

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	Nutraceutiki in tehnologija
Course title:	Nutraceuticals and Technology

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Biomedicinska tehnologija/Biomedical Technology 3. stopnja/3rd Degree		2	3 ali 4

Vrsta predmeta / Course type

Izbirni/Elective

Univerzitetna koda predmeta / University course code:

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje work	Druge oblike študija	Samost. Delo Individ. Work	ECTS
15	20	10			105	5

Nosilec predmeta / Lecturer:

Prof. dr. Mojca Škerget

Jeziki /

Predavanja / Lectures:

Slovenščina / Slovene

Languages:

Vaje / Tutorial:

Slovenščina / Slovene

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:

Kandidat mora doseči 300 ECTS na predhodnem študiju.

Prerequisites:

Graduate degree 300 ECTS

Vsebina:

Vrste, viri, pridobivanje, lastnosti in delovanje naravnih bioaktivnih komponent z antioksidativnim, antimikrobiološkim in farmakološkim delovanjem za uporabo v prehranski, kozmetični, predvsem pa v farmacevtski oziroma fitofarmacevtski industriji.

Vsebina:

- identifikacija spojin z antioksidativnim, antikotičnim ali farmakološkim učinkom (fenolne spojine, terpenoidi, steroidi, alkaloidi,...).
- postopki izolacije in koncentriranja aktivnih učinkovin (ekstrakcija, kromatografija,...)
- vpliv (zdravilne) substance na pojav bolezni in možnosti zdravljenja ter vrste testiranja (predklinični klinični testi)
- predklinična testiranja: različni testi antioksidativne učinkovitosti npr. Rancimat test, peroksidno število, anizidinsko število, BCB test (β-carotene bleaching test), DPPH test (free radical scavenging capacity), testiranja antimikrobiološkega delovanja npr. z merjenjem radialne rasti plesni na PDA agarju in z merjenjem optične gostote bakterijskih suspenzij.

Content (Syllabus outline):

Type, source, separation methods, properties and activity of natural bioactive compounds with antioxidative, antimicrobiological and pharmacological activity for the use in food, cosmetic and especially in pharmaceutical or phytopharmaceutical industry.

Content:

- identification of substances with antioxidative, antimicrobial or pharmacological activity (phenolic compounds, terpenoids, steroids, alkaloids,...)
- influence of health substances on occurrence of sickness and healing possibilities and types of activity tests (pre-clinical and clinical tests).
- Pre-clinical tests: various antioxidant activity tests: e.g. Rancimat test, peroxide value, anisidine value, BCB test (β-carotene bleaching test) and DPPH test (free radical scavenging capacity), antimicrobiological capacity tests: e.g. measuring the radial growth on PDA plates and measuring the optical density of bacterial suspension by densitometry.

Temeljni literatura in viri / Readings:

- J. Bruneton, Pharmacognosy. Phytochemistry. Medicinal Plants, 2nd ed., Lavoisier Publishing, Paris, 1999.
- A.Y. Leung, S. Foster, Encyclopedia of common natural ingredients used in food, drugs and cosmetics. 2nd ed., Wiley, New York, 1996.
- H.D. Belitz, Food Chemistry, Springer Verlag, Berlin, 1999.
- J. Buttriss, M. Saltmarsh, eds., Functional foods II: claims and evidence, Cambridge: Royal Society of Chemistry, 2000
- R.J. Lewis, Food additives handbook, Van Nostrand Reinhold, New York, 1989.
- S.W. Souci, W. Fachmann, H. Scherz, F. Sener, K. Heinrich, Food composition and nutrition tables. 6th ed., Stuttgart: Medpharm, Boca Raton, London: CRC, 2000.

Cilji in kompetence:

Integracija načel kemije, biologije, medicine in inženirstva s ciljem spoznati naravne produkte, ki pozitivno vplivajo na človeško zdravje (nutraceutiki), metode njihove izolacije, področja uporabe, kot tudi njihove vplive na zdravje in testne metode.

Objectives and competences:

Integration principles of chemistry, biology, medicine and engineering with the aim to recognize natural products, which have positive influence on human health (nutraceuticals), the isolation methods, possible areas of application, as well as their influence on the health and test methods.

Predvideni študijski rezultati:

Znanje in razumevanje:

Postopki izolacije in koncentriranja aktivnih učinkovin, vpliv zdravilnih substanc na pojav bolezni.

Prenesljive/ključne spretnosti in drugi atributi:

Študent obvlada predklinična testiranja, npr. BCB test, merjenje optične gostote bakterijskih suspenzij.

Metode poučevanja in učenja:

Študijski primeri v zadnjem času razvitih nutraceutikov
Laboratorijsko delo v okviru projektne naloge

Intended learning outcomes:

Knowledge and understanding:

Procedures for the isolation and concentration of active substances, the influence of the active substances on the occurrence of the disease.

Transferable/Key Skills and other attributes:

The student mastered preclinical testing, e.g. BCB test, measurement of optical density of bacterial suspensions.

Learning and teaching methods:

Lectures
Study examples of the recently developed nutraceuticals
Laboratory work in the frame of project exercise

Načini ocenjevanja:

- Ustno izpraševanje,
- projekt

Delež (v %) /

Weight (in %)

Assessment:

- Oral,
- project