SZKOŁA GŁÓWNA GOSPODARSTWA WIEJSKIEGO

Plant active compounds in human life

Educational subject description sheet

Basic information

Field of study Biotechnology **Speciality** - **Organizational unit** Faculty of Biology and Biotechnology **Study level** first cycle (engineering degree) **Study form** full-time studies **Education profile** General academic	**Didactic cycle** 2023/24 **Subject code** BBTBTjS_D.340K.01638.23 **Lecture languages** english **Mandatory** Elective subjects **Block** Major subjects **Disciplines** Biological sciences

Coordinator	Anna Geszprych
Teacher	Anna Geszprych

Period Semester 7	**Examination** Pass with grade **Activities and hours** Lecture: 15	**Number of ECTS points** 1

Goals

Code	Goal
C1	The aim of the course is to provide students with the knowledge on biologically active compounds present in herbal plants, with special emphasis to their role in phytotherapy.

Entry requirements

Information on general botany, organic chemistry and biochemistry.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	the most important biologically active compounds occurring in plants and the directions of utilization of these compounds and plant raw materials	BTj_K3_W09, BTj_K3_W10	Report, Test (written or computer based)
Skills – Student can:			
U1	find information on sourcing, characteristics and application of plant active compounds	BTj_K3_U05_inz, BTj_K3_U22	Report
Social competences – Student is ready to:			
K1	identify and research the biological activity of plant compounds and is ready to deepen knowledge in this field	BTj_K3_K01, BTj_K3_K06	Report, Test (written or computer based)

Study content

No.	Course content	Subject's learning outcomes	Activities
1.	Subject matter of the lectures includes general characteristics of the main groups of biologically active substances occurring in plants, especially those substances that are known as plant secondary metabolites, including essential oils, glycosides and alkaloids. Plant raw materials rich in these compounds and possible applications of the raw materials and isolated compounds in the prevention and treatment of various diseases, as well as in aromatherapy and cosmetics will be presented. Students will also individually search for information on active plant compounds in the scientific literature.	W1, U1, K1	Lecture

Course advanced

Activities	Methods of conducting classes
Lecture	Lecture, Conversation lecture, Presentation, Analysis of source materials

Activities	Examination method	Percentage
Lecture	Test (written or computer based)	90%
Lecture	Report	10%

Activities	Credit conditions
Lecture	The conditions for passing the course is participation in the classes (attending the lectures is obligatory) and getting the passing score for the final test (51%). The condition for taking the test is submission of the report based on the literature survey.

Literature

Obligatory

1. Hussein R.A., El-Anssary A.A. 2017. Plants secondary metabolites: The key drivers of the pharmacological actions of medicinal plants. In: Builders P.F. (ed.) Herbal Medicine. IntechOpen. doi: 10.5772/intechopen.76139.
2. Wink M. 2015. Modes of action of herbal medicines and plant secondary metabolites. Medicines (Basel) 2(3): 251-286. doi: 10.3390/medicines2030251.
3. Scientific publications concerning the compounds presented, recommended at the lectures.

Optional

1. Zhao Y., Wu Y., Wang M. 2015. Bioactive substances of plant origin. W: Cheung P.C.K., Mehta B.M. (red.) Handbook of Food Chemistry: 967-1008.
2. Fierascu R.C., Fierascu I., Baroi A.M., Ortan A. 2021. Selected aspects related to medicinal and aromatic plants as alternative sources of bioactive compounds. Int. J. Mol. Sci. 22: 1521.
3. Debnath B. et al. 2018. Role of plant alkaloids on human health: A review of biological activities. Materials Today Chemistry 9: 56-72.
4. Herman R.A. et al. 2019. Essential oils and their applications - a mini review. Adv. Nutr. Food. Sci. 4(4): 1-13.
5. Other articles concerning the compounds presented.

Calculation of ECTS points

Activity form	Activity hours*
Lecture	15
Preparation of the report	5
Preparation for the test	5
Student workload	**Hours** 25
Number of ECTS points	**ECTS** 1

* hour means 45 minutes

Effects

Code	Content
BTj_K3_K01	The graduate is ready to proper storage of data, updating and extending knowledge on topics related to biotechnology and the related sciences;
BTj_K3_K06	The graduate is ready to presenting justified arguments supporting one’s standpoint regarding scientific, ethical and social topics influencing the progress in biological sciences;
BTj_K3_U05_inz	The graduate can understand and explain chemical processes forming a basis for explaining biochemical reactions, and able to apply proper techniques for their investigation;
BTj_K3_U22	The graduate can find and assess information from various sources, including from original research, and present in a well organised manner (e.g. essays, reports and laboratory reports);
BTj_K3_W09	The graduate knows and understands living organisms and their place in the natural environment, and how they can be used for the good of humanity;
BTj_K3_W10	The graduate knows and understands terms, principles and theories related to processes and mechanisms which have shaped the world of nature, knowing how they can be used efficiently;