



UNIVERSITÀ  
DEGLI STUDI DI MILANO-BICOCCA

## COURSE SYLLABUS

### Bioactivity in Biological Models

2324-1-F0601Q110-F0601Q115M

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#### Aims

Knowledge and understanding

This teaching module, which is the last module of the "One Health Laboratory: from the environment to health" aims to evaluate the effect of the plant extracts obtained in the "Approaches for the study of natural bioactive molecules" laboratory. The goal is to test their antioxidant and neuroprotective properties in specific cellular systems. The student will acquire the skills to evaluate if the purified extracts/molecules represent resources for disease prevention and if they can be considered bioactive molecules to be used in the nutraceutical and food context.

Capacity

Thanks to the attendance of the laboratory, the student will learn to know and use the instruments present in a cellular biology laboratory and to perform various functional assays, including enzymatic assays, cell viability and cell death assays.

Autonomy of judgment

Develop the skills to verify the effect of the bioactive molecules present in the extracts for their potential use in the nutraceutical, cosmetic and pharmaceutical sectors.

Communication skills

This teaching module aims to provide to the student the ability to clearly and correctly describe the topics covered during the course, using an appropriate technical language, clarity and synthesis skills.

#### Contents

The third part of the "One Health Laboratory: from the environment to health" involves the study of the effects of biodiversity and natural substances such as anti-oxidant and anti-neurodegenerative in a context of prevention and well-being.

## **Detailed program**

This third part of the "One Health Laboratory: from the environment to health" course will lead the student to understand the resources can be found in biodiversity in terms of bioactive metabolites able of promoting well-being and preventing disease.

The vitality of specific cellular systems will be assessed in the presence of the obtained extracts, including the antioxidant properties by also testing the activity of some enzymes involved in cellular defense against oxidative stress. The properties of the plant extracts will also be considered according to their effectiveness in reducing the levels of reactive oxygen species. Finally, specific markers of cell apoptosis will be investigated by western blot assays to evaluate the protective effect of the extracts.

## **Prerequisites**

Knowledge of chemistry, biochemistry and botany, for a full understanding of the lessons, but also to be able to carry out laboratory activities.

## **Teaching form**

Mainly laboratory activity.

## **Textbook and teaching resource**

The teaching material consists of slides shown in class which will be provided on the teaching e-learning platform.

## **Semester**

Second semester.

## **Assessment method**

The knowledge acquired during the course will be assessed through an oral exam, contemporary to the other modules of the teaching, which has the objective of verifying the acquisition of the expected knowledge according to what is detailed in the objectives of the course, the ability to discuss the program using the appropriate terminology. The final evaluation will be carried out through an oral exam with three-four questions in order to ascertain the understanding of the theoretical topics and of the experiments carried out in the laboratory.

## **Office hours**

By appointment by writing to the teacher: [paola.cocchetti@unimib.it](mailto:paola.cocchetti@unimib.it).

## **Sustainable Development Goals**

GOOD HEALTH AND WELL-BEING | QUALITY EDUCATION

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