



Universitat de Lleida

# DEGREE CURRICULUM

# **BIOACTIVE COMPOUNDS OF FOODS**

Coordination: ODRIOZOLA SERRANO, ISABEL ANDREA

Academic year 2017-18

## Subject's general information

Subject name	BIOACTIVE COMPOUNDS OF FOODS			
Code	100625			
Semester	1st Q(SEMESTER) CONTINUED EVALUATION			
Typology	Degree	Course	Typology	Modality
	Bachelor's Degree in Human Nutrition and Dietetics	4	OPTIONAL	Attendance-based
ECTS credits	6			
Groups	1GG			
Theoretical credits	0			
Practical credits	0			
Coordination	ODRIOZOLA SERRANO, ISABEL ANDREA			
Department	TECNOLOGIA D'ALIMENTS			
Teaching load distribution between lectures and independent student work	-H. On-site:60 Lecture 32 Practice and tutorials 16 Seminars 12  -H. Off-site: 90			
Important information on data processing	Consult <a href="#">this link</a> for more information.			
Language	English Catalan			

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
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## Subject's extra information

### 1. Introducció a l'assignatura

Food, in addition to providing nutrients, contain a number of non-nutritive substances (bioactive compounds), which are involved in secondary metabolism of plants (pigments, protective against parasites, aromatic ...) that do not have a definite classical nutritional function, but can have a significant impact on disease prevention. This subject will introduce the main bioactive components of food, its bioavailability in different matrices and their effect on the body. It also aims to introduce students to the knowledge of functional foods and dietary supplements, within the context of the regulations of the European Union, and the relationship between these products and different diseases. After the course, students must be able to critically evaluate the use of functional foods or dietary supplements to provide better quality of life to individuals.

## Learning objectives

1. To know the main bioactive food components and their effect on health.
2. To classify foods according to the containing bioactive components.
3. To know the factors that influence the bioavailability of the bioactive compounds
4. To acquire the aptitude to incorporate bioactive compounds to complement the diet.
5. To assess the current state of the scientific study of bioactive components.
6. To understand the use of functional foods to provide a better quality of life for individuals
7. To analyze the use of dietary supplements.

Objectives	Activities	On-site hours	Student work
1-7	Lectures	32	80
1-4	Practice and tutorials	16	32
1-3, 5, 7	Seminars	12	38

\*Student work = on-site hours + off-site hours

## Competences

1. To know the composition of food substances that produce a beneficial effect on health
2. To know the use, function, structural modification, elimination and the effects on the body of bioactive components
3. To expose, analyze and understand the needs and current nutritional recommendations in these substances and their evolution in the scientific study
4. To correctly express oneself, orally and in writing.
5. To show capacity for analysis and synthesis

## Subject contents

**Theme 1.-Introduction.** Definition of bioactive component and functional food. Classification. Factors that affect their concentration.

**Theme 2.-Bioactive components present in plant products.** Structure. Classification. Properties. Intake. Absorption and bioavailability. Metabolism. Health benefits. Food sources. Stability in food.

**Theme 3.-Bioactive components present in animal products.** Structure. Classification. Properties. Intake. Absorption and bioavailability. Metabolism. Health benefits. Food sources. Stability in food.

**Theme 4.-Bioactive components present in microorganisms and other sources.** Structure. Classification. Properties. Intake. Absorption and bioavailability. Metabolism. Health benefits. Food sources. Stability in food.

**Theme 5.-Functional foods.** Concept and scientific evaluation of functional foods. History. Nutritional and health claims. Context. Legislation in the European Union. Critical analysis of functional foods on the market. Functional foods and disease (coronary, cancer, obesity, diabetes and bone health). Functional foods and intellectual function.

**Theme 6.-Dietary Supplements.** Definition. Examples of supplements. Regulations. Analysis of the risk / benefit of using antioxidant supplements vs foods rich in antioxidant compounds and discussion of existing information.

## Methodology

### Lectures

These will be taught with the whole group. The aim is to provide a general view of the contents specifically related with the course.

### Seminars

Seminars will take place in the classroom. They will consist in the analysis of scientific papers and/or search of information that will complement the contents developed in lectures. Participation and discussion will be encouraged.

### Tutorials

They will be conducted in groups of 2-4 students. Assistance is mandatory and tutorials must do in the assigned groups. They will aim to guide in learning avoiding dispersion, clarify doubts and establish a conceptual diagram of the subject.

### Laboratory practice

Assistance to this activity is NOT compulsory. Lab practice will be carried out in groups of 2-3 students and will take place in lab or in the pilot plant of the food technology department.

Three types of activities will be undertaken:

- To know foods rich in bioactive components using different analytical techniques.
- To determine the antioxidant activity of plant extracts.
- To elaborate dishes rich in bioactive components.

To achieve the objectives and acquire the competences the following activities were scheduled:

Activities	Objectives	Description
<b>Lectures</b>	1-7	Acquisition of knowledge about bioactive compounds, functional foods and dietary supplements
<b>Seminars</b>	1,2,3,5,7	Explanation, treatment and discussion on various topics related to the subject.
<b>Tutorials</b>	1-7	Guide in learning and clarifying the doubts about the course content
<b>Lab practice</b>	1,2,3,4	Practical application of the knowledge acquired in the classroom

## Evaluation

The evaluation will consist of the weighted average of 4 qualifications, obtained from the following elements:

1. Written exam I (individual): 30%
2. Written exam II (individual): 30%
3. Practice and tutorials 25%

Practice will be conducted in groups. A memory will be presented. Formal and conceptual aspects will be evaluated and the rest of the qualification will be assessed during the development of the laboratory practices.

Tutorials for monitoring the practices will be made.

4. Seminars: 15%

The qualification will be obtained from the arithmetic mean of the different proposed activities.

The presentation of the reports or activities are required to pass the course.

Es realitzaran 2 exàmens parcials de la part teòrica, amb preguntes tipus test i preguntes llargues. L'alumne ha de superar els parcials amb una nota mitja de 5 sobre 10. Els parcials suspesos es recuperan el dia de la segona avaluació fent una prova escrita que englobarà els continguts dels dos parcials.

Two exams of the theoretical part, with test and long questions will be made. In order to average the other qualification, a qualification above 5 is required for the average of the two written examinations. In any other case, to pass the subject, the student will have to do a written exam that will include the contents of the two parcials.

## Bibliography

### Books

- Álvarez Cruz, N., Bague Serrano, A.J. 2011. Los alimentos funcionales: una oportunidad para una mejor salud.

Ed. A. Madrid Vicente, Madrid, España

- Ball, G.F.M. 2005. Vitamins in Foods: Analysis, bioavailability and stability. CRC Press, London and New York.
- Cadaval, A. 2005. Alimentos funcionales: Para una alimentación más saludable. 2005. Corporación Alimentaria Peña, Madrid.
- Corrado, T. 2001. Bioactive compounds from natural sources: isolation, characterisation and biological properties. CRC Press, London and New York.
- Fereidoon, S., Naczki, M. 2004. Phenolics in Food and Nutraceuticals. CRC Press, Florida
- Gilbert, J., ÖSényüv, H.Z. 2008. Bioactive compounds in foods. Blackwell Pub., Oxford.
- Landrum, J.T. 2010. Carotenoids: Physical, chemical and biological functions and properties. CRC Press, London, New York.
- Macheix, J.J., Fleuriet, A., Billot, J. 2000. Fruit phenolics. CRC Press, Florida.
- Mínguez Mosquera, M.I. 1997. Clorofila y carotenos en tecnología de alimentos. Ed: Gráficas Varona, España.
- Mazza, G. 2000. Alimentos funcionales; Aspectos bioquímicos y de procesado. Ed. Acribia, Zaragoza, España.
- Ruch, R.B., Suttie, J.W., McCormick, D.B., Machlin, L.J. 2001. Handbook of vitamins. Marcel Dekker, New York.
- Tung-Ching, L., Chi-Tang, H. 2002. Bioactive compounds in foods: effects of processing and storage. American Chemical Society, Washington.
- Webb, G.P. 2006. Complementos nutricionales y alimentos. Ed. Acribia, Zaragoza, España.