UNIVERSITY OF NOVI SAD
FACULTY OF MEDICINE

Study program: Integrated Academic Studies in Pharmacy

Course title: Biologically Active Food Ingredients

Teacher: Jelena M. Cvejić, Ljilja D. Torović, Momir M. Mikov, Artur L. Bjelica, Milica T. Atanacković Krstonošić, Mira P. Mikulić

Course status: Elective

ECTS Credits: 3

Condition: Pharmacognosy II

Course aim

Main goal of Biologically Active Food Ingredients course is introduction to sustainable sources of bilogically active compounds, their isolation and incorporation in added value food products. Learning about innovatives procedures for isolation of biologically active compounds (e.g. phenolics, lipids) from sustainable and new sources such as food industry by-products and waste (e.g. grape and olive pomace), marine products (algae) and other. Appplication of 'green' (ecologicalyy suitable) extraction methods as well as innovative new techniques for identification of biologically active compounds. Acknowledge the relation and interaction between biologically active ingredients, gut microbiome from phramacological-immune aspect targeting the benefititial health effects. Knowledge acquiring related to the design of added-value food products by incorporation of biologically active compounds from sustainable sources. Development of critical judgment and ability for work in science research studies.

Expected outcome of the course

Student learns about appropriate selection and applications of new sustainable sources of biologically active compounds. Overview of potential beneficial health effects. Knowledge related to application of procedures for biologically active compounds encapsulation in order to preserve their stability and activity, and enable intelligent delivery.
Student learns about applications and selection of appropriate method in analysis of real samples. Techiques and stages in analysis of natural products. Regulatory rules. Different approaches to the analysis concerning different characteristics of products and their active ingredients. Estimation of errors and statistical analysis. Sample preparation.

Course description

Theoretical education

Sustainable and new sources of biologically active compounds. “Green” (ecologically acceptable) extraction methods. Contemporary techniques of biologically active compounds identification. Interaction between gut microbiome and biologically active food ingredients. Pharmacological-immune mechanisms. Added value food products design, technological approach. Encapsulation and release of sensitive biologically active compounds.

Practical education

Workshops – presentations and discussion of selected examples related to course topics (e.g. sustainable sources of biologically active compounds, extraction methods, new added value food products design) based on available scientific information.
Preparation, presentation and defense of seminar work (selected topic).

Literature

Compulsory

1. Galanakis CM, editor. Nutraceutical and Functional Food Components: Effects of Innovative Processing Techniques. Elsevier, Academic press; 2017.
2. Galanakis CM, editor. Innovation Strategy in the Food Industry. Elsevier, Academic press; 2016.

Additional

1. Bao C, Jiang P, Chai J, Jiang Y, Lia D, Bao W, Liu B, Liu B, Norde W, Li Y. The delivery of sensitive food bioactive ingredients: Absorption mechanisms, influencing factors, encapsulation techniques and evaluation models. Food Research International. 2019;120:130–140.
2. Chai J, Jiang P, Wang P, Jiang Y, Li D, Bao W, Liu B, Liu B, Zhao L, Norde W, Yuan Q, Ren F, Li Y. The intelligent delivery systems for bioactive compounds in foods: Physicochemical and physiological conditions, absorption mechanisms, obstacles and responsive strategies. Trends in Food Science & Technology 2018;78:144–154.

Number of active classes	**Theoretical classes:** 30	**Practical classes:** 15

Teaching methods

Lectures. Essay. Practical classes-workshops.

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**

Lectures	20	Written	-
Practices		Oral	40
Colloquium	-	.....	
Essay	40		