; OT - Tutorial; O - Other

Name(s) of lecturer(s) Josiana Adelaide Vaz, Marcio Soares Carochó

Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:

1. Recognize the importance of bioactivity of natural products
2. To know the basic mechanisms of antioxidant activity, anticancer, anti-inflammatory, antimicrobial, antimalarial, analgesic activity
3. Relate biological activity to bioactive compounds
4. Distinguish in vivo, in vitro and ex vivo bioassay evaluation procedures
5. Apply in vitro screening techniques for evaluating the biological activity of natural products
6. Analyze and discuss experimental results

Prerequisites

Not applicable

Course contents

From the screening of biological activity of natural products to the drug Molecular modeling and prediction of bioactivity Bioactivity of matrices and natural products In vivo, in vitro and ex vivo bioactivity evaluation procedures

Course contents (extended version)

1. From the screening of biological activity of natural products to the drug
2. Molecular modeling and prediction of bioactivity
3. Bioactivity of matrices and natural products
 - Antioxidant, anticancer, anti-inflammatory activities
 - Antimicrobial, antimalarial, analgesic and antihypertensive activities
 - Basic mechanisms and related bioactive compounds
4. In vivo, in vitro and ex vivo bioactivity evaluation procedures
 - In vitro screening techniques for assessing biological activity
 - Cell culture
 - In vivo and ex vivo assays involving animal experimentation
5. In the laboratory component: screening of biological activity in several matrices, namely:
 - antioxidant, antimicrobial and antitumor activities,
 - establishing a correlation between those activities and the chemical composition of the extracts.

Recommended reading

1. Rahman A. , Choudhary M. I. , Thompson W. Bioassay Techniques for Drug Development. 2001. Harwood Academic Publishers.
2. William A. Pryor. Bio-Assays for Oxidative Stress Status. 2001. Elsevier
3. Vogel, Hans G. Drug Discovery and Evaluation: Pharmacological Assays. 2008. 3ª Ed. Springer Willow
4. J. H. Liu. Traditional Herbal Medicine Research Methods: Identification, Analysis, Bioassay, and Pharmaceutical and Clinical Studies. 2011

Teaching and learning methods

The lectures are taught using videoconferencing technology and shared with Professor sónia Miguel from IPG. The lecture, tutorial, demonstrative, active, problem solving and simulation methods are integrated in the different types of teaching learning: theoretical-practical (TP), practical and laboratory (PL), and tutorial orientation.

Assessment methods

- Unique Alternative - (Regular, Student Worker) (Final, Supplementary, Special)
- Development Topics - 60% (Portfolio of biological activities from a matrix of choice. Communication written on poster.)
- Presentations - 40% (Pitch model presentation)

Language of instruction

Portuguese, with additional English support for foreign students.

Electronic validation

Josiana Adelaide Vaz, Marcio Soares Carochó	Ana Maria Geraledes Rodrigues Pereira	Luis Migue Fernandes Nascimento	Adília Maria Pires da Silva Fernandes
18-04-2024	30-04-2024	30-04-2024	10-05-2024