Course Unit Descriptor

Study Programme: Doctoral Academic Studies in Biochemistry

Course Unit Title: Xenoestrogens

Course Unit Code: DSB-629

Name of Lecturer(s): Professor Suzana Jovanović-Šanta, Professor Sanja Krstić

Type and Level of Studies: PhD degree

Course Status (compulsory/elective): elective

Semester (winter/summer): winter

Language of instruction: English

Mode of course unit delivery (face-to-face/distance learning): Face-to-face

Number of ECTS Allocated: 15

Prerequisites: -

Course Aims:

Extend students' knowledge of biosynthetic pathways and the physiological effects of various endocrine disruptors and xenoestrogens. Develop students' ability to apply and modify standard methods in solving problems arising from the action of these compounds. To enable students to create new methods in order to solve current problems and tasks, independently plan, perform experiments, process the results obtained and critically discuss them. Introduce students with basic legal regulations aimed at reducing and correcting the regulation and use of endocrine disruptors and xenoestrogens.

Learning Outcomes:

After successful completion of the course, the student is able to: explain the role of particular classes of xenoestrogens (eg phytoestrogens or endocrine disruptors) in physiological and / or pathological processes; explain changes resulting from the action of xenoestrogens; critically expresses its position on the significance of certain classes of endocrine disruptors and the justification of the use of commercial preparations containing phytoestrogen, for the purpose of therapy, supplements or others; critically analyzes and discusses scientific papers, scientific hypotheses and experimental results in a particular field; independently plans and performs experiments.

Syllabus:

Theory

Classes, distribution, availability and finding of xenoestrogens. Physiology of the endocrine system. Estrogen hormones. Compounds that imitate estrogenic activity (mimetics). Phytoestrogens - structures, physiological role in plants and biological activity in humans. Selected phytoestrogens: genistein, daidzein, glycitein, formononetine, biohanin A and others - natural sources and phytopreparates. Determination of phytoestrogen content in plant material and phytopreparates by chromatographic methods. Endocrine disruptors - bisphenol A (BPA), phthalates, dioxins, pesticides, DDT, polychlorinated biphenyls. Sources of endocrine disruptors in the body, the household, the environment. Interaction with the endocrine system. Healthcare related to the problems of the endocrine system. EU legislation and domestic legislation.

Practice

Isolation of xenoestrogens from available samples; Determination of phytoestrogen content in plant material and phytopreparates by chromatographic methods. Study of available data and development of a smaller research project on the subject in the field of xenoestrogens.

Required Reading:

1. A.C. Gore, Introduction to Endocrine Disrupting Chemicals, Endocrine society, 2014

2. Endocrinology and Endocrine Toxicology y IPCS GLOBAL ASSESSMENT OF EDCS, WHO, 2016
3. P.A. Fail, C.S. Sloan, J.D. Johnson, V.J. Brown, Steroidogenesis screening assays and endocrine disruptors, 2005
4. Review and original scientific articles from selected research areas

Weekly Contact Hours: 10	**Lectures:** 5	**Practical work:** 5

Teaching Methods: Lectures, laboratory work, study projects

Knowledge Assessment (maximum of 100 points): 100

Pre-exam obligations	points	**Final exam**	points
Active class participation		written exam	
Project presentation	50	oral exam	50
Preliminary exam(s)		…….	
Seminar(s)			

The methods of knowledge assessment may differ; the table presents only some of the options: written exam, oral exam, project presentation, seminars, etc.