



Univerza v Mariboru

Medicinska fakulteta

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	Biokemija s kemijo
Course title:	Biochemistry with chemistry

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Splošna medicina	Splošna medicina	1	1 in 2
General Medicine-EMŠP	General Medicine		

Vrsta predmeta / Course type

Obvezni/Compulsory

Univerzitetna koda predmeta / University course code:

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Laboratory work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
90	30		60		90	9

Nosilec predmeta / Lecturer:

Red. prof. dr. Uroš Potočnik, red. prof. dr. Željko Knez

Jeziki /

Predavanja / Lectures: Slovenski/Slovene

Languages:

Vaje / Tutorial: Slovenski/Slovene

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

Prerequisites:

Vsebina:

Biokemija

- Uvod v biokemijo, molekulske osnove življenja, voda, biološko pomembni elementi, ioni in glavne skupine biomolekul:
 - Trigliceridi, monosaharidi in kompleksni ogljikovi hidrati, peptidi in aminokisline, nukleinske kisline in nukleotidi
- Uvod v strukturo beljakovin:
 - Aminokisline: struktura, povezava med strukturo in funkcijo, izoelektrična in izoiionska točka, analitika aminokislin.
 - Peptidi: biološko aktivni peptidi; strukturne osnove delovanja peptidnih hormonov
 - Primarna, sekundarna, terciarna in kvartarna struktura beljakovin
- Beljakovine: splošna zgradba in lastnosti, razdelitev po funkciji (encimi, transportne, skladiščne, kontraktilne, strukturne, obrambne in regulatorne beljakovine)
- Fibrilarne in globularne beljakovine

Content (Syllabus outline):

Biochemistry

- Introduction to the biochemistry, molecular bases of life, water, elements and ions of biological importance, classification of biomolecules:
 - triglycerides, monosaccharides and complex carbohydrates, amino acids and peptides, nucleic acids and nucleotides
- Introduction to the protein structure:
 - aminoacids: structure, links between structure and function, isoelectric and isoionic point, analysis of aminoacids.
 - Peptides: biologically active peptides, structurally based function of peptide hormones
 - Primary, secondary tertiary and quaternary structure of proteins.
- Proteins: general structure and characteristics, classification by the function (enzymes, transport, contractile, accumulative, defence

- Struktura in funkcija fibrilarnih beljakovin: keratin, kolagen, elastin
- Monomerna in oligomerna struktura beljakovin: mioglobin in hemoglobin
- 5. Encimi: splošne značilnosti in osnove encimske kinetike
 - Mehanizmi encimskih reakcij, regulacija encimske aktivnosti (alosterična modulacija, kovalentna modifikacija, regulacija prek proteolitičnih encimov), klasifikacija in nomenklatura encimov
 - Koencimi
 - Sklopljene reakcije, vloga ATP pri sklopljenih procesih, aktivni transport
 - GTP, UTP in CTP tudi sodelujejo pri encimskih reakcijah; koencim A; kovinski ioni
- 6. Biokemijske komponente celic in tkiv
 - Biološke membrane – struktura in funkcija
 - Primeri membranskih beljakovin: transporterji za ione in beljakovine, receptorji
 - Celična površina – membranske karakteristike; krvne skupine
 - Citoskelet, kontraktilne beljakovine in molekularni motorji: miozin, aktin, troponin, tropomiozin, kinezin in dinein
- 7. Enostavni in sestavljeni polisaharidi, glikoproteini, celična stena
- 8. Metabolizem
- 9. Prebavni encimi, uvod v metabolne poti – regulacija metaboličnih poti, glavni eksperimentalni pristopi za študij metabolizma
- 10. Encimska razgradnja glikozidnih vezi
- 11. Oksidativni procesi v celici in pridobivanje energije
- 12. Metabolizem ogljikovih hidratov, uravnavanje sinteze in razgradnje ogljikovih hidratov
- 13. Metabolizem maščobnih kislin in trigliceridov
- 14. Metabolizem nukleotidov in nukleinskih kislin, uravnavanje metabolizma nukleotidov, bolezni povezane z metabolizmom nukleotidov
- 15. Metabolizem membranskih lipidov, celična razgradnja in biosinteza enostavnih in sestavljenih lipidov; biosinteza in razgradnja žolčnih kislin; metabolizem lipoproteinov; metabolizem prostaglandinov; uravnavanje metabolizma lipidov, bolezni povezane z metaboličnimi defekti v metabolizmu lipidov
- 16. Metabolizem aminokislin, prebava proteinov, razgradnja aminokislin, biosinteza neesencialnih aminokislin, uravnavanje hitrosti metabolizma aminokislin, bolezni povezane z metaboličnimi defekti v metabolizmu aminokislin; aminokislina kot izhodne snovi v biosintezah biološko pomembnih spojin

- and regulatory proteins).
4. Fibrillar and globular proteins.
 - Structure and function of fibrillary proteins: keratin, collagen, elastin.
 - Monomeric and oligomeric structure of proteins: myoglobin and haemoglobin.
 5. Enzymes: general features and bases of enzymatic kinetics.
 - Mechanism of enzymatic reactions, regulation of enzymatic activity (allosteric modulation, covalent modification, regulation of proteolytic enzymes), classification and nomenclature of enzymes.
 - Coenzymes.
 - Coupled reactions, ATP, active transport.
 - GTP, UTP and CTP and their role by the enzymatic reactions: coenzyme A, metal ions.
 6. Biochemical components of cells and tissues.
 - Biological membranes – structure and function.
 - Examples of membrane proteins: transporters, receptors.
 - Cell surface: membrane characteristics: blood groups.
 - Cytoskeleton: contractile proteins and molecular motors: myosin, actin, troponin, tropomyosin, kinesin and dinein.
 7. Simple and complex polysaccharides, glycoproteins, cell wall.
 8. Metabolism.
 9. Digestive enzymes; introduction to the metabolic pathways, major experimental approaches to the study of metabolism.
 10. Enzymatic digestion of glycoside bonds.
 11. Oxidative processes in the cell and energy generation.
 12. Metabolism of carbohydrates, regulation of anabolism and catabolism of carbohydrates.
 13. Metabolism of fatty acids and triglycerides.
 14. Metabolism of nucleotides and nucleic acids, regulation of their metabolism, diseases.
 15. Metabolism of membrane lipids, anabolism and catabolism of simple and complex triglycerides, bile acids, lipoproteins, prostaglandins, regulation of lipid metabolism. Diseases that arose from metabolism disorders.
 16. Metabolism of amino acids and proteins, anabolism and catabolism of essential and non-essential amino acids, regulation of metabolism, diseases that arose from metabolic disorders, amino acids as precursors in biosynthesis of biologically important molecules..
 17. Haem metabolism.
 18. Vitamins: classification, water soluble vitamins and coenzymes and prosthetic groups, fat

17. Metabolizem hema
18. Vitamin: klasifikacija vitaminov, vodotopni vitamini, koencimi in prostetične skupine; lipidotopni vitamini.
19. Pomen biokemije za razlago in zdravljenje bolezni
20. Biosinteza proteinov, usmerjanje, znotrajcelični transport, zvijanje, kontrola kvalitete, degradacija
21. Membranske beljakovine, prenos snovi skozi biološke membrane, pasivni in aktivni transport, primeri pasivnega in aktivnega transporta pri človeku
22. Hormoni, sproščanje hormonov
23. Vloga hormonov v uravnavanju metaboličnih procesov
24. Metabolizem mineralov, vnos, zadrževanje in izločanje mineralnih snovi pri človeku (kalcij, magnezij, železo, cink, jod, itn.)
25. Metabolične značilnosti posameznih tkiv in organov. Skeletna mišica, srčna mišica, jetra, maščevje, ledvica, živčevje, krvni elementi, koža, oko, pljuča, vezivno tkivo
26. Medsebojna odvisnost in vloga organov v metaboličnih procesih pri človeku.
27. Biokemija krvnih skupin in koagulacija krvi;
28. Signalna transdukcija
29. Metabolne bolezni, vključno dedni sindromi

Kemija

- Zgradba atoma, kemične vezi, medmolekulske sile, biološko pomembni elementi, radioizotopi.
- Voda: strukture, lastnosti, H-vezi, hidrofobne interakcije, voda kot topilo.
- Raztopine: raztapljanje plinov v vodi, koligativne lastnosti raztopin, osmotski pojavi v celici, osmoliuretiki.
- pH: ionizacija vode, K_w , pH, šibki in močni elektroliti, kisline in baze, pufri, puferski sistemi v organizmu, porazdelitev ionov v organizmu, biološki pomen pH.
- Oksidoredukcija: definicije, kvantitativna karakterizacija redoks reakcij.
- Redoks potencial in reakcijska prosta entalpija.
- Organske biomolekule: izomerija, medsebojni vpliv funkcionalnih skupin.
- Pregled organskih spojin po funkcionalnih skupinah.
- Kemija ogljikovih hidratov: monosaharidi, disaharidi, polisaharidi, homoglikani in heteroglikani.
- Kemija lipidov in steroidov.

soluble vitamins.

19. Importance of biochemistry for disease explanation and treatment.
20. Biosynthesis of proteins, conformations, folding, quality control, intracellular transport, protein degradation.
21. Membrane proteins: transport over the membrane, passive and active transport in human body.
22. Hormones and their release.
23. Role of hormones in the regulation of metabolic processes.
24. Metabolism of minerals, intake, storage and secretion of minerals in the human body (calcium, magnesium, zinc, iodine, ...).
25. Metabolic characteristics of individual tissues and organs (skeletal muscle, heart muscle, liver, adipose tissue, kidneys, nervous system, blood elements, skin, eye, lungs, connective tissue).
26. Interrelation and interactions of the organs in the metabolism of human body.
27. biochemistry of blood groups and coagulation;
28. signal transduction
29. Metabolic diseases, including hereditary syndromes

Chemistry

- Structure of atom, chemical bond and intermolecular forces, biologically important elements, radioisotopes.
- Water: structures, properties, H-bond, hydrophobic interactions, water as solvent.
- Solutions: solubility of gases in water, colligative properties of solutions, osmotic phenomenon in the cell, osmo-diuretics agents.
- pH: ionization of water, K_w , pH, weak and strong electrolytes, acids and bases, buffers, buffer systems in organism, distribution of ions in the body, biological importance of pH.
- Oxidoreduction: definition, quantitative characterization of redox reactions.
- Redox potential and reaction free enthalpy.
- Organic biomolecules: isometry, interacting influence of functional groups.
- Review of organic substances according to their functional groups.
- Chemistry of carbohydrates: monosaccharides, disaccharides, polysaccharides, homoglycanes and heteroglycanes.
- Chemistry of lipids and steroids.

Temeljni literatura in viri / Readings:**Biokemija/Biochemistry**

1. Lehninger Principles of Biochemistry, 7th ed, W.H. Freeman and Company, New York, 2012.
2. Rodney Boyer, Concepts in Biochemistry, 3rd Ed. Wiley, 2006, ISBN: 139780471661795.
3. Michael Lieberman, Allan Marks, Alisa Peet.: Marks' basic medical biochemistry : a clinical approach. 4th ed., Philadelphia : Lippincott Williams & Wilkins, 2013.
4. Dewlin, Thomas M: Textbook of Biochemistry With Clinical Correlations , 8th Ed J. Wiley & sons, Hoboken (New Jersey), 2014 Nelson DL, Cox MM.;
5. Lee W. Janson, M. Tischler, Medical Biochemistry: The Big Picture (LANGE The Big Picture), McGraw-Hill, 2012, ISBN:9780071637923.
6. Florian Horn. Biochemie des Menschen, 5., korrigierte Auflage 2012 664 S. , 1180 Abb. , Broschiert ISBN: 9783131308856

Kemija/Chemistry

1. D. D. Ebbing, S. D. Gammon: General chemistry, 9th ed., Houghton Mifflin, cop., Boston, New York, 2009.
2. J. B. Umland, J. M. Bellama: General chemistry, 3rd ed., Brooks/Cole Publishing Company ITP, Pacific Grove, 1999.
3. H. R. Hunt, T. F. Block, G. M. McKelvy: Laboratory experiments for general chemistry, 4th ed., Brooks/Cole-Thomson Learning, Australia, United States, 2002.
4. Zeeck, S. C. Fischer, S. Grond, I. Papastavrou: Chemie für Mediziner, 5. völlig überarbeitete Auflage, Urban & Fischer Verlag, München, 2003

Cilji in kompetence:

Cilj tega predmeta je obnoviti osnovna znanja iz splošne kemije in poznavanja kemijske zgradbe molekul in reakcij, ter razumeti kemijske reakcije in procese v človeškem organizmu.

Študent se spozna z biomolekulami v človeškem telesu in s temeljnimi zakonitostmi ter mehanizmi biokemičnih dogajanj, ki predstavljajo osnovo za razumevanje življenjskih procesov v zdravem in bolezenskem stanju organizma.

Pridobi si osnovno znanje iz biokemičnih procesov, ki omogoča živim organizmom normalno delovanje in vzdrževanje optimalnih koncentracij celičnih sestavin in telesnih tekočin ter rast in razmnoževanje.

Objectives and competences:

The objective of this course is to renew the basic knowledge of general chemistry and knowledge of the chemical structure of molecules and reactions, and to understand the chemical reactions and processes in human body.

Students get acquainted with biomolecules in the human body with fundamental characteristics and mechanisms of biochemical reactions as a basis for understanding of life and processes in the healthy and ill state of the organism.

Students acquire the basic knowledge in biochemical processes to maintain the normal and optimal function of the human body.

Predvideni študijski rezultati:

Znanje in razumevanje:

Študent bo sposoben prepoznati in razlikovati molekule. Razumel bo kemijske reakcije ter znal razložiti transportne pojave, ki potekajo v človeškem organizmu.

Biokemija integrira molekularne osnove temeljnih življenjskih procesov in je nujna za razumevanje vzrokov bolezni ter molekularnih pristopov zdravljenja. Povezuje znanj o molekularnih mehanizmi delovanja zdravega organizma in okvar, ki privedejo do bolezni.

Prenesljive/ključne spretnosti in drugi atributi:

Študent bo razvil bo spretnosti dela v skupini ter spretnost računanja.

Spoznavanje delovanja organizma na molekularni ravni. Biokemija je povezana s predmeti Molekularna biologija in Biologija celice. Pomaga pri razumevanju Patofiziologije, Farmakologije in večine kliničnih predmetov.

Intended learning outcomes:

Knowledge and Understanding:

On completion of this course the student will be able to recognize and differentiate molecules, to understand the chemical reactions in human body and know to explain transport phenomenon in human body

An integrative approach of fundamental living processes and understanding of disease incidence and molecular approaches of healing. Integrative knowledge of molecular mechanisms of functioning of the healthy organism and disorders that consequently lead to the disease.

Transferable/Key Skills and other attributes:

Student will be able to work in team and to improve the skills of computation.

Biochemistry is correlated to the understanding of pathophysiology, pharmacology and most of the clinical subjects.

Metode poučevanja in učenja:

Predavanja, skupinsko in individualno delo, seminarji, laboratorijske vaje. PBL.

Learning and teaching methods:

Lectures, group and individual work, projects, laboratory practicals, PBL.

Načini ocenjevanja:

Delež (v %) /
Weight (in %)

Assessment:

Način (pisni izpit, ustno izpraševanje, naloge, projekt)		Type (examination, oral, coursework, project):
pisni izpit	70 %	written examination
opravljene lab. vaje in kolokvij,	20 %	assessment of laboratory practicals,
opravljen seminar	10 %	assessment of project work
ŠTUDIJSKE OBVEZNOSTI ŠTUDENTOV		ACADEMIC OBLIGATIONS OF STUDENTS:
Opravljene vaje – prisotnost na vajah		Students should complete laboratory work and write reports. Presence at all laboratory work is mandatory.
Opravljeni seminarji – prisotnost na seminarjih		Students should write an essay on selected topic and give oral presentation (seminar). Presence at seminar presentations is mandatory.
POGOJI ZA PRISTOP K POSAMEZNEMU PREVERJANJU ZNANJA		REQUIREMENTS FOR ACCESS TO INDIVIDUAL KNOWLEDGE CHECKING:
Opravljen kolokvij iz vaj – pogoj za pristop k izpitu		Laboratory and seminary work project is condition for applying to written exam
Opravljene vaje in dnevnik – pogoj za pristop h kolokviju iz vaj		Students can pass the exam with colloquia which is highly recommended. Colloquia are divided in three sets. For the recognition of written examination must all be positive.
Opravljeni seminarji – pogoj za pristop k izpitu		

Reference nosilca / Lecturer's references:**POTOČNIK UROŠ**

JOSTINS, Luke, MITROVIČ, Mitja, POTOČNIK, Uroš, et al. Host-microbe interactions have shaped the genetic architecture of inflammatory bowel disease. *Nature*, ISSN 0028-0836. [Print ed.], 2012, vol. 491, no. 7422, str. 119-124, doi: 10.1038/nature11582. [COBISS.SI-ID 512230968], [JCR, SNIP, WoS do 5. 6. 2016: št. citatov (TC): 945, čistih citatov (CI): 940, čistih citatov na avtorja (CIAu): 46.32, normirano št. čistih citatov (NC): 374, Scopus do 5. 5. 2016: št. citatov (TC): 986, čistih citatov (CI): 979, čistih citatov na avtorja (CIAu): 48.25, normirano št. čistih citatov (NC): 1558], SCI impact factor=36.28

CLEYNEN, Isabelle, BOUCHER, Gabrielle, JOSTINS, Luke, SCHUMM, Philip L., ZEISSIG, Sebastian, AHMAD, Tariq, ANDERSEN, Vibeke, ANDREWS, Jane M, ANNESE, Vito, BRAND, Stephan, et al., MITROVIČ, Mitja (sodelavec pri raziskavi), POTOČNIK, Uroš (sodelavec pri raziskavi), et al. Inherited determinants of Crohn's disease and ulcerative colitis phenotypes : a genetic association study. *The Lancet*, ISSN 1474-547X. [Online ed.], 2016, vol. 387, iss. 10014, str. 156-167. [http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(15\)00465-1/abstract](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(15)00465-1/abstract), doi: 10.1016/S0140-6736(15)00465-1. [COBISS.SI-ID 512567352], [JCR, SNIP, WoS do 1. 6. 2016: št. citatov (TC): 3, čistih citatov (CI): 3, čistih citatov na avtorja (CIAu): 0.13, normirano št. čistih citatov (NC): 1, Scopus do 1. 6. 2016: št. citatov (TC): 4, čistih citatov (CI): 4, čistih citatov na avtorja (CIAu): 0.17, normirano št. čistih citatov (NC): 1]; SCI impact factor= 45.22

RIVAS, Manuel A, MITROVIČ, Mitja, POTOČNIK, Uroš, et al. Deep resequencing of GWAS loci identifies independent rare variants associated with inflammatory bowel disease. *Nature genetics*, ISSN 1061-4036, 2011, vol. 43, no. 11, str. 1066-1073, doi: 10.1038/ng.952. [COBISS.SI-ID 15421974], [JCR, SNIP, WoS do 6. 6. 2016: št. citatov (TC): 280, čistih citatov (CI): 279, čistih citatov na avtorja (CIAu): 12.61, normirano št. čistih citatov (NC): 77, Scopus do 6. 5. 2016: št. citatov (TC): 299, čistih citatov (CI): 297, čistih citatov na avtorja (CIAu): 13.42, normirano št. čistih citatov (NC): 82] SCI impact factor=35.53

BERCE, Vojko, PINTO KOZMUS, Carina, POTOČNIK, Uroš. Association among ORMDL3 gene expression, 17q21 polymorphism and response to treatment with inhaled corticosteroids in children with asthma. *Pharmacogenomics journal*, ISSN 1470-269X, Dec. 2013, vol. 13, issue 6, 523-529. <http://www.nature.com/tpj/journal/vaop/ncurrent/full/tpj201236a.html>, doi: 10.1038/tpj.2012.36. [COBISS.SI-ID

4406079], [JCR, SNIP, WoS do 4. 2. 2016: št. citatov (TC): 6, čistih citatov (CI): 5, čistih citatov na avtorja (CIAu): 1.67, normirano št. čistih citatov (NC): 2, Scopus do 4. 12. 2015: št. citatov (TC): 8, čistih citatov (CI): 7, čistih citatov na avtorja (CIAu): 2.33, normirano št. čistih citatov (NC): 3]; SCI impact factor= 5.513

KODER, Silvo, REPNIK, Katja, Ferkolj, Ivan, PERNAT DROBEŽ, Cvetka, SKOK, Pavel, WEERSMA, Rinse K., POTOČNIK, Uroš. Genetic polymorphism in ATG16L1 gene influences the response to adalimumab in Crohn's disease patients. *Pharmacogenomics*, ISSN 1462-2416, 2015, vol. 16, no. 3, str. 191-204, doi: 10.2217/pgs.14.172. [COBISS.SI-ID 512474168], [JCR, SNIP, WoS do 2. 5. 2016: št. citatov (TC): 1, čistih citatov (CI): 1, čistih citatov na avtorja (CIAu): 0.14, normirano št. čistih citatov (NC): 0, Scopus do 2. 3. 2016: št. citatov (TC): 1, čistih citatov (CI): 1, čistih citatov na avtorja (CIAu): 0.14, normirano št. čistih citatov (NC): 0]; SCI impact factor= 3.218

ŽELJKO KNEZ

MIRKOVIĆ, Dušica, IBRIĆ, Svetlana, BALANČ, Bojana D., KNEZ, Željko, BUGARSKI, Branko M. Evaluation of the impact of critical quality attributes and critical process parameters on quality and stability of parenteral nutrition nanoemulsions. *Journal of drug delivery science and technology*, ISSN 1773-2247, 2017, vol. 39, str. 341-347, ilustr., doi: 10.1016/j.jddst.2017.04.004. [COBISS.SI-ID 20561430], [JCR, SNIP, WoS do 14. 7. 2017: št. citatov (TC): 0, čistih citatov (CI): 0, čistih citatov na avtorja (CIAu): 0, Scopus do 12. 6. 2017: št. citatov (TC): 0, čistih citatov (CI): 0, čistih citatov na avtorja (CIAu): 0]

XHANARI, Klodian, FINŠGAR, Matjaž, KNEZ HRNČIČ, Maša, MAVER, Uroš, KNEZ, Željko, SEITI, Bujar. Green corrosion inhibitors for aluminium and its alloys : a review. *RSC advances*, ISSN 2046-2069, 2017, vol. 7, str. 27299-27330, doi: 10.1039/C7RA03944A. [COBISS.SI-ID 20588822], [JCR, SNIP, WoS do 16. 6. 2017: št. citatov (TC): 0, čistih citatov (CI): 0, čistih citatov na avtorja (CIAu): 0, Scopus do 1. 10. 2017: št. citatov (TC): 1, čistih citatov (CI): 0, čistih citatov na avtorja (CIAu): 0]

KNEZ HRNČIČ, Maša, KRAVANJA, Gregor, KNEZ, Željko. Hydrothermal treatment of biomass for energy and chemicals. *Energy*, ISSN 0360-5442. [Print ed.], Dec. 2016, vol. 116, part 2, str. 1312-1322, doi: 10.1016/j.energy.2016.06.148. [COBISS.SI-ID 19682838], [JCR, SNIP, WoS do 24. 9. 2017: št. citatov (TC): 4, čistih citatov (CI): 3, čistih citatov na avtorja (CIAu): 1.00, Scopus do 31. 8. 2017: št. citatov (TC): 5, čistih citatov (CI): 4, čistih citatov na avtorja (CIAu): 1.33]

ČOLNIK, Maja, PRIMOŽIČ, Mateja, KNEZ, Željko, LEITGEB, Maja. Use of non-conventional cell disruption method for extraction of proteins from black yeasts. *Frontiers in bioengineering and biotechnology*, ISSN 2296-4185, April 2016, vol. 4, str. 1-12, doi: 10.3389/fbioe.2016.00033. [COBISS.SI-ID 19560726], [SNIP]

KRAVANJA, Gregor, KNEZ HRNČIČ, Maša, ŠKERGET, Mojca, KNEZ, Željko. Interfacial tension and gas solubility of molten polymer polyethyleneglycol in contact with supercritical carbon dioxide and argon. *The Journal of supercritical fluids*, ISSN 0896-8446. [Print ed.], Feb. 2016, vol. 108, str. 45-55, doi: 10.1016/j.supflu.2015.10.013. [COBISS.SI-ID 19233814], [JCR, SNIP, WoS do 24. 9. 2017: št. citatov (TC): 4, čistih citatov (CI): 2, čistih citatov na avtorja (CIAu): 0.50, Scopus do 31. 8. 2017: št. citatov (TC): 4, čistih citatov (CI): 2, čistih citatov na avtorja (CIAu): 0.50]

BRGLEZ MOJZER, Eva, KNEZ HRNČIČ, Maša, ŠKERGET, Mojca, KNEZ, Željko, BREN, Urban. Polyphenols : extraction methods, antioxidative action, bioavailability and anticarcinogenic effects. *Molecules*, ISSN 1420-3049, 2016, vol. 21, no. 7, str. 1-38. <http://www.mdpi.com/1420-3049/21/7/901>, doi: 10.3390/molecules21070901. [COBISS.SI-ID 19672598], [JCR, SNIP, WoS do 24. 9. 2017: št. citatov (TC): 8, čistih citatov (CI): 8, čistih citatov na avtorja (CIAu): 1.60, Scopus do 30. 9. 2017: št. citatov (TC): 16, čistih citatov (CI): 16, čistih citatov na avtorja (CIAu): 3.20]