

63014 - Immunochemical techniques applied to food quality control

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	Second 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 designed for this subject consists of 12 hours of lectures and 15 hours of laboratory classes..

Lectures will be given in sessions of 1-2 hours and the participation of students will be encouraged. Lesson I includes the obtention of antibodies (polyclonal and monoclonal), and the techniques for the purification and conjugation of them. This knowledge is fundamental because antibodies are the main components of any immunochemical technique. In lesson II the fundamental of the different types of immunochemical techniques and different formats indicating the advantages and disadvantages of each are explained. In lesson III the application of immunochemical techniques in food quality control are reviewed. Students will have available in advance in the ADD the presentations used in the lectures as well as some

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supplementary material. Some videos and web pages available on Internet will be show in some sessions.

Practical classes will be given in the laboratory in sessions of 3-4 hours. Each group will be divided into small subgroups so that everyone can carry out the experimental work simultaneously. Students will have the protocols previously in the ADD to prepare practices. At the beginning of each session, the fundamental and the experimental step of each technique will be exposed.

5.2.Learning activities

The learning activities of this subject include lecturers, laboratory practices and the preparation of a report with results obtained in the experimental work carried out.

Lectures will provide students theoretical knowledge about the fundamentals and types of immunochemical techniques that are necessary to carry out the other learning activities. In the practical sessions, which will be given after the corresponding lecturers, students will be able to apply the different techniques learned in the quality control of food. Students have to prepare a brief written report individually including results and their discussion as well as an oral presentation in group in which their participation will be promoted to make a critical interpretation of results obtained.

5.3.Program

LECTURES

Lesson I. Introduction. Obtención de polyclonal and monoclonal antibodies. Antibody purification methods. Antibody conjugation techniques and characterization of conjugates.

Lesson II. Types of immunochemical techniques. Precipitation techniques. Agglutination techniques. Enzymatic immunoassay: immunodotting and ELISA techniques. Western-blotting. Lateral flow. Immunosensors.

Lesson III. Applications of immunochemical techniques in quality control of foods. Determination of chemical and biological contaminants. Detection of allergens. Detection of transgenic foods. Detection of frauds by species substitution.

LABORATORY PRACTICALS

Laboratory practical 1. Precipitation techniques: double immunodiffusion, radial immunodiffusion. Immuno-electrophoresis.

Laboratory practical 2. Immunodotting and immunotransfer techniques. Titration curve of antisera.

Laboratory practical 3. Indirect competitive ELISA technique. Sandwich ELISA technique. Lateral flow.

5.4.Planning and scheduling

5.5.Bibliography and recommended resources