

63005 - Detection and evaluation of antimicrobial compounds in foods

Información del Plan Docente

Academic Year	2016/17
Academic center	105 - Facultad de Veterinaria
Degree	566 - Master's in Food Quality, Safety and Technology
ECTS	3.0
Course	1
Period	First semester
Subject Type	Optional
Module	---

1.Basic info

1.1.Recommendations to take this course

1.2.Activities and key dates for the course

2.Initiation

2.1.Learning outcomes that define the subject

2.2.Introduction

3.Context and competences

3.1.Goals

3.2.Context and meaning of the subject in the degree

3.3.Competences

3.4.Importance of learning outcomes

4.Evaluation

5.Activities and resources

5.1.General methodological presentation

The learning process that is designed for this course is based on the following:

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The theoretical teaching of this course presents the fundamentals for the detection and evaluation of the antimicrobial activity of the main naturally occurring compounds and their application in food. In the practical sessions students tested in the laboratory the study of the activity against different pathogens, both "in vitro" as in a food matrix. To do this, they have a detailed experimental protocol and the direct supervision of teachers.

The student participation will be encouraged in the presentation of the work sessions and in the results and conclusions of practical sessions

5.2.Learning activities

1. Theoretical class, where the foundations for the detection and evaluation of the antimicrobial activity of the main naturally occurring compounds and their application in food are presented.
2. Practical sessions, in which students tested in the laboratory to study the activity against different pathogens, both "in vitro" as in a food matrix. To do this, they have a detailed process steps and the direct supervision of teachers experimental protocol.
3. Teachers work in which students draw up individually or in groups work on a topic related to the subject, by the selection and interpretation of several current scientific literature. The work carried out under the supervision of a teacher of the subject.
4. Seminars, in which students present the results and conclusions of the practices; as well as exposure of the elaborate work. In these sessions the participation of students, urging them to make a critical interpretation thereof by examples performed by the teacher in the theoretical sessions will be motivated. individually or collectively, by monitoring the work and resolution of any questions arising during the development of these tutoring.

5.3.Program

The program offered to the student to achieve the expected results includes the following activities:

- 1: Theoretical sessions. 4 hours

Brief description of the contents:

1. Introduction. Importance of natural compounds in the food industry as food additives. Classification.

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2. General characteristics, mechanism of action and applications of natural compounds in foods.

- Antimicrobials of microbial origin: lactic acid bacteria, bacteriocins.

- Antimicrobials of vegetable origin: aromatic condiments, essential oils, active ingredients.

- Antimicrobials of animal origin: lysozyme, lactoferrin, lactoperoxidase.

2: Practical sessions. 18 hours.

Preparation of culture media and necessary to carry out the various practical sessions material.

Extraction of essential oils from plant products by hydrodistillation.

Evaluation of the antimicrobial activity "in vitro" of various essential oils from aromatic plants against pathogenic microorganisms of interest in food safety. Selecting the most effective antimicrobial for each pathogen and subsequent application to a food matrix.

3: Teaching works:

Different themes for the development of work will be proposed either by the teacher or by the students, related to the course. The work is made by compilation and interpretation of several current scientific work on the selected topic. This work will be led by teachers, it will be made independently and will be delivered on the date set.

4: Seminars: 8 hours (sessions of 2 or 3 hours).

1. Each student group will present the approach and results of the work done in the laboratory; a sharing, discussion and conclusions will be held.

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2. Each student or student group presents the teaching work; and the answer to the questions that are raised by both teachers as students.

5.4.Planning and scheduling

Schedule of sessions and presentation of works

The master calendar and scheduling of the theoretical and practical sessions of the course will appear throughout the month of September on the website of the Faculty of Veterinary Medicine, at the following address:
<http://veterinaria.unizar.es/>

5.5.Bibliography and recommended resources

Typically, the literature of the academic year is kept updated and is consulted by the Library website (search biblioteca.unizar.es recommended bibliography).

Antimicrobials in food / edited by P. Michael Davidson, John N. Sofos, A. L. Branen . - 3rd ed. Boca Raton, Florida [etc.]: Taylor & Francis, 2005

Encyclopedia of food microbiology / editor-in-chief Richard K. Robinson; editors Carl A. Batt, Pradip D. Patel San Diego [etc.]: Academic Press, cop. 2000

Natural antimicrobials for the minimal processing of foods / edited by Sibel Roller. Boca Ratón : CRC ; Cambridge : Woodhead Publishing Limited, cop. 2003