LIČNA KARTA

ISTRAŽIVAČKE GRUPE FARMACEUTSKOG FAKULTETA

Министарство просвете, науке и технолошког развоја

European Commission

Co-funded by the Erasmus+ Programme of the European Union

COST

JRC

REPUBLIKA SRBIJA FOND ZA INOVACIONU DELATNOST

Фонд за науку Републике Србије

UNIVERZITET U BEOGRADU

FARMACEUTSKI FAKULTET

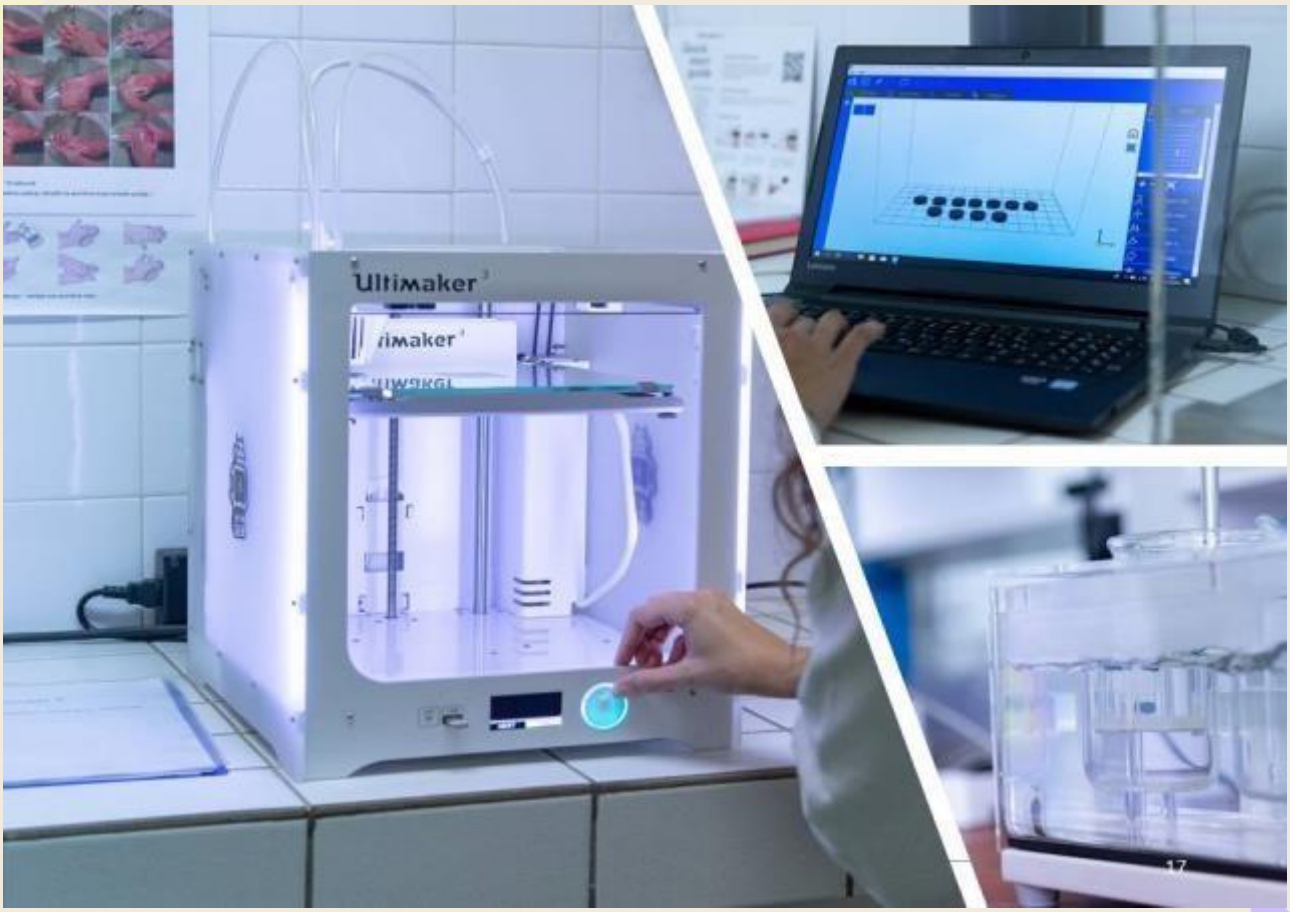
- *Više od **80 godina** pružanja usluga visokog obrazovanja.*
- *Član Univerziteta u Beogradu, **najstarijeg univerziteta** u Republici Srbiji.*
- ***Duga tradicija** istraživanja u nekoliko oblasti.*
- *U oblasti farmacije i farmaceutskih nauka Univerzitet u Beogradu bio je rangiran **u prvih 200 univerziteta** na Šangajskoj listi 2018. god. i među 500 najboljih univerziteta u istoj naučnoj oblasti u 2020, prema broju publikacija u 25% vodećih naučnih časopisa (Q1).*

***Katedra za farmaciju** prvi put je osnovana na Medicinskom fakultetu Univerziteta u Beogradu 24. oktobra 1939. **Farmaceutski fakultet** je postao nezavisna visokoškolska ustanova 19. oktobra 1945. Niz godina predavanja su se izvodila u prostorijama Medicinskog fakulteta, a u septembru 1991. godine Farmaceutski fakultet se preselio u svoju zgradu.*

Oprema

Katalog opreme (link)


19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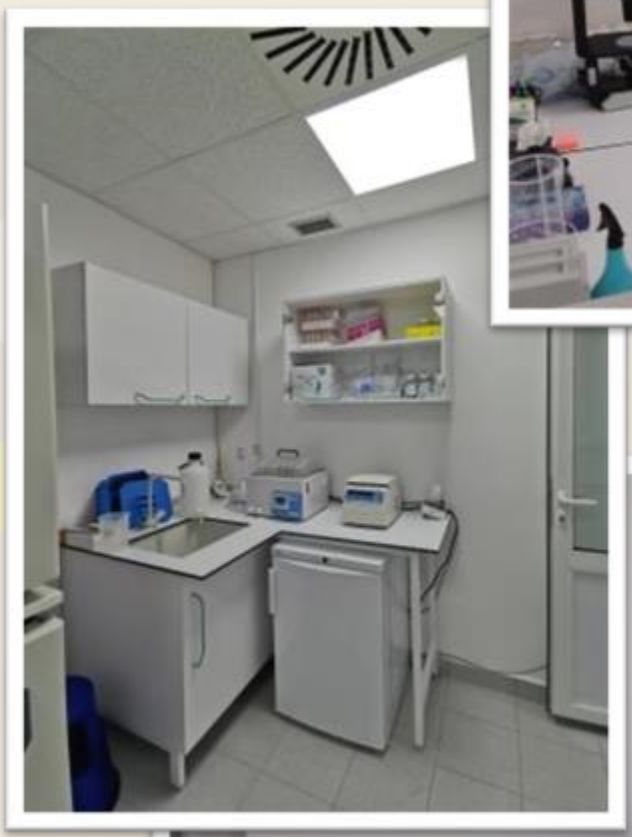
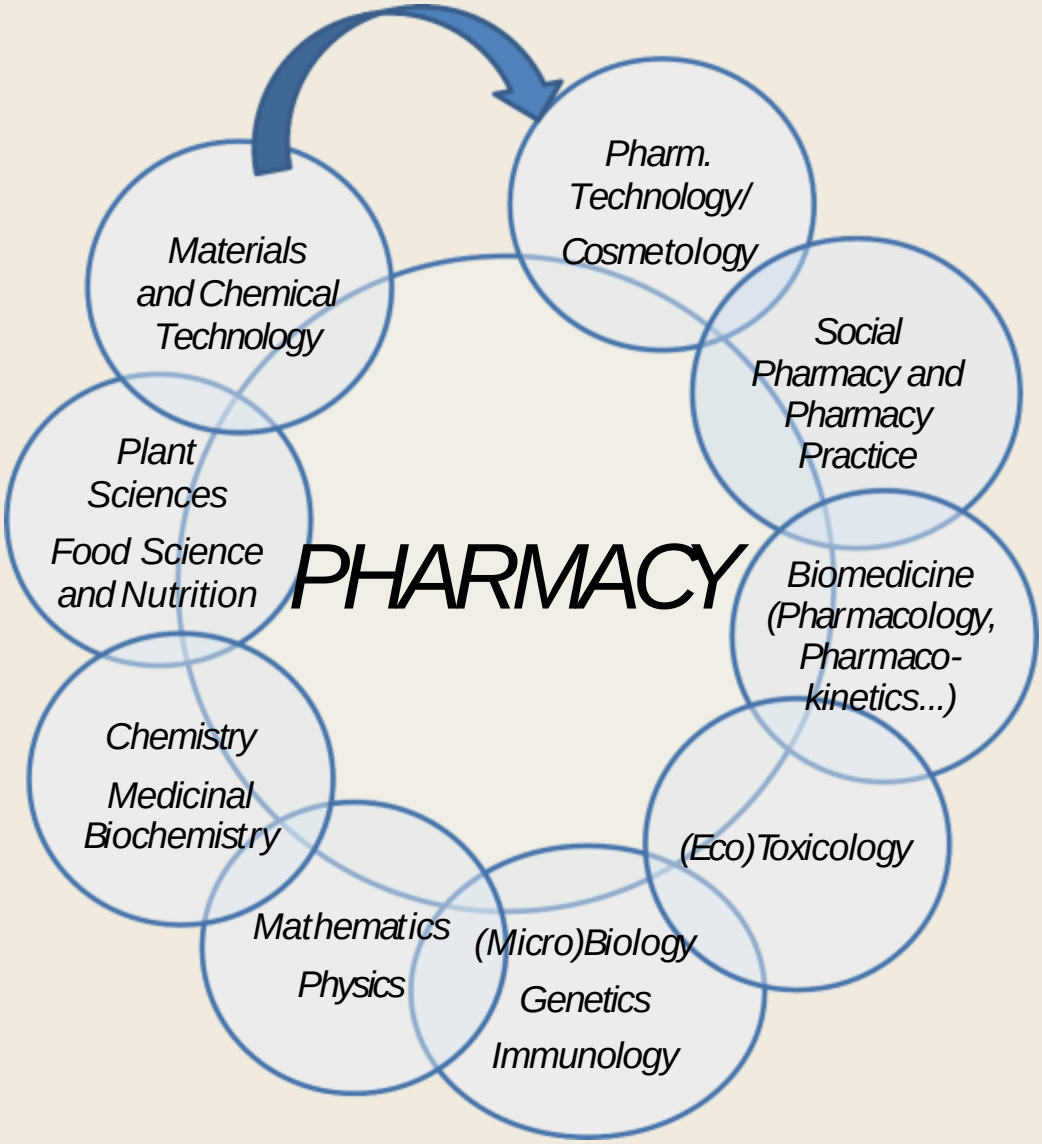
Centar za istraživanje matičnih ćelija i razvoj lekova…



Istraživačke oblasti



Istraživačke grupe (IG)

IG prof. dr Anđelije Malenović (Analitika lekova)
IG prof. dr Slađane Šobajić (Bromatologija)
IG dr Katarine Nikolić, vanr. prof. (Farmaceutska hemija)
IG prof. dr Slavice Erić (Farmaceutska hemija)
IG doc. dr Vladimira Dobričića (Farmaceutska hemija)
IG prof. dr Snežane Savić (Farmaceutska tehnologija i kozmetologija)
IG prof. dr Svetlane Ibrić (Farmaceutska tehnologija i kozmetologija)
IG prof. dr Nade Kovačević (Farmakognozija)
IG prof. dr Branislave Miljković (Farmakokinetika i klinička farmacija)
IG prof. dr Miroslava Savića (Farmakologija)
IG prof. dr Radice Stepanović-Petrović (Farmakologija)
IG dr Aleksandre Janošević-Ležaić, vanr. prof. (Fizička hemija)
IG prof. dr Neli Kristine Todorović Vasović (Fizika i matematika)
IG doc. dr Marina Jukića (Fiziologija)
IG prof. dr Vesne Pešić (Fiziologija)
IG prof. dr Svetlane Ignjatović (Medicinska biohemija)
IG prof. dr Jelene Antić Stanković (Mikrobiologija)
IG prof. dr Vladimira Savića (Organska hemija)
IG prof. dr Biljane Spremo-Potparević (Patobiologija)
IG prof. dr Gordane Leposavić (Patobiologija)
IG prof. dr Dušanke Krajnović (Socijalna farmacija)
IG prof. dr Biljane Antonijević (Toksikologija)
IG doc. dr Aleksandre Buhe Đorđević (Toksikologija)

Međunarodni istraživački projekti

Univerzitet u Beogradu - Farmaceutski fakultet je uključen ili je bio uključen u realizaciju:

- **2** projekta iz programa **Horizon 2020** (prof. dr Miroslav Savić, doc. dr Marin Jukić),
- **27 COST** (European Cooperation in Science and Technology) akcija (link),
- **1 Istraživačko-razvojnog projekta sa Narodnom Republikom Kinom** (dr Danijela Đukić Ćosić, vanr. prof /IG Prof. Biljana Antonijević)
- **2 CEEPUS** (Central European Exchange Program for University Studies) projekta (prof. dr Jelena Kotur Stevuljević, prof. dr Jelena Parojčić),
- **3 JRC** (Joint Research Centre) projekta (prof. dr Snežana Savić),
- **1 FDA** podržanog projekta (dr Sandra Cvijić, vanr. Prof./IG prof. dr Svetlana Ibrić),
- **6** bilateralnih projekata sa **Saveznom Republikom Nemačkom** (prof. dr Snežana Savić, dr Ana Protić, vanr. prof., prof. dr Svetlana Ibrić),
- **4** bilateralna projekta sa **Republikom Slovenijom** (doc. dr Vladimir Dobričić, dr Biljana Otašević, vanr. prof., dr Danijela Đukić-Ćosić, vanr. prof., dr Katarina Vučićević, vanr. prof.),
- **3** bilateralna projekta sa **Republikom Austrijom** (prof. dr Brižita Đorđević i doc. dr Nevena Ivanović, prof. dr Miroslav Savić),
- **2** bilateralna projekta sa **Narodnom Republikom Kinom** (prof. dr Aleksandra Novaković, dr Sandra Cvijić, vanr. Prof./IG prof. dr Svetlana Ibrić),
- **1** bilateralnog projekta sa **Republikom Francuskom** (dr Katarina Nikolić, vanr. prof.),
- **1** bilateralnog projekta sa **Republikom Italijom** (prof. dr Biljana Potparević),
- **1** bilateralnog projekta sa **Republikom Hrvatskom** (prof. dr Biljana Antonijević),
- **1 Deutsche Forschungsgemeinschaft** (DFG) projekta (dr Katarina Nikolić, vanr. prof.),
- **ERASMUS+** (link) i **ReFEEHS** (link) projekata.

Nacionalni istraživački projekti

Univerzitet u Beogradu - Farmaceutski fakultet je bio koordinator **15 istraživačkih projekata (12 projekata iz oblasti osnovnih istraživanja i 3 projekta iz oblasti tehnološkog razvoja)** koje je finansiralo nadležno Ministarstvo Republike Srbije; pored toga, naše nastavno / istraživačko osoblje bilo je uključeno u **32 nacionalna istraživačka projekta** koja je vodila neka druga naučna institucija (osnovno istraživanje, tehnološki razvoj, interdisciplinarno istraživanje); **trenutno, istraživanja na Farmaceutskom fakultetu, kao akreditovanoj naučnoistraživačkoj organizaciji (NIO), podržana su od strane Ministarstva prosvete, nauke i tehnološkog razvoja Republike Srbije putem prelaznog institucionalnog finansiranja.**

Министарство просвете,
науке и технолошког развоја

Više od 150 istraživača iz redova nastavnog osoblja i 39 istraživača, uglavnom doktoranada, uključeno je u program institucionalnog finansiranja.

Nacionalni istraživački projekti

Univerzitet u Beogradu - Farmaceutski fakultet je uključen ili je bio uključen u realizaciju:

- **4 projekta** iz programa **Dokaz koncepta** Fonda za inovacionu delatnost (dr Marina Odalović, vanr. prof., prof. dr Zorica Vujić, prof. dr Snežana Savić, prof. dr Vesna Spasojević Kalimanovska),
- **4 projekta** iz programa **saradnje srpske nauke sa dijasporom** Fonda za nauku (prof. dr Gordana Leposavić, dr Brankica Filipić, vanr. prof., asist. dr. Tamara Gojković, prof. dr Vladimir Savić),
- **2 projekta** iz programa **PROMIS** (Program za izvrsne projekte mladih istraživača) Fonda za nauku (doc. dr Marin Jukić, doc. dr Aleksandra Buha Đorđević),
- **1 projekta** iz programa **saradnje nauke i privrede** Fonda za inovacionu delatnost (prof. dr Vladimir Savić),
- **1 projekta Centra za promociju nauke** (dr Brankica Filipić, vanr. prof., doc. dr Aleksandra Buha Đorđević i doc. dr Ivan Jančić),
- **projekta** u okviru **pokreni se za nauku inicijative** (doc. dr Marin Jukić),
- **2 inovaciona vaučera** (prof. dr Marina Milenković, assist dr sc. Tamara Gojković).

Фонд за науку Републике Србије

REPUBLIKA SRBIJA FOND ZA INOVACIONU DELATNOST

ЦЕНТАР ЗА ПРОМОЦИЈУ НАУКЕ

ISTRAŽIVAČKA GRUPA
PROF. DR ANĐELIJA MALENOVIĆ

A N A L I T I K A L E K O V A

Naslov istraživačke teme: Modelovanje analitičkih i bioanalitičkih sistema za karakterizaciju farmakološki aktivnih jedinjenja

Članovi tima:
Dr Anđelija Malenović, redovni profesor
Dr Mira Zečević, redovni profesor
Dr Biljana Otašević, vanredni profesor
Dr Ana Protić, vanredni profesor
Dr Aleksandra Janošević Ležajić, docent
Mag. farm. Nevena Đajić
Mag. farm. Jovana Krmar
Mag. farm. Marija Rašević
Mag. farm. Milena Rmandić
Mag. farm. Bojana Svrkota

Oprema i metode:
1. HPLC system Finnigan Surveyor Thermo Scientific
2. Waters Acquity; H-Class core systems, Waters Xevo™ TQD
3. Dionex Ultimate 3000 (U)HPLC system equipped with Corona Charged Aerosol Detector (ThermoFisher Scientific, USA)
4. Thermo Scientific Accela UPLC system (Thermo Fisher Scientific USA)
5. Thermo Scientific TSQQuantum Access Max (Thermo Fisher Scientific, Inc, CA, USA) equipped with triple quadrupole

Projekti/ finansiranje: Hemometrijski pristup ispitivanju odgovora Corona Charged Aerosol detektora u farmaceutskoj analizi (Bilateralni projekat sa Nemačkom, Univerzitet u Vircburgu)

Saradnje:
- Intensive and fruitful collaboration with assoc. prof. Yannis Dotsikas, Laboratory of Pharmaceutical Analysis, Department of Pharmacy, National and Kapodistrian University of Athens, Athens, Greece.
- Collaboration with prof. dr Ulrike Holzgrabe, University of Wurzburg, Institute of Pharmacy and Food Chemistry, Germany.
- Collaboration with prof. dr Borut Štrukelj, Chair for pharmaceutical biology, University of Ljubljana, Slovenia

ISTRAŽIVAČKA GRUPA
PROF. DR ANĐELIJA MALENOVIĆ

Odabrane publikacije:

Rmandić M, Malenović A. Chaotropic chromatography method development for the determination of aripiprazole and its impurities following analytical quality by design principles. J. Sep. Sci. 2020; 43:3242–3250. Chemistry – Analytical category (32/86), M22, IF 2.878

Rmandić M, Dotsikas Y, Malenović A. Identification of the factors affecting the consistency of DBS formation via experimental design and image processing methodology. Microchemical J. 2019; 145: 1003-1010. Chemistry – Analytical category (19/86), M21, IF 3.594

Čolović, J., Rmandić, M., Malenović, A.: Characterization of bonded stationary phase performance as a function of qualitative and quantitative chromatographic factors in chaotropic chromatography. Anal. Bioanal. Chem. 2018; 410: 4855-4866. Chemistry – Analytical category (18/84), M21, IF 3.286

Ilioua, K., Malenović, A., Loukas, Y., Dotsikasa, Y.: Analysis of potential genotoxic impurities in rabeprazole active pharmaceutical ingredient via Liquid Chromatography-tandem Mass Spectrometry, following quality-by-design principles for method development. J. Pharm. Biomed. Anal. 2018; 149: 410-418. Chemistry – Analytical category (24/84), M21, IF 2.983

Čolović, J., Kalinić, M., Vemić, A., Erić, S., Malenović, A.: Influence of the mobile phase and molecular structure parameters on the retention behavior of protonated basic solutes in chaotropic chromatography. J Chromatogr A. 2017; 1511: 68-76. Chemistry – Analytical category (13/81), M21, IF 3.716

Šljivić J, Protić A, Malenović A, Otašević B, Zečević M. Simple and efficient solution for robustness testing in gradient elution liquid chromatographic methods. Chromatographia 2018 August; (81): 1135-1145. (Chemistry, Analitical, IF 1.552, M23)

Otašević B, Šljivić J, Protić A, Maljurić N, Malenović A, Zečević M. Comparison of AQbD and grid point search methodology in the development of micellar HPLC method for the analysis of cilazapril and hydrochlorothiazide dosage form stability. Microchemical J 2019; 145: 655-663 (Chemistry, Analitical, IF 3,594, M21)

Mitrović M, Protić A, Malenović A, Otašević B, Zečević M. Analytical Quality by Design development of an ecologically acceptable enantioselective HPLC method for timolol maleate enantiomeric purity testing on ovomucoid chiral stationary phase. J Pharm Biomed Anal 2020; 180: 113034. (Chemistry, Analitical, IF 3,209, M22)

Golubovic Jelena B, Birkemeyer Claudia, Protic Ana D, Otasevic Biljana M, Zecevic Mira L. Structure-response relationship in electrospray ionization-mass spectrometry of sartans by artificial neural networks. Journal of Chromatography A, 2016, vol. 1438, 123.132 (Chemistry, Analitical, IF 3,981, M21)

Golubovic Jelena B, Protic Ana D, Zecevic Mira L, Otasevic Biljana M. Quantitative structure retention relationship modeling in liquid chromatography method for separation of candesartan cilexetil and its degradation products, Chemometics and Intelligent Laboratory Systems, 2015, vol. 140 br. , str. 92-101, (Chemistry, Analitical, IF 2,217, M22)

Jovana Krmar, Milan Vukićević, Ana Kovačević, Ana Protić, Mira Zečević, Biljana Otašević. Performance comparison of nonlinear and linear regression algorithms coupled with different attribute selection methods for quantitative structure-retention relationships modeling in micellar liquid chromatography. Journal of Chromatography A 2020; 1623: 461146. DOI: 10.1016/j.chroma.2020.461146. (journal rankings M21, IF=4.049 for year 2019; field Chemistry, Analytical 14/86)

Jelena Golubović, Ana Protić, Biljana Otašević, Mira Zečević. Quantitative structure-retention relationships applied to development of liquid chromatography gradient-elution method for the separation of sartans. Talanta 2016; 150: 190-197. DOI: 10.1016/j.talanta.2015.12.035. (journal rankings M21, IF=4.162 for year 2016; field Chemistry, Analytical 9/76)

Jelena Golubović, Biljana Otašević, Ana Protić, Aleksandra Stanković, Mira Zečević. Liquid chromatography-tandem mass spectrometry for simultaneous determination of undeclared corticosteroids in cosmetic creams. Rapid communications in mass spectrometry 2015; 29 (24): 2319-2327. DOI: 10.1002/rcm.7403. (journal rankings M22, IF=2.226; field Spectroscopy 17/43)

Jelena Golubović, Ana Protić, Mira Zečević, Biljana Otašević, Marija Mikić. Artificial neural networks modelling in UPLC method optimization of mycophenolate mofetil and its degradation products. Journal of chemometrics 2014; 28(7): 567-574. DOI: 10.1002/cem.2616 (journal rankings M21, IF=1.500; field Mathematics, Interdisciplinary Applications 26/99)

Nevena Maljurić; Jelena Golubović, Matjaž Ravnikar, Dušan Žigon, Borut Štrukelj, Biljana Otašević. Isolation and determination of fomentariol – novel potential antidiabetic drug from fungal material. Journal of analytical methods in chemistry 2018; Volume 2018, Article ID 2434691, 9 pages. DOI 10.1155/2018/2434691. (journal rankings M23, IF=1.589; field Chemistry, Analytical 59/84)

Nevena Maljurić, Biljana Otašević, Anđelija Malenović, Mira Zečević, Ana Protić, Quantitative structure retention relationship modeling as potential tool in chromatographic determination of stability constants and thermodynamic parameters of β-cyclodextrin complexation process, Journal of Chromatography A, 1619 (2020) 460971, doi: 10.1016/j.chroma.2020.460971. Chemistry – Analytical category (14/86), M21, IF4.049

Nevena Maljurić, Biljana Otašević, Jelena Golubović, Jovana Krmar, Mira Zečević, Ana Protić, A new strategy for development of eco-friendly RP-HPLC method using Corona Charged Aerosol Detector and its application for simultaneous analysis of risperidone and its related impurities, Microchemical Journal, 153 (2020) 104394. Chemistry – Analytical category (19/86), M21, IF3.594

Klaus Schilling, Jovana Krmar, Nevena Maljurić, Ruben Pawellek, Ana Protić, Ulrike Holzgrabe, Quantitative Structure – Property Relationship modeling of polar analytes lacking UV chromophores to Charged Aerosol Detector Response, Analytical and Bioanalytical Chemistry, 2019, 411: 2945-2959. Chemistry – Analytical category (18/86) M21, IF3.637

Nevena Maljurić, Jelena Golubivić, Biljana Otašević, Mira Zečević, Ana Protić, Quantitative structure – retention relationship modeling of selected antipsychotics and their impurities in green liquid chromatography using cyclodextrin mobile phases, Analytical and Bioanalytical Chemistry, 2018, 410: 2533–2550. Chemistry – Analytical category (18/84) M21, IF3.286

Ana Protić, Marina Radišić, Jelena Golubović, Biljana Otašević, Mira Zečević, Mila Laušević, Structural elucidation of unknown oxidative degradation products of Mycophenolate mofetil using LC-MSn, Chromatographia, 2016, 79: 919-926 (Short communication). Chemistry – Analytical category (52/76) M23, IF1.402

Ostali radovi:
Repozitorijum Farmaceutskog fakulteta - FarFaR (link)

ISTRAŽIVAČKA GRUPA
PROF. DR SLAĐANA ŠOBAJIĆ

B R O M A T O L O G I J A

Naslov istraživačke teme:	Analiza hemijskog sastava hrane i praćenje bioloških efekata nutrijenata u različitim populacionim grupama
Članovi tima:	Dr Slađana Šobajić, redovni profesor Dr Ivan Stanković, redovni profesor Dr Brižita Đorđević, redovni profesor Dr Ivana Đuričić, vanredni profesor Dr Bojana Vidović, vanredni profesor Dr Nevena Ivanović, docent Dr Vanja Todorović, asistent sa doktoratom Mag.farm. Milica Zrnić Ćirić, saradnik Dr Uroš Čakar, naučni saradnik Mag.farm. Nevena Dabetić, istraživač-saradnik Mag.farm-med.biohem. Tijana Ilić, istraživač-pripravnik
Oprema i metode:	1. GC Agilent Technologies 7890A sa plameno jonizacionim detektorom 2. ELISA čitač BIOTEK, USA, ELx800 Absorbance Microplate Reader 3. Jednozračni spektrofotometar J. P. SELECTA 4. UV/VIS LLG-UniSPEC 2 spektrofotometar
Projekti/ finansiranje:	CA16112 “Personalized Nutrition in aging society: redox control of major age-related diseases” (2016-2021) CA17117 “Towards an International Network for Evidence-based Research in Clinical Health Research” (2018-2022) CA19105 “Pan-European Network in Lipidomics and EpiLipidomics” (2020-2024)
Saradnje:	Bilateral project with Department of Nutritional Science, University of Vienne: Evaluation of the potential of a new probiotic concept for the menagment of obesity and its associated comorbidies, 2018- CBIOS, Universidade Lusófona´s Research Center for Biosciences & Health Technologies, Lisbon, Portugal, prof. dr Ana Sofia Fernandes, 2018-

ISTRAŽIVAČKA GRUPA
PROF. DR SLAĐANA ŠOBAJIĆ

Odabrane publikacije:

Koss-Mikołajczyk I, Todorovic V, Sobajic S, Mahajna J, Gerić M, Tur JA, Bartoszek A. Natural products counteracting cardiotoxicity during cancer chemotherapy: The special case of doxorubicin, a comprehensive review. International Journal of Molecular Sciences. 2021 Jan;22(18):10037.

Djuricic I, Calder PC. Beneficial outcomes of omega-6 and omega-3 polyunsaturated fatty acids on human health: An update for 2021. Nutrients. 2021 Jul;13(7):2421.

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Dodevska MS, Sobajic SS, Dragicevic VD, Stankovic I, Ivanovic ND, Djordjevic BI. The impact of diet and fibre fractions on plasma adipocytokine levels in prediabetic adults. Nutrients. 2021 Feb;13(2):487.

Ciric MZ, Ostojic M, Baralic I, Kotur-Stevuljevic J, Djordjevic BI, Markovic S, Zivkovic S, Stankovic I. Supplementation with Octacosanol Affects the Level of PCSK9 and Restore Its Physiologic Relation with LDL-C in Patients on Chronic Statin Therapy. Nutrients. 2021 Mar;13(3):903.

Timic JB, Kotur-Stevuljevic J, Boeing H, Krajnovic D, Djordjevic B, Sobajic S. A cross-sectional survey of salty snack consumption among serbian urban-living students and their contribution to salt intake. Nutrients. 2020 Nov;12(11):3290.

Ilić T, Dodevska M, Marčetić M, Božić D, Kodranov I, Vidović B. Chemical characterization, antioxidant and antimicrobial properties of goji berries cultivated in Serbia. Foods. 2020 Nov;9(11):1614.

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Dabetić N, Todorović V, Panić M, Radojčić Redovniković I, Šobajić S. Impact of deep eutectic solvents on extraction of polyphenols from grape seeds and skin. Applied Sciences. 2020 Jan;10(14):4830.

Dragacevic L, Djordjevic B, Gavrovic-Jankulovic M, Ilic V, Kanazir D, Minic R. ELLSA based profiling of surface glycosylation in microorganisms reveals that ß-glucan rich yeasts' surfaces are selectively recognized with recombinant banana lectin. Glycoconjugate journal. 2020 Feb;37(1):95-105.

Grozdanić N, Đuričić I, Kosanić M, Zdunić G, Šavikin K, Etahiri S, Assobhei O, Benba J, Petović S, Matić IZ, Stanojković TP. Fucus spiralis extract and fractions: Anticancer and pharmacological potentials. Journal of BU ON.. 2020;25(2):1219-29.

Baranowska M, Suliborska K, Todorovic V, Kusznierewicz B, Chrzanowski W, Sobajic S, Bartoszek A. Interactions between bioactive components determine antioxidant, cytotoxic and nutrigenomic activity of cocoa powder extract. Free Radical Biology and Medicine. 2020 Jul 1;154:48-61.

Zrnić-Ćirić M, Dabetić N, Todorović V, Đuriš J, Vidović B. Beta-glucan content and antioxidant activities of mushroom-derived food supplements. Journal of the Serbian Chemical Society. 2020;85(4):439-51.

Milovanovic M, Žeravík J, Obořil M, Pelcová M, Lacina K, Cakar U, Petrovic A, Glatz Z, Skládal P. A novel method for classification of wine based on organic acids. Food chemistry. 2019 Jun 30;284:296-302.

Koss-Mikołajczyk I, Baranowska M, Todorovic V, Albini A, Sansone C, Andreoletti P, Cherkaoui-Malki M, Lizard G, Noonan D, Sobajic S, Bartoszek A. Prophylaxis of non-communicable diseases: why fruits and vegetables may be better chemopreventive agents than dietary supplements based on isolated phytochemicals?. Current pharmaceutical design. 2019 May 1;25(16):1847-60.

Smilkov K, Ackova DG, Cvetkovski A, Ruskovska T, Vidovic B, Atalay M. Piperine: old spice and new nutraceutical?. Current pharmaceutical design. 2019 Apr 1;25(15):1729-39.

Costa JG, Vidovic B, Saraiva N, do Céu Costa M, Del Favero G, Marko D, Oliveira NG, Fernandes AS. Contaminants: a dark side of food supplements?. Free radical research. 2019 Aug 12;53(sup1):1113-35.

Michaličková D, Belović M, Ilić N, Kotur-Stevuljević J, Slanař O, Šobajić S. Comparison of polyphenol-enriched tomato juice and standard tomato juice for cardiovascular benefits in subjects with stage 1 hypertension: A randomized controlled study. Plant Foods for Human Nutrition. 2019 Mar;74(1):122-7.

Milović S, Stanković I, Nikolić D, Radović J, Kolundžić M, Nikolić V, Stanojković T, Petović S, Kundaković-Vasović T. Chemical analysis of selected seaweeds and seagrass from the Adriatic Coast of Montenegro. Chemistry & biodiversity. 2019 Oct;16(10):e1900327.

Čakar U, Grozdanić N, Pejin B, Vasić V, Čakar M, Petrović A, Djordjević B. Impact of vinification procedure on fruit wine inhibitory activity against α-glucosidase. Food Bioscience. 2018 Oct 1;25:1-7.

Michalickova D, Kotur-Stevuljevic J, Miljkovic M, Dikic N, Kostic-Vucicevic M, Andjelkovic M, Koricanac V, Djordjevic B. Effects of probiotic supplementation on selected parameters of blood prooxidant-antioxidant balance in elite athletes: a double-blind randomized placebo-controlled study. Journal of human kinetics. 2018 Sep;64:111.

Ostali radovi:
Repozitorijum Farmaceutskog fakulteta - FarFaR (link)

ISTRAŽIVAČKA GRUPA
DR KATARINA NIKOLIĆ, VANR. PROF.

F A R M A C E U T S K A H E M I J A

Naslov istraživačke teme: Kvantitativni odnos strukture i dejstva, sinteza, fizičko-hemijska karakterizacija i analiza farmakološki aktivnih jedinjenja

Članovi tima:

Dr Katarina Nikolić, vanredni profesor
Dr Gordana Popović, redovni profesor
Dr Mara Aleksić, redovni profesor
Dr Slavica Oljačić, docent
Dr Marija Popović Nikolić, profesor
Dr Teodora Đikić, istraživač saradnik
Dr Valentina Radulović, asistent
Mag. farm. Dušan Ružić, asistent
Mag. farm. Nemanja Đoković, asistent
Mag. farm. Milica Radan, asistent
Mag. farm. Darija Obradović, asistent

Oprema i metode: Računari sa Linux i Windows operativnim sistemima i različitim programa za dizajn lekova - VMD, NAMD, Gromacs, AutoDock, AD Vina, GOLD, Pentacle, FLAP, ADMET predictor, Dragon6, SIMCA, MODDE.
HPLC-UV (Thermo scientific, USA, Dionex Ultimate 3000), UHPLC/MS/MS (ThermoScientific, USA, Accela 6000 TSQ Quantum Access Max), FT-IR (Thermo Scientific, USA, Nicolet iS10), NMR (Bruker, USA, Ascend 400), Automatski titrator 798 MPT Titrino (Metrohm, Switzerland) sa elektrodom LL unitrode Pt 1000 (Metrohm, Switzerland), Potenciostat / galvanostat, μAutolab analyser EcoChemie, The Nederlands, 663 VA Stand, Metrohm, Switzerland.

Kompjuterske metode u dizajnu lekova

- Maestro, FLAP, BIOVIA D.S., Shrodinger Suite
- Biofizička simulacija kompleksnih sistema – Gromacs program, Python programiranje
- Virtuelni doking - with Autodock Vina, GOLD and Glide program
- Modelovanje proteina – Modeller, Chimera, Schrodinger
- *in silico* ADMET skrining: ADMET predictor i ACD/Labs Percepta program
- *Ligand-based virtual screening, structure-based virtual screening, pharmacophore-based virtual screening* – FLAP/GRID program
- 3D-QSAR i modelovanje farmakofore: Pentacle program (Molecular Discovery), Phase (Shrodinger)
- *Artificial Neural Networks* i *Support Vector Machine* modelovanje - Statistica program
- PLS/PCA modelovanje - SIMCA P+ version 12.0, 2008, Umetrics AB; MODDE, Umetrics AB.

Eksperimentalne metode i tehnike: HPLC, LC-GC, UV/VIS spektrometrija, IR-spektroskopija, NMR spektroskopija, LC-MS/MS, *in vitro* ADMET analiza (PAMPA, *biomicelar chromatography, hydrophilic interaction liquid chromatography* (HILIC)), *in vitro* ispitivanja, organska sinteza, fizičkohemijska karakterizacija. Elektrohemijske tehnike: ciklična voltametrija (CV), diferencijalno pulsna voltametrija (DPV) i voltametrija pravougaonih talasa (SWV).

ISTRAŽIVAČKA GRUPA
DR. KATARINA NIKOLIĆ, VANR. PROF.

Projekti/ finansiranje:

1. Ministarstvo nauke i tehnološkog razvoja RS, Ugovor broj 451-03-9/2021-14/200161
2. Bilateralni projekat, Hubert Curien Partnership Project for collaboration France-Serbia 2020-2022 (Program Pavle Savic 2020): Identification of novel DOT1L and DNMT1/3A inhibitors, with Epigenetic Chemical Biology, Institut Pasteur, CNRS UMR3523, Paris 75015 France (Prof. Paola Arimondo research group).
3. Deutsche Forschungsgemeinschaft (DFG) project named: Control of epigenetic states through light-triggered protein-protein interaction mediators, 2020-2023 PI Asst. Prof. Olalla Vázquez, Fachbereich Chemie Philipps-Universität Marburg, Germany.
4. COST action CA18240 (2019-2023): "Adher ´n Rise' on adhesion GPCRs for non-tenured scientists"
5. COST action CA18133 (2019-2023): "European Research Network on Signal Transduction"

Saradnje:

1. Center for Multidisciplinary Research Institute of Nuclear Sciences VINCA, Serbia (national project 172033, 173001),
2. Institute of Oncology and Radiology of Serbia (national project 173001), University of East Anglia, UK (COST CM1406),
3. Universite de Poitiers, France (COST CM1406, COST CA17104),
4. University of St Andrews, UK (COST CM1103, COST CA15135),
5. Consejo Superior de Investigaciones Cientıficas, Madrid, Spain (COST CM1103, COST CA15135),
6. Heinrich Heine University, Dusseldorf, Germany (COST CM1103, COST CA1207, COST CA15135, COST CA18133),
7. Institut Pasteur, CNRS, Paris, France (COST CM1406, Bilateral project Serbia-France),
8. Fachbereich Chemie Philipps-Universität Marburg, Germany (COST CM1406, Deutsche Forschungsgemeinschaft project), Fraunhofer IME-SP, Hamburg, Germany (COST CM1406, COST CA15135), University of Eastern Finland, Kuopio, Finland (COST CM1406).

Odabrane publikacije

Bouchet S, Linot C, Ruzic D, Agbaba D, Fouchaq B, Roche J, Nikolic K, Blanquart C, Bertrand P. Extending Cross Metathesis To Identify Selective HDAC Inhibitors: Synthesis, Biological Activities, and Modeling. ACS Med. Chem. Lett. 2019, 10, 863−868. doi:10.1021/acsmedchemlett.8b00440. (M21)

Ruzic D, Petkovic M, Agbaba D, Ganesan A, Nikolic K. Combined Ligand and Fragment-based Drug Design of Selective Histone Deacetylase-6 Inhibitors. Molecular Informatics 2019 May; 38 (5): e1800083. doi: 10.1002/minf.201800083. (M21)

Albert L, Peñalver A, Djokovic N, Werel L, Hoffarth M, Ruzic D, Xu J, Essen LO, Nikolic K, Dou Y, Vázquez O. Modulating Protein-Protein Interactions with Visible-Light Responsive Peptide Backbone Photoswitches. ChemBioChem 2019 Jun 3; 20(11): 1417-1429. doi: 10.1002/cbic.201800737. (M22)

Djikic T, Vucicevic J, Laurila J, Radi M, Veljkovic N, Xhaard H, Nikolic K. Deciphering Imidazoline Off-Targets by Fishing in the Class A of GPCR field. Molecular Informatics 2020 July, 39 (7): 1900165. doi: 10.1002/minf.201900165. (M21)

S. Abás, S. Rodríguez-Arévalo, A. Bagán, C. Griñán-Ferré, F. Vasilopoulou, I. Brocos-Mosquera, C. Muguruza, B. Pérez, E. Molins, F. Javier Luque, P. Pérez-Lozano, S. de Jonghe, D. Daelemans, L. Naesens, J. Brea, M. Isabel Loza, E. Hernández-Hernández, J. A. García-Sevilla, M. Julia García-Fuster, M. Radan, T. Djikic, K. Nikolic, M. Pallàs, L. F. Callado, C. Escolano. Bicyclic α-Iminophosphonates as High Affinity Imidazoline I2 Receptor Ligands for Alzheimer's Disease. Journal of Medicinal Chemistry 2020 63 (7): 3610-3633, DOI: 10.1021/acs.jmedchem.9b02080 (M21a)

M. Radan, D. Ruzic, M. Antonijevic, T. Djikic, K. Nikolic. In silico Identification of Novel 5-HT2A Antagonists Supported with Ligand- and Target- Based Drug Design Methodologies, Journal of Biomolecular Structure and Dynamics 2020 March: 1819-1837 DOI: 10.1080/07391102.2020.1738961 (M22)

M. Elek, N. Djokovic, A. Frank, S. Oljacic, A. Zivkovic, K. Nikolic, H. Stark. Synthesis, in silico, and in vitro studies of novel dopamine D2 and D3 receptor ligands, Arch Pharm. 2021; 354: e2000486. DOI: 10.1002/ardp.202000486. (M22)

N. Djokovic, D. Ruzic, T. Djikic, S. Cvijic, J. Ignjatovic, S. Ibric, K. Baralic, A. Buha Djordjevic, M. Curcic, D. Djukic-Cosic, K. Nikolic. An Integrative in Silico Drug Repurposing Approach for Identification of Potential Inhibitors of SARS-CoV-2 Main Protease. Mol. Inf. 2021, 40, 2000187. DOI: 10.1002/minf.202000187 (M21)

I. Asanovic, E. Strandback, A. Kroupova, Dj. Pasajlic, A. Meinhart, P. Tsung-Pin, N. Djokovic, D. Anrather, T. Schuetz, M.J. Suskiewicz, S. Sillamaa, T. Kocher, R. Beveridge, K. Nikolic, A. Schleiffer, M. Jinek, M. Hartl, T. Clausen, J.Penninger, P. Macheroux, S. Weitzer, J. Martinez. The oxidoreductase PYROXD1 uses NAD(P)+ as an antioxidant to sustain tRNA ligase activity in pre-tRNA splicing and unfolded protein response. Molecular Cell 81 (12), P2520-2532.E16, June 17, 2021. DOI: https://doi.org/10.1016/j.molcel.2021.04.007 (M21a)

S. Rodriguez-Arévalo, A. Bagán, Christian G. Ferré, F. Vasilopoulou, M. Pallàs, I. Brocos-Mosquera, L.F. Callado, M. Isabel Loza, A.L. Martínez, J. Brea, B. Pérez, E. Molins, S. De Jonghe, D. Daelemans, M. Radan, T. Djikic, K. Nikolic, E.H. Hernández, M.J. García-Fuster, J.A. García-Sevilla, C. Escolano, Benzofuranyl-2-imidazoles as imidazoline I2 receptor ligands for Alzheimer's disease, European Journal of Medicinal Chemistry 2021, 222, 113540, https://doi.org/10.1016/j.ejmech.2021.113540. (M21a)

D. Ruzic, N. Djokovic, and K. Nikolic (2021) Fragment-Based Drug Design of Selective HDAC6 Inhibitors. In: Ballante F. (Editor(s)) Protein-Ligand Interactions and Drug Design. Methods in Molecular Biology, vol 2266. Humana, New York, NY. https://doi.org/10.1007/978-1-0716-1209-5_9

T. Djikic, Z. Gagic, K. Nikolic, Chapter 16 - Design and Discovery of Kinase Inhibitors Using Docking Studies, Editor(s): Mohane S. Coumar, Molecular Docking for Computer-Aided Drug Design, Academic Press, 2021, Pages 337-365, ISBN 9780128223123, https://doi.org/10.1016/B978-0-12-822312-3.00009-6.J. Rupar, M. Aleksić, K. Nikolić, M. Popović Nikolić. Comparative electrochemical studies of kinetic and thermodynamic parameters of Quinoxaline and Brimonidine redox process, Electrochimica acta. 2018; May 278: 220-231. (M21, IF 5,116) https://doi.org/10.1016/j.electacta.2018.03.114

V. Radulović, M. Aleksić, V. Kapetanović, K. Karljiković Rajić, M. Jovanović, I. Marjanović, M. Stojković, D. Agbaba. The evaluation of short- and long-term stability studies for brimonidine in aqueous humor by DPV/BDDE method - possible application for direct assay in native samples. Anal Bioanal Chem. 2019; Sept 411(22):5755–63. (M21; IF 3,286) https://doi.org/10.1007/s00216-019-01955-3

J. Rupar, M. Aleksić, V. Dobričić, J. Brborić, O. Čudina. An electrochemical study of 9-chloroacridine redox behavior and its interaction with double-stranded DNA, Bioelectrochemistry, 2020 October; 135: 107579 (M21, IF 4,722) https://doi.org/10.1016/j.bioelechem.2020.107579

Ostali radovi:
Repozitorijum Farmaceutskog fakulteta - FarFaR (link)

ISTRAŽIVAČKA GRUPA PROF. DR SLAVICA ERIĆ

F A R M A C E U T S K A H E M I J A

Naslov istraživačke teme:	Dizajniranje novih lekova iz prirodnih izvora
Članovi tima:	Dr Slavica Erić, redovni profesor Dr Mire Zloh Mr Aleksandar Vukadinović Dr Zoran Bijelović
Oprema i metode:	Kompjuterski operativni sistemi za dizajniranje lekova, kompjuterski programi za razjašnjavanje mehanizama dejstva konstituenata prirodnih izvora i dizajniranje novih lekova iz prirodnih izvora, upotreba opreme za ekstrakciju i identifikaciju konstituenata prirodnih izvora, upotreba opreme za testiranje aktivnosti konstituenata prirodnih izvora na određenim targetima.
Projekti/ finansiranje:	Institucionalno finansiranje putem Ugovora sa MPNTR-om, evidencioni br. 451-03-9/2021-14/200161
Saradnje:	Katedre za Botaniku, Analitičku hemiju i Farmakokinetiku Farmaceutskog fakulteta Univerziteta u Beogradu (UB), Institut za molekularnu genetiku i genetičko inženjerstvo (UB), Institut za hemiju, tehnologiju i metalurgiju (UB), Institut za nuklearne nauke “Vinča”, Medicinski fakultet (UB), Hemijski fakultet (UB).
Odabrane publikacije	3D-QSAR study of adenosine 5'-phosphosulfate (APS) analogs as ligands for APS reductase. Slavica Erić, Ilija Cvijetić and Mire Zloh. J. Serb. Chem. Soc. 86 (0) 1–10 (2021) Insights into mechanism of anticancer activity of pentacyclic oxindole alkaloids of *Uncaria tomentosa* by means of a computational reverse virtual screening and molecular docking approach. Kozielewicz Pawel, Paradowska Katarzyna, Eric Slavica, Wawer Iwona, Zloh Mire. Monatshefte fur Chemie (2014), 145 (7), 1201-1211 Structural insight into binding of small molecule inhibitors to Enhancer of Zeste Homolog 2. Kalinic Marko, Zloh Mire, Eric Slavica. Journal of Computer-Aided Molecular Design (2014), 28 (11), 1109-1128 Computational classification models for predicting the interaction of drugs with P-glycoprotein and breast cancer resistance protein. Eric Slavica, Kalinic Marko, Ilic Katarina, Zloh Mire. SAR and QSAR in Environmental Research (2014), 25 (12), 955-982 Application of Counter-propagation Artificial Neural Networks in Prediction of Topiramate Concentration in Patients with Epilepsy. Jovanovic Marija, Sokic Dragoslav, Grabnar Iztok, Vovk Tomaz, Prostran Milica, Eric Slavica, Kuzmanovski Igor, Vucicevic Katarina, Miljkovic Branislava. Journal of Pharmacy and Pharmaceutical Sciences (2015), 18 (5), 856-862

Ostali radovi:
Repozitorijum Farmaceutskog fakulteta - FarFaR (link)

ISTRAŽIVAČKA GRUPA
DOC. DR VLADIMIR DOBRIČIĆ

F A R M A C E U T S K A H E M I J A

Naslovi istraživačkih tema:

1. Dizajniranje, sinteza, ispitivanje fizičko-hemijskih i biofarmaceutskih osobina farmakološki aktivnih jedinjenja
2. Razvoj i validacija analitičkih metoda za određivanje sadržaja farmaceutskih supstanci u doziranim oblicima i biološkim uzorcima

Članovi tima:

Dr Zorica Vujić, redovni profesor
Dr Olivera Čudina, redovni profesor
Dr Katarina Karljiković Rajić, redovni profesor
Dr Jasmina Brborić, vanredni profesor
Dr Bojan Marković, vanredni profesor
Dr Branka Ivković, vanredni profesor
Dr Milkica Crevar Sakač, docent
Dr Jelena Savić, docent
Mag. farm. Jelena Rupar, asistent
Mag. farm. Jelena Bošković, istraživač saradnik

Oprema i metode:

1. **Računari sa Windows operativnim sistemima i različitim programa za dizajn lekova** - VMD, NAMD, AutoDock, AutoDock Vina, OpenEye softverski paket, Statistica
2. **HPLC-PDA-CAD** (Dionex Ultimate 3000);
3. **HPLC-PDA** (Agilent 1200);
4. **HPLC-UV** (HP 1100);
5. **UHPLC-MS/MS** (Accela 6000 TSQ Quantum Access Max),
6. **FT-IR spektrofotometar** (Nicolet iS10);
7. **UV-Vis spektrofotometar** (Evolution 300);
8. **UV-Vis spektrofotometar** (GBC Scientific Equipment Cintra 20);
9. **Automatski titrator 798 MPT Titrino** sa elektrodom LL unitrode Pt 1000.
10. **Vakuum sušnica** (Thermo Heraeus)

Projekti/ finansiranje:

1. **Institucionalno finansiranje putem Ugovora sa MPNTR-om**, evidencioni br. 451-03-9/2021-14/200161;
2. **Dokaz koncepta** (PoC – Fond za inovacionu delatnost Republike Srbije: “Razvoj novog antiseptika/dezinficijensa koji se zasniva na antimikrobnom efektu novosintetisanih halkona“);
3. **Program za izvrsne projekte mladih istraživača – PROMIS; Fond za nauku R.Srbije** („Korisnost CYP2C19 i CYP2D6 genotipizacije i kvantifikacije koncentracije leka u plazmi u personalizaciji doziranja antidepresiva i antipsihotika“);
4. **COST action CA17104 (2018-2022)**: “New diagnostic and therapeutic tools against multidrug resistant tumours”.

ISTRAŽIVAČKA GRUPA
DOC. DR VLADIMIR DOBRIČIĆ

Saradnje:

1. Univerzitet u Beogradu – Farmaceutski fakultet (istraživačke grupe prof. dr Miroslava Savića, prof. dr Snežane Savić, prof. dr Svetlane Ibrić, prof. dr Vesne Spasojević Kalimanovske, prof. dr Marine Milenković);
2. Institut za onkologiju i radiologiju Srbije;
3. Centar za kontrolu trovanja, Katedra za eksperimentalnu farmakologiju i toksikologiju, Vojnomedicinska akademija;
4. Institut za molekularnu genetiku i genetičko inženjerstvo, Univerzitet u Beogradu;
5. Fakultet medicinskih nauka Univerziteta u Kragujevcu;
6. Katedra za farmaceutsku hemiju, Farmaceutski fakultet, Univerzitet u Ljubljani, Slovenija

Odabrane publikacije

Dallavalle, S., **Dobričić, V**., Lazzarato, L., Gazzano, E., Machuqueiro, M., Pajeva, I., Tsakovska, I., Zidar, N., & Fruttero, R. (2020). Improvement of conventional anti-cancer drugs as new tools against multidrug resistant tumors. Drug Resistance Updates, 50, 100682.

Hendrickx, L. A., **Dobričić, V**., Toplak, Ž., Peigneur, S., Mašič, L. P., Tomašič, T., & Tytgat, J. (2020). Design and characterization of a novel structural class of Kv1. 3 inhibitors. Bioorganic chemistry, 98, 103746.

Rupar, J., **Dobričić, V**., Grahovac, J., Radulović, S., Skok, Ž., Ilaš, J., Aleksić, M., **Brborić, J.**, & **Čudina, O**. (2020). Synthesis and evaluation of anticancer activity of new 9-acridinyl amino acid derivatives. RSC medicinal chemistry, 11(3), 378-386.

Turkovic, N., **Ivkovic, B**., Kotur-Stevuljevic, J., Tasic, M., **Marković, B**., & **Vujic, Z.** (2020). Molecular docking, synthesis and anti-HIV-1 protease activity of novel chalcones. Current pharmaceutical design, 26(8), 802-814.

Krkobabić, M., Medarević, D., Pešić, N., Vasiljević, D**., Ivković, B.**, & Ibrić, S. (2020). Digital light processing (DLP) 3D printing of atomoxetine hydrochloride tablets using photoreactive suspensions. Pharmaceutics, 12(9), 833.

Homšek, A., **Marković, B**., Bogavac-Stanojević, N., Vladimirov, S., & **Karljiković-Rajić, K.** (2020). Method Transfer Evaluation for Digital Derivative Spectrophotometry Through its Resolution Parameter Comparison of Different Computer Programs. Applied spectroscopy, 74(5), 525-535.

Janković, T., Turković, N., Kotur-Stevuljević, J., **Vujić, Z**., & **Ivković, B**. (2020). Differences in antioxidant potential of chalcones in human serum: In vitro study. Chemico-biological interactions, 324, 109084.

Knutson, D. E., Kodali, R., Divović, B., Treven, M., Stephen, M. R., Zahn, N. M., **Dobričić, V.,** Huber, A. T., Meirelles, M. A., Verma, R. S., Wimmer, L., Witzigmann, C., Arnold, L. A., Chiou, L-C., Ernst, M., Mihovilovic, M. D., Savić, M. M., Sieghart, W., & Cook, J. M. (2018). Design and synthesis of novel deuterated ligands functionally selective for the γ-aminobutyric acid type A receptor (GABAAR) α6 subtype with improved metabolic stability and enhanced bioavailability. Journal of medicinal chemistry, 61(6), 2422-2446.

Dobričić, V., **Savić, J**., Nikolic, K., Vladimirov, S., **Vujić, Z**., & **Brborić, J.** (2017). Application of biopartitioning micellar chromatography and QSRR modeling for prediction of gastrointestinal absorption and design of novel β-hydroxy-β-arylalkanoic acids. European Journal of Pharmaceutical Sciences, 100, 280-284.

Dobričić, V., **Marković, B**., Nikolic, K., Savić, V., Vladimirov, S., & **Čudina, O**. (2014). 17β-carboxamide steroids–in vitro prediction of human skin permeability and retention using PAMPA technique. European Journal of Pharmaceutical Sciences, 52, 95-108.

Ivković, B. M., Nikolic, K., Ilić, B. B., Žižak, Ž. S., Novaković, R. B., **Čudina, O. A**., & Vladimirov, S. M. (2013). Phenylpropiophenone derivatives as potential anticancer agents: Synthesis, biological evaluation and quantitative structure–activity relationship study. European journal of medicinal chemistry, 63, 239-255.

Crevar-Sakač, M., **Vujić, Z**., **Brborić, J.,** Kuntić, V., & Uskoković-Marković, S. (2013). An improved HPLC method with the aid of a chemometric protocol: Simultaneous determination of atorvastatin and its metabolites in plasma. Molecules, 18(3), 2469-2482.

Ostali radovi:
Repozitorijum Farmaceutskog fakulteta - FarFaR (link)

ISTRAŽIVAČKA GRUPA
PROF. DR SNEŽANA SAVIĆ

F A R M A C E U T S K A T E H N O L O G I J A I K O Z M E T O L O G I J A

Naslovi istraživačkih tema

Nano-platforme za isporuku lekova u mozak i kožu (Nanoplatforms for brain/skin delivery)
Dermalna raspoloživost lekova-in vitro/in vivo korelacije
Mikrofluidne tehnike u prekliničkom razvoju mikro- i nanonosača
Nanomaterijali za kozmetičku primenu i in vivo biofizičke metode za procenu efikasnosti

Članovi tima:

Stalni članovi grupe
Dr Snežana Savić, redovni profesor
Dr Ivana Pantelić, docent
Dr Tanja Ilić, asistent
Mag. farm. Ines Nikolić, asistent
Jelena Đoković
Jelena Mitrović
Ana Gledović

Saradnici kroz institucionalno finansiranje
Dr Danina Krajišnik, vanredni profesor
Dr Bojan Čalija, vanredni profesor
Dr Milica Lukić, docent
Mag. farm. Nevena Pajić

Eksterni članovi/doktoranti
Olivera Drulović (stipendista MPNTR-a)
Milica Todorović
Milica Aranđelović
Miroslav Jevtić
Mirjana Timotijević

Oprema:

Homogenizer po visokim pritiskom
Mikrofluidizer sa SPG membranom
Disruptor Genie (Scientific Industries, SAD) za dobijanje nanokristala
Zetasizer ZS90 (Malvern Instruments Ltd., Worcestershire, UK)
Olympus BX53-P polarizacioni mikroskop (Olympus, Japan)
Rheometer, Paar Physica, Nemačka
DSC 1 (Mettler-Toledo AG, Analytical, Švajcarska)
Franz-ove difuzione ćelije i set za *in vitro* oslobađanje i peremaciju kroz kožu
Courage + Khazaka uređaji za biofizička merenja na koži (pH, vlažnost kože, TEWL, sadržaj lipida na koži, frikciometar, melanin indeks, eritem indeks, viskoelastičnost kože)
Texture analyser EZ-LX-HS, Shimadzu, Japan
Sitna oprema koja se koristi za pripremu uzoraka

Metode:

Izrada nanopartikularnih nosača različitog tipa primenom tehnika sa/bez utroška energije (postupci koji štede energiju), pristupom dizajniranja kvaliteta (QbD)
In vitro oslobađanje, penetracija/permecija lekovitih supstanci iz različitih nosača za primenu na kožu
Tape-stripping i diferencijalni *tape-stripping*, *in vivo skin blanching assay* za procenu biološke ekvivalentnosti dermatoloških lekova
In vitro tehnika sa dijaliznim vrećicama za parenteralne farmaceutske oblike
Biofizička i senzorna merenja na koži uz organizaciju *in vivo* studija i statističku obradu podataka
Fizičkohemijske karakterizacije koloidnih nosača lekova i kozmetički aktivnih supstanci (veličina kapi, polidisperzni indeks, reološka i teksturna analiza, optička/polarizaciona mikroskopija, termalno ponašanje)
In vivo farmakodinamske i farmakokinetičke studije na animalnim modelima

ISTRAŽIVAČKA GRUPA
PROF. DR SNEŽANA SAVIĆ

Projekti/ finansiranje

Dokaz koncepta (PoC – Fond za inovacionu delatnost Republike Srbije: "Natural cosmetic nano-serum with Red Raspberry Seed Oil of Serbian origin for antioxidant treatment of skin photoaging"), 2.400.000 RSD.
Institucionalno finansiranje putem Ugovora sa MPNTR-om, evidencioni br. 451-03-9/2021-14/200161.
Projekat bilateralne saradnje sa Nemačkom (Eberhard-Karls Universität in Tübingen), 2020-2021: Innovative nanoformulations for brain/skin delivery of patented vs. reference active substances: novel formulation approaches and tailored in vitro/in vivo methods for delivery assessment.
Advanced In Chemico/In Vitro Training and Capacity Building for Safe Cosmetic Nanomaterials and Nanostructured Products (NanoCosMetrics), Training and Capacity Building Project, organizovan od Joint Research Center of European Commission (Ispra, Italija).
Saradnici na H2020-IMI projektu: IMI2-2017-13-10 - Improving the preclinical prediction of adverse effects of pharmaceuticals on the nervous system (NeuroDeRisk, Grant agreement ID: 821528).

Saradnje

Univerzitet u Beogradu - Farmaceutski fakultet
Grupa Prof. Miroslava Savića (Katedra za farmakologiju)
Grupa Prof. Jelene Antić Stanković (Katedra za mikrobiologiju i imunologiju)
Katedra za Farmaceutsku hemiju (UPLC i HPLC aparat/metode)
Katedra za fizičku hemiju i instrumentalne metode
Univerzitet u Beogradu – Rudarsko-geološki fakultet Grupa Prof. Aleksandra Kremenovića
Univerzitet u Beogradu – Institut za hemiju, tehnologiju i metalurgiju Naučni savetnik dr sc. Danijela Ranđelović
Univerzitet u Novom Sadu
Fakultet tehničkih nauka – Prof. Goran Stojanović
Medicinski fakultet/Odsek Farmacija – Prof. Veljko Krstonošić
Univerzitet u Nišu – Medicinski fakultet //Odsek Farmacija – Prof. Ivana Nešić, Doc. dr Marija Tasić Kostov
Tehnološki fakultet Leskovac – Prof. Nebojša Cekić
Institut za proučavanje lekovitog bilja "Josif Pančić"

Inostrane kolaboracije
Institut za farmaceutsku tehnologiju, Univerzitet u Tibingenu, Nemačka
Institut za farmaceutsku tehnologiju, Univerzitet u Braunšvajgu, Nemačka
Institut za hemijsku biologiju, Nacionalna Helenska Istraživačka Fondacija, Grčka
Katedra za farmaceutsku tehnologiju, Farmaceutski fakultet Ljubljana, Univerzitet u Ljubljani, Slovenija
Institut za farmaceutsku tehnologiju, Medicinski Univerzitet Gdanjsk, Poljska
Universite Le Havre, Francuska
London College of Fashion, Univerzitet umetnosti, London, Velika Britanija
School of Pharmacy, University College Cork, Cork, Ireland, dr sc. Sonja Vučen
Loughborough University, Department of Chemical Engineering, prof. dr Goran Vladisavljević

Odabrane publikacije

Gledovic A, Janosevic Lezaic A, **Nikolic I**, Tasic-Kostov M, Antic-Stankovic J, Krstonosic V, Randjelovic D, Bozic D, Ilic D, Tamburic S, **Savic S. Polyglycerol Ester-Based Low Energy Nanoemulsions with Red Raspberry Seed Oil and Fruit Extracts: Formulation Development toward Effective In Vitro/In Vivo Bioperformance**. Nanomaterials (Basel). 2021 Jan 15;11(1):217. doi: 10.3390/nano11010217 (**IF 4,324/2019**)

Mitrović JR, Divović B, Knutson DE**, Đoković JB**, Vulić PJ, Randjelović DV, Dobričić VD, Čalija BR, Cook JM, Savić MM, **Savić SD. Nanocrystal dispersion of DK-I-56-1, a poorly soluble pyrazoloquinolinone positive modulator of α6 GABAA receptors: Formulation approach toward improved in vivo performance. Eur J Pharm Sci**. 2020, doi: 10.1016/j.ejps.2020.105432 **(IF 3,616/2019)**.

Nikolić I, Mitsou E, Damjanović A, Papadimitriou V, Antić-Stanković J, Stanojević B, Xenakis A, **Savic S. Curcumin-loaded low-energy nanoemulsions: Linking EPR spectroscopy-analysed microstructure and antioxidant potential with in vitro evaluated biological activity. J Mol Liq**. 2020, doi.org/10.1016/j.molliq.2020.112479 **(IF 5,065/2019)**.

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Ilić T, Savić S, Batinić B, Marković B, Schmidberger M, Lunter D, Savić M, **Savić S. Combined use of biocompatible nanoemulsions and solid microneedles to improve transport of a model NSAID across the skin: In vitro and in vivo studies. Eur J Pharm Sci**. 2018, doi: 10.1016/j.ejps.2018.09.023. **(IF 3,616/2019)**.

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Ostali radovi:
Repozitorijum Farmaceutskog fakulteta - FarFaR (link)

ISTRAŽIVAČKA GRUPA
PROF. DR SVETLANA IBRIĆ

F A R M A C E U T S K A T E H N O L O G I J A I K O Z M E T O L O G I J A

Naslovi istraživačkih tema:

Formulacioni pristupi za poboljšanje rastvorljivosti i biološke raspoloživosti teško rastvorljivih lekovitih supstanci
Primena tehnika 3D i 2D štampe u razvoju farmaceutskih oblika lekova
Primena optimizacionih tehnika, metoda multivarijante analize i mašinskog učenja u razvoju formulacije i procesa
Primena fiziološki-zasnovanog modelovanja u biofarmaceutskoj karakterizaciji i predviđanju bioperformansi lekovitih supstanci/farmaceutskih preparata
Razvoj savremenih terapijskih sistema zasnovanih na mikro- i nanoinkapsulaciji lekovite supstance za različite puteve primene
Preformulaciona i formulaciona istraživanja lekovitih i pomoćnih supstanci u razvoju čvrstih farmaceutskih oblika lekova za različite puteve primene

Članovi tima:

Dr Svetlana Ibrić, redovni profesor
Dr Jelena Parojčić, redovni profesor
Dr Dragana Vasiljević, vanredni profesor
Dr Sandra Cvijić, vanredni profesor
Dr Ljiljana Đekić, vanredni profesor
Dr Jelena Đuriš, vanredni profesor
Dr Đorđe Medarević, viši naučni saradnik
Dr Ivana Aleksić, docent
Dr Milica Drašković, asistent sa doktoratom
Mag. farm. Marijana Madžarević, istraživač-saradnik
Mag. farm. Ivana Vasiljević, istraživač-saradnik
Mag. farm. Jelisaveta Ignjatović, istraživač-saradnik
Mag. farm. Ivana Kurćubić, istraživač-saradnik
Mag. farm. Ana Ćirić, istraživač-pripravnik
Mag. farm. Erna Turković, istraživač-pripravnik
Mag. farm. Nikola Pešić, istraživač-pripravnik

Oprema i metode:

OYSTAR Hüttlin Mycrolab fluid-bed uređaj
Gamlen D-series uređaj za dinamičku kompakciju praškova
Sintratec SLS 3D štampač
Ultimaker 2 3D štampač
Wanhao Duplicator 8 3D štampač
Korsch EK0 ekscenter tablet mašina
Erweka DT 600 i DT 126 light uređaji za ispitivanje brzine rastvaranja sa rotirajućom lopaticom i korpicom
Sotax CE7 uređaj za ispitivanje brzine rastvaranja sa protočnom ćelijom
Bio Dis VK 750 D uređaj za ispitivanje brzine rastvaranja sa cilindrom sa povratnim kretanjem
Erweka ZT 52 uređaj za ispitivanje raspadljivosti čvrstih farmaceutskih oblika
Paar Physica RHEOLAB MC-120 rotacioni reometar
Olympus BX53-P polarizacioni mikroskop
DSC 1 diferencijalni skenirajući kalorimetar
Erweka TBH 125 uređaj za ispitivanje otpornosti tableta na lomljenje
Shimadzu EZ-LX analizator teksture

Licence za softvere
GastroPlusTM programski paket (v. 9.8.0002, Simulations Plus Inc., Lancaster, CA, USA)

Projekti:

Institucionalno finansiranje putem Ugovora sa MPNTR-om, evidencioni br. 451-03-9/2021-14/200161
Projekat podržan od strane FDA: “Robust In Vitro/In Silico Model to Accelerate Generic Drug Product Development for the Oral Cavity Route of Administration” (2020-2023)
Projekat naučne i tehnološke saradnje Republike Srbije i Narodne Republike Kine: ”Razvoj inhalacionih nanolekova za ciljanu terapiju bolesti pluća primenom inovativnog eksperimentalno-računarskog pristupa” (2021-2022)
CEEPUS projekat: “Central European Knowledge Alliance for Teaching, Learning & Research in Pharmaceutical Technology” CIII-RS-1113-00-1718 (od 2017)
COST akcija: “European Network on Understanding Gastrointestinal Absorption-related Processes (UNGAP)” br. CA16205 (2017-2021)
COST akcija: “European Network of Bioadhesion Expertise: Fundamental Knowledge to Inspire Advanced Bonding” br. CA15216 (2016-2020)
COST akcija: “Simulation and Pharmaceutical Technologies for Advanced Patient-tailored Inhaled Medicines (SimInhale)” br. MP1404 (2016-2019)
Projekat bilateralne naučno-tehnološke saradnje između Republike Srbije i SR Nemačke: „Primena mašinskog učenja u razvoju prostora za dizajn u razvoju čvrstih farmaceutskih oblika” (2013-2014)
Projekat: „Razvoj proizvoda i tehnologija koje obezbeđuju željeno oslobađanje lekovitih supstanci iz čvrstih farmaceutskih oblika”, finansiran od strane Ministarstva prosvete, nauke i tehnološkog razvoja Republike Srbije (2011-2019)
Projekat: „Razvoj novih inkapsulacionih i enzimskih tehnologija za proizvodnju biokatalizatora i biološki aktivnih komponenata hrane u cilju povećanja njene konkurentnosti, kvaliteta i bezbednosti”, finansiran od strane Ministarstva prosvete, nauke i tehnološkog razvoja Republike Srbije (2011-2019)

ISTRAŽIVAČKA GRUPA
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Saradnje:

Katedra za farmaceutsku tehnologiju, Farmaceutski fakultet Aristotelovog Univerziteta u Solunu, Grčka
Katedra za farmaceutsku tehnologiju, Institut za farmaceutske nauke, Univerzitet u Gracu, Austrija
Institut za farmaciju i biofarmaciju, Farmaceutski fakultet, Hajnrih Hajne Univerziteta u Dizeldorfu, Nemačka
Katedra za biofarmaciju i farmaceutsku tehnologiju Instituta za farmaciju i biohemiju Johannes Gutenberg Univerziteta u Majncu, Nemačka
Katedra za farmaceutsku tehnologiju Farmaceutskog fakulteta u Granadi, Španija
Katedra za farmaceutsku tehnologiju Farmaceutskog fakulteta Univerziteta u Ljubljani, Slovenija
Fakultet za farmaciju i farmaceutske nauke, Triniti Koledž Univerziteta u Dablinu, Irska
Katedra za farmaceutsku tehnologiju Farmaceutskog fakulteta u Sarajevu, Bosna i Hercegovina
Wuya koledž za inovacije, Šenjang Farmaceutski univerzitet, NR Kina
Departman za farmaciju, Fakultet zdravstvenih i medicinskih nauka, Univerzitet u Kopenhagenu, Danska
Departman za lekove i hranu, Univerzitet u Parmi, Italija
Departman za kliničku farmakologiju, Odsek za farmaciju Fakulteta zdravstvenih nauka, Ben-Gurion Univerzitet Negeva, Beer-Sheva, Izrael

Odabrane publikacije

Djuris J, Cirin-Varadjan S, Aleksic I, Djuris M, Cvijic S, Ibric S. Application of Machine-Learning Algorithms for Better Understanding of Tableting Properties of Lactose Co-Processed with Lipid Excipients. Pharmaceutics. 2021; 13(5):663. https://doi.org/10.3390/pharmaceutics13050663

Madžarević M, Ibrić S. Evaluation of exposure time and visible light irradiation in LCD 3D printing of ibuprofen extended release tablets. Eur J Pharm Sci. 2021; 158:105688.

Vasiljević I, Turković E, Piller M, Zimmer A, Parojčić J. An investigation into applicability of different compression behaviour assessment approaches for multiparticulate units characterization. Powder Technol. 2021;379:526-36.

Ignjatovic J, Đuriš J, Cvijić S, Dobričić V, Montepietra A, Lombardi C, Ibrić S, Rossi A. Development of solid lipid microparticles by melt-emulsification/spray-drying processes as carriers for pulmonary drug delivery. Eur J Pharm Sci. 2021; 156: 105588.

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Djekic L, Čalija B, Medarević Đ. Gelation behavior, drug solubilization capacity and release kinetics of poloxamer 407 aqueous solutions: The combined effect of copolymer, cosolvent and hydrophobic drug. J Mol Liq. 2020; 303: 112639.

Markovic M, Zur M, Ragatsky I, Cvijić S, Dahan A. BCS Class IV Oral Drugs and Absorption Windows: Regional-Dependent Intestinal Permeability of Furosemide. Pharmaceutics 2020, 12, 1175; doi:10.3390/pharmaceutics12121175.

Kurcubic I, Cvijic S, Filipcev B, Ignjatovic J, Ibric S, Djuris J. Development of propranolol hydrochloride bilayer mucoadhesive buccal tablets supported by in silico physiologically-based modeling. React Funct Polym. 2020;151

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Krstić M, Medarević Đ, Đuriš J, Ibrić S. Self-nanoemulsifying drug delivery systems (SNEDDS) and self-microemulsifying drug delivery systems (SMEDDS) as lipid nanocarriers for improving dissolution rate and bioavailability of poorly soluble drugs. In Grumezescu AM, editor. Lipid Nanocarriers for Drug Targeting, Elsevier, 2018; 473-508. ISBN: 978-0-12-813687-4

Djuris J, ed. Computer aided applications in pharmaceutical technology, Woodhead Publishing Series in Biomedicine, Woodhead Publishing Ltd., Cambridge, UK. ISBN 978-1-907568-27-5, 2013

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Aleksić, I., German Ilić, I., Cvijić, S. et al. An Investigation into the Influence of Process Parameters and Formulation Variables on Compaction Properties of Liquisolid Systems. AAPS PharmSciTech 2020. 21, 242.

Drašković M, Djuriš J, Ibrić S, Parojčić J. Functionality and performance evaluation of directly compressible co-processed excipients based on dynamic compaction analysis and percolation theory. Powder Technol. 2019. 326, 292-301.

Ostali radovi:
Repozitorijum Farmaceutskog fakulteta - FarFaR (link)

ISTRAŽIVAČKA GRUPA
PROF. DR NADA KOVAČEVIĆ

F A R M A K O G N O Z I J A

Naslov istraživačke teme: Ispitivanje prirodnih lekovitih proizvoda

Članovi tima:

Dr Nada Kovačević, redovni profesor
Dr Branislava Lakušić, redovni profesor *
Dr Silvana Petrović, redovni profesor
Dr Marina Milenković, redovni profesor **
Dr Zoran Maksimović, redovni profesor
Dr Tatjana Kundaković-Vasović, redovni profesor
Dr Violeta Slavkovska, vanredni profesor *
Dr Milica Drobac, vanredni profesor
Dr Mirjana Marčetić, docent
Dr Danilo Stojanović, docent *
Dr Jelena Kukić-Marković, asistent
Dr Jelena Arsenijević, naučni saradnik
Dr Stevan Samardžić, naučni saradnik
Dr Ljuboš Ušjak, naučni saradnik
Dr Violeta Milutinović, istraživač saradnik
Mast. biol. Miloš Zbiljić, asistent *
Mag. farm. Jelena Radović, istraživač pripravnik
Mag. farm. Aleksandra Leković, istraživač pripravnik

* Katedra za botaniku
** Katedra za mikrobiologiju i imunologiju
Univerzitet u Beogradu - Farmaceutski fakultet

Oprema i metode:

Gasni hromatograf sa plameno-jonizacionim i masenim detektorom Agilent GC/MSD System 6890N / 5975C
Tečni hromatograf Agilent 1100 HPLC System
Tečni hromatograf sa masenim detektorom (LC/MS) Agilent 1260/6130 LC Systems
UV-Vis spektrofotometar Thermo Scientific Evolution 300
Liofilizator, vakuum uparivači
Inkubator sa CO_2 MMM Medcenter Einrichtungen GmbH

Optimizacija ekstrakcije biljnog materijala
Kvalitativna i kvantitativna analiza ekstrakata i etarskih ulja
Izolacija sekundarnih metabolita biljaka
Ispitivanje antioksidantne aktivnosti biljnih izolata
In vitro i *in silico* ispitivanje sposobnosti inhibicije različitih enzima od strane biljnih izolata
Ispitivanje antimikrobne aktivnosti biljnih izolata
In vivo ispitivanje gastroprotektivne, hepatoprotektivne i antidijabetske aktivnosti biljnih izolata

Projekti/ finansiranje: Institucionalno finansiranje putem Ugovora sa MPNTR-om, evidencioni br. 451-03-9/2021-14/200161.

Saradnje: Institut za biološka istraživanja „Siniša Stanković“; Institut za onkologiju i radiologiju Srbije; Prirodnjački muzej; Institut za proučavanje lekovitog bilja „Dr Josif Pančić“, Beograd;
Department of Pharmacognosy and Natural product Chemistry, School of Pharmacy, University of Athens, Greece;
Department of Medicinal Chemistry and Pharmacognosy, College of Pharmacy, University of Illinois, Chicago, USA;
Equipe de Chimie Analytique des Molécules BioActives Institut Pluridisciplinaire Hubert CURIEN (French National Centre for Scientific Research), Université de Strasbourg.

ISTRAŽIVAČKA GRUPA PROF. DR NADA KOVAČEVIĆ

Odabrane publikacije

Marčetić M, Kovačević N, Lakušić D, Lakušić B. Habitat-related variation in composition of the essential oil of *Seseli rigidum* Waldst. & Kit. (Apiaceae). ***Phytochemistry*** 2017; 135: 80-592. doi:10.1016/j.phytochem.2016.12.004

Omar E, Pavlović I, Drobac M, Branković S, Stojanović M, Kovačević N. Chemical composition and spasmolytic activity of *Cymbopogon nervatus* (Hochst.) Chiov. (Poaceae) essential oil. ***Industrial Crops and Products*** 2017; 91: 249-254. doi: 10.1016/j.indcrop.2016.07.013

Suručić R, Kundaković T, Drakul D, Lakušić B, Milovanović S, Kovačević N. Variations in chemical composition, vasorelaxant and angiotensin I-converting enzyme inhibitory activities of essential oil from aerial parts of *Seseli pallasii* Besser (Apiaceae). ***Chemistry & Biodiversity*** 2017; 14(5): e1600407. doi: 10.1002/cbdv.201600407

Milutinović V, Niketić M, Krunić A, Nikolić D, Petković M, Ušjak Lj, Petrović S. Sesquiterpene lactones from the methanol extracts of twenty-eight *Hieracium* species from the Balkan Peninsula and their chemosystematic significance. ***Phytochemistry*** 2018; 154: 19-30. doi: 10.1016/j.phytochem.2018.06.008

Petrović S, Ušjak Lj, Milenković M, Arsenijević J, Drobac M, Drndarević A, Niketić M. *Thymus dacicus* as a new source of antioxidant and antimicrobial metabolites. ***Journal of Functional Foods*** 2017; 28: 114-121. doi: 10.1016/j.jff.2016.11.007

Petrović S, Drobac M, Ušjak Lj, Filipović V, Milenković M, Niketić M. Volatiles of roots of wild-growing and cultivated *Armoracia macrocarpa* and their antimicrobial activity, in comparison to horseradish, *A. rusticana*. ***Industrial Crops and Products*** 2017; 109: 398-403. doi: 10.1016/j.indcrop.2017.08.056

Samardžić S, Arsenijević J, Božić D, Milenković M, Tešević V, Maksimović Z. Antioxidant, anti-inflammatory and gastroprotective activity of *Filipendula ulmaria* (L.) Maxim. and *Filipendula vulgaris* Moench. ***Journal of Ethnopharmacology*** 2018; 213: 132-137. doi: 10.1016/j.jep.2017.11.013

Popović V, Heyerick A, Petrovic S, Van Calenbergh S, Karalic I, Niketic M, Deforce D. Sesquiterpene lactones from the extracts of two Balkan endemic *Laserpitium* species and their cytotoxic activity. ***Phytochemistry*** 2013; 87: 102-111. doi: 10.1016/j.phytochem.2012.11.011

Škobić S, Marčetić MD, Kundaković-Vasović T, Crnobarac J. Nitrogen fertilization and the essential oils profile of the rhizomes of different sweet flag populations (*Acorus calamus* L.). ***Industrial Crops and Products*** 2019; 142: 111871. doi: 10.1016/j.indcrop.2019.111871

Kolundžić M, Grozdanić NĐ, Dodevska M, Milenković M, Sisto F, Miani A, Farronato G, Kundaković T. Antibacterial and cytotoxic activities of wild mushroom *Fomes fomentarius* (L.) Fr., Polyporaceae. ***Industrial Crops and Products*** 2016; 79: 110-115. doi: 10.1016/j.indcrop.2015.10.030

Tošić S, Stojičić D, Slavkovska V, Mihailov-Krstev T, Zlatković B, Budimir S, Uzelac B. Phytochemical composition and biological activities of native and in vitro-propagated *Micromeria croatica* (Pers.) Schott (Lamiaceae). ***Planta*** 2019; 249: 1365-1377. doi: 10.1007/s00425-018-03071-5

Milenković M, Stošović J, Slavkovska V: Synergy between essential oils of *Calamintha* species (Lamiaceae) and antibiotics. ***Natural Product Communications*** 2018; 13 (3): 371-374.

Slavkovska V, Lakušić B, Lakušić D, Jančić R. Leaf and stem anatomy of *Micromeria* Benth. species from the Central part of the Balkan Peninsula. ***Biologia*** 2017; 72(3): 277-291. doi: 10.1515/biolog-2017-0029

Arsenijević J, Drobac M, Šoštarić I, Ražić S, Milenković M, Couladis M, Maksimović Z. Bioactivity of herbal tea of Hungarian thyme based on the composition of volatiles and polyphenolics. ***Industrial crops and products*** 2016; 89: 14-20. doi: 10.1016/j.indcrop.2016.04.046

Samardžić S, Tomić M, Pecikoza U, Stepanović-Petrović R, Maksimović Z. Antihyperalgesic activity of *Filipendula ulmaria* (L.) Maxim. and *Filipendula vulgaris* Moench in a rat model of inflammation. ***Journal of Ethnopharmacology*** 2016; 193: 652-656. doi: 10.1016/j.jep.2016.10.024

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Milutinović V, Pecikoza U, Tomić M, Stepanović-Petrović R, Niketić M, Ušjak L, Petrović S. Investigation of antihyperalgesic and antiedematous activities of three *Hieracium* species. ***Natural Product Research*** 2020:1-5. doi: 10.1080/14786419.2020.1768086

Mićović T, Topalović D, Živković L, Spremo-Potparević B, Jakovljević V, Matić S, Popović S, Baskić D, Stešević D, Samardžić S, Stojanović D, Maksimović Z. Antioxidant, antigenotoxic and cytotoxic activity of essential oils and methanol extracts of *Hyssopus officinalis* L. subsp. *aristatus* (Godr.) Nyman (Lamiaceae). ***Plants*** 2021; 10(4): 711. doi: 10.3390/plants10040711

Ilić MD, Marčetić MD, Zlatković BK, Lakušić BS, Kovačević NN, Drobac MM. Chemical composition of volatiles of eight *Geranium* L. species from Vlasina Plateau (south eastern Serbia). ***Chemistry & Biodiversity*** 2020; 17(2): e1900544. doi: 10.1002/cbdv.201900544

Kolundžić M, Stanojković T, Radović J, Tačić A, Dodevska M, Milenković M, Sisto F, Masia C, Farronato G, Nikolić V, Kundaković T. Cytotoxic and antimicrobial activities of *Cantharellus cibarius* Fr.(Cantarellaceae). ***Journal of Medicinal Food*** 2017; 20(8): 790-796. doi: 10.1089/jmf.2016.0176

Arsenijević J, Drobac M, Šoštarić I, Jevđović R, Živković J, Ražić S, Moravčević Đ, Maksimović Z. Comparison of essential oils and hydromethanol extracts of cultivated and wild growing *Thymus pannonicus* All. ***Industrial Crops and Products*** 2019;130: 162-169. doi: 10.1016/j.indcrop.2018.12.055

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Ostali radovi:
Repozitorijum Farmaceutskog fakulteta - FarFaR (link)

ISTRAŽIVAČKA GRUPA
PROF. DR BRANISLAVA MILJKOVIĆ

F A R M A K O K I N E T I K A I K L I N I Č K A F A R M A C I J A

Naslov istraživačke teme: Identifikacija i kvantifikacija izvora farmakokinetičke i varijabilnosti u odgovoru na lek – aspekt efikasnosti i bezbednosti terapije

Članovi tima:

Dr Branislava Miljković, redovni profesor
Dr Sandra Vezmar Kovačević, redovni profesor
Dr Katarina Vučićević, vanredni profesor
Dr Marija Jovanović, docent
Dr Milica Ćulafić, asistent
Dr Milena Kovačević, asistent
Mag. farm. Maša Roganović, asistent
Mag. farm. Ana Homšek, asistent

Oprema i metode: *NONMEM* i *Monolix* softveri za farmakinetičko i farmakokinetičko-farmakodinamičko modelovanje i simulacije kliničkih podataka. Cilj analize je dobijanje matematičko-statističkih modela za opisivanje ponašanja leka tokom terapije i optimizacija režima doziranja lekova prema individualnim potrebama pacijenta.
Farmakokinetika lekova u animalnom studijama.
PASW Statistics
Alati za identifikaciju klinički značajnih lek-lek interakcija (*LexiInteract*, *Epocrates*, *Medscape*)

Projekti/ finansiranje: Institucionalno finansiranje putem ugovora sa MPNTR-om evidencioni br. 451-03-9/2021-14/200161
COST European Network on Understanding Gastrointestinal Absorption-related Processes (UNGAP), No.16205. (24.10.2017- 23.04.2022) Prof. Katarina Vučićević je rukovodilac radnog paketa 1 (WG1).

Saradnje:

Farmaceutski fakultet-Univerzitet u Ljubljani, Slovenija
Klinika za gastroenterohepatologiju, Klinički centar Srbije
Vojnomedicinska akademija
Kliničko-bolnički centar “Zvezdara”
Farmaceutski fakultet-Univerzitet u Lisabonu, Portugalija
Farmaceutski fakultet-Univerzitet u Marseju, Francuska
Institut za onkologiju i radiologiju Srbije
Klinika za nefrologiju Klinički centar Srbije
Klinika za psihijatriju Klinički centar Srbije
Univerzitetska dečja klinika, Beograd
Institut za zdravstvenu zaštitu majke i deteta “Dr Vukan Čupić”
Medicinski fakultet-Univerzitet u Beogradu
Medicinski fakultet-odsek Farmacija, Univerzitet u Banjoj Luci, Republika Srpska

ISTRAŽIVAČKA GRUPA
PROF. DR BRANISLAVA MILJKOVIĆ

Odabrane publikacije

Milenković B, Šuljagić V, Perić A, Dragojević-Simić V, Tarabar O, Milanović M, Putić V, Tomić D, Miljković B, Vezmar Kovačević S. Outcomes of *Clostridioides difficile* infection in adult cancer and non-cancer patients hospitalised in a tertiary hospital: a prospective cohort study. Eur J Hosp Pharm. 2021:ejhpharm-2020-002574.

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Culafic M, Vezmar Kovacevic S, Dopsaj V, Stulic M, Vlaisavljevic Z, Miljkovic B, Culafic D. A Simple Index for Nonalcoholic Steatohepatitis-HUFA-Based on Routinely Performed Blood Tests. Medicina (Kaunas). 2019;55(6):243.

Golubović B, Vučićević K, Radivojević D, Kovačević SV, Prostran M, Miljković B. Exploring Sirolimus Pharmacokinetic Variability Using Data Available from the Routine Clinical Care of Renal Transplant Patients - Population Pharmacokinetic Approach. J Med Biochem. 2019;38(3):323-331.

Pejčić Z, Vučićević K, García-Arieta A, Miljković B. Adjusted indirect comparisons to assess bioequivalence between generic clopidogrel products in Serbia. Br J Clin Pharmacol. 2019;85(9):2059-2065.

Erika Wallender, Katarina Vucicevic, Prasanna Jagannathan, Liusheng Huang, Paul Natureeba, Abel Kakura, Mary Muhindo, Mirium Nakalembe, Diane Havlir, Moses Kamya, Francesca Aweeka, Grant Dorsey, Philip J. Rosenthal, Radojka M. Savic. Predicting optimal dihydroartemisinin-piperaquine regimens to prevent malaria during pregnancy for HIV-infected women receiving efavirenz. J Infect Dis 2018; 217(6): 964-72.

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Ilić V, Bogićević D, Miljković B, Ješić M, Kovačević M, Prostran M, Kovačević SV. Duration of valproic acid monotherapy correlates with subclinical thyroid dysfunction in children with epilepsy. Epileptic Disord. 2016;18(2):181-186.

Golubovic B, Prostran M, Miljkovic B, Vucicevic K, Radivojevic D, Grabnar I. Population Pharmacokinetic Approach of Immunosuppressive Therapy in Kidney Transplant Patients. Curr Med Chem. 2016;23(19):1998-2011.

Jovanović M, Sokić D, Grabnar I, Vovk T, Prostran M, Erić S, Kuzmanovski I, Vučićević K, Miljković B. Application of Counter-propagation Artificial Neural Networks in Prediction of Topiramate Concentration in Patients with Epilepsy. J Pharm Pharm Sci. 2015;18(5):856-862.

Ostali radovi:
Repozitorijum Farmaceutskog fakulteta - FarFaR (link)

ISTRAŽIVAČKA GRUPA
PROF. DR MIROSLAV SAVIĆ

F A R M A K O L O G I J A

Naslovi istraživačkih tema:

Bihejvioralna i farmakokinetička karakterizacija novosintetisanih liganada selektivnih za benzodiazepinsko mesto vezivanja na pojedinim podtipovima $GABA_A$ receptora
Stvaranje novih integrisanih alata za predikciju neželjenih efekata lekova na nervni sistem

Članovi tima:

Dr Miroslav Savić, redovni profesor
Dr Tamara Major
Dr Ivan Jančić, docent
Dr Bojan Batinić, docent
Mag. farm. Branka Divović Matović, asistent
Mag. farm. Aleksandra Kovačević, asistent
Jovana Aranđelović
Vladimir Stevanović

Eksterni saradnici:
Dr Siniša Karasek
Dr Aleksandar Obradović
Dr Vanja Todorović
Anja Santrač
Milica Gajić Bojić

Oprema i metode:

Rotarod za pacove (*Ugo Basile*, Italija; model: 47700)
Aparat za merenje jačine stiska pacova (*Ugo Basile*, Italija; model: 47105)
Digitalni stereotaksični instrument za pacove (*Stoelting*, Irska; model: 51900)
Bussey-Saksida komora za testiranje pacova sa ekranom osetljivim na dodir (*Lafayette Instrument*, Lafboro, Engleska, Velika Britanija; model: 80604-20)
Luminex 200 sistem sa PONENT 4.2. softverom (*Luminex Corporation*, Ostin, Teksas, SAD; model: *Luminex 200*)

Bihejvioralno testiranje glodara (u Morisovom vodenom lavirintu, uzdignutom plus lavirintu, rotarodu, testu otvorenog polja, testu jačine stiska, testu preferencije saharoze, testu forsiranog plivanja, testu tri komore, testu impulsivnosti, testu afektivne pristrasnosti...)
Merenje koncentracije liganada u krvi, mozgu i drugim organima i telesnim tečnostima glodara i farmakokinetička karakterizacija liganada

Projekti/ finansiranje:

1. Projekat u okviru *Horizon 2020 Research and Innovation action – Innovative Medicines Initiative* (IMI2 – Poziv 13) i Evropske federacije farmaceutske industrije i Udruženja inovativnih proizvođača lekova (EFPIA) pod nazivom: "De-eskalacija rizika neurotoksičnosti u prekliničkom otkriću lekova" (NeuroDeRisk), br. 821528, 2019-2022, 696 150 €
2. Projekat Ministarstva prosvete, nauke i tehnološkog razvoja Republike Srbije br. 175076: „Bihejvioralni efekti ponavljane primene novosintetisanih supstanci selektivnih za pojedine podtipove benzodiazepinskog mesta vezivanja $GABA_A$ receptora: poređenje sa standardnim psihofarmakološkim lekovima" iz osnovnih istraživanja – Medicina (trenutno je aktuelno institucionalno finansiranje grupe putem Ugovora o realizaciji i finansiranju naučnoistraživačkog rada Univerziteta u Beogradu – Farmaceutskog fakulteta u 2021. godini, evidencioni br. 451-03-9/2021-14/200161)
3. Projekat bilateralne saradnje sa Republikom Austrijom (Medicinski Univerzitet u Beču): "Modulacija neuropatskog bola preko GABAA receptora u animalnim modelima)", br. 451-03-02141/2017-09/05, 2018-2021.

ISTRAŽIVAČKA GRUPA
PROF. DR MIROSLAV SAVIĆ

Saradnje: Univerzitet u Beogradu – Farmaceutski fakultet – dr Bojan Marković, dr Vladimir Dobričić, istraživačke grupe dr Snežane Savić, dr Marina Jukića
Institut za nuklearne nauke "Vinča", Srbija
Medicinski Univerzitet u Beču, Austrija
Univerzitet u Torontu i Campbell Family istraživački institut za mentalno zdravlje, Kanada
Univerzitet Vinskonsin-Milvoki, SAD

Odabrane publikacije

Andronis C, Silva JP, Lekka E, Virvilis V, Carmo H, Bampali K, Ernst M, Hu Y, Loryan I, Richard J, Carvalho F, **Savić MM**. Molecular basis of mood and cognitive adverse events elucidated via a combination of pharmacovigilance data mining and functional enrichment analysis. Arch Toxicol. 2020;94:2829-2845.

Sieghart W, **Savić MM**. International Union of Basic and Clinical Pharmacology. CVI: $GABA_A$ Receptor Subtype- and Function-selective Ligands: Key Issues in Translation to Humans. Pharmacol Rev. 2018;70:836-878.

Mitrović JR, **Divović B**, Knutson DE, Đoković JB, Vulić PJ, Randjelović DV, Dobričić VD, Čalija BR, Cook JM, **Savić MM**, Savić SD. Nanocrystal dispersion of DK-I-56-1, a poorly soluble pyrazoloquinolinone positive modulator of α6 $GABA_A$ receptors: Formulation approach toward improved in vivo performance. Eur J Pharm Sci. 2020;152:105432.

Knutson DE, Kodali R, **Divović B**, Treven M, Stephen MR, Zahn NM, Dobričić V, Huber AT, Meirelles MA, Verma RS, Wimmer L, Witzigmann C, Arnold LA, Chiou LC, Ernst M, Mihovilovic MD, **Savić MM**, Sieghart W, Cook JM. Design and Synthesis of Novel Deuterated Ligands Functionally Selective for the γ-Aminobutyric Acid Type A Receptor ($GABA_A$ R) α6 Subtype with Improved Metabolic Stability and Enhanced Bioavailability. J Med Chem. 2018;61:2422-2446.

Vasović D, **Divović B**, Treven M, Knutson DE, Steudle F, Scholze P, **Obradović A**, Fabjan J, Brković B, Sieghart W, Ernst M, Cook JM, **Savić MM**. Trigeminal neuropathic pain development and maintenance in rats are suppressed by a positive modulator of α6 $GABA_A$ receptors. Eur J Pain. 2019;23:973-984.

Prevot TD, Li G, **Vidojevic A**, Misquitta KA, Fee C, **Santrac A**, Knutson DE, Stephen MR, Kodali R, Zahn NM, Arnold LA, Scholze P, Fisher JL, Marković BD, Banasr M, Cook JM, **Savic M**, Sibille E. Novel Benzodiazepine-Like Ligands with Various Anxiolytic, Antidepressant, or Pro-Cognitive Profiles. Mol Neuropsychiatry. 2019;5:84-97.

Batinić B, **Santrač A**, **Jančić I**, Li G, **Vidojević A**, Marković B, Cook JM, **Savić MM**. Positive modulation of α5 $GABA_A$ receptors in preadolescence prevents reduced locomotor response to amphetamine in adult female but not male rats prenatally exposed to lipopolysaccharide. Int J Dev Neurosci. 2017;61:31-39.

Bojić MG, Todorović L, **Santrač A**, Mian MY, Sharmin D, Cook JM, **Savić MM**. Vasodilatory effects of a variety of positive allosteric modulators of $GABA_A$ receptors on rat thoracic aorta. Eur J Pharmacol. 2021;899:174023.

Savić MM, Huang S, Furtmüller R, Clayton T, Huck S, Obradović DI, Ugrešić ND, Sieghart W, Bokonjić DR, Cook JM. Are $GABA_A$ receptors containing alpha5 subunits contributing to the sedative properties of benzodiazepine site agonists? Neuropsychopharmacology. 2008;33:332-9.

Savić MM, Clayton T, Furtmüller R, Gavrilović I, Samardzić J, Savić S, Huck S, Sieghart W, Cook JM. PWZ-029, a compound with moderate inverse agonist, functional selectivity at $GABA_A$ receptors containing alpha5 subunits, improves passive, but not active, avoidance learning in rats. Brain Res. 2008;1208:150-9.

Ostali radovi:
Repozitorijum Farmaceutskog fakulteta - FarFaR (link)

ISTRAŽIVAČKA GRUPA
PROF. DR RADICA STEPANOVIĆ-PETROVIĆ

F A R M A K O L O G I J A

Naslov istraživačke teme:	Ispitivanje mehanizma dejstva, interakcija i neželjenih efekata alternativnih analgetika u animalnim modelima bola.
Članovi tima:	Dr Radica Stepanović-Petrović, redovni profesor Dr Maja Tomić, redovni profesor Dr Ana Micov, docent Dr Uroš Pecikoza, asistent Mag. farm. Katarina Nastić
Oprema i metode:	Hugo Sachs Elektronik 7360 Aparat za izvođenje testa izmicanja repa miševa/pacova pod uticajem toplote Hugo Sachs Elektronik D-79232 Aparat za izvođenje testa pritiska na šapu pacova IITC Life Science Inc. 2390 Aparat za merenje bolne preosetljivosti šape miševa/pacova pri mehaničkoj stimulaciji Ugo Basile S.R.L. 7141 Aparat za merenje volumena šape miševa/pacova (Pletizmometar) Ugo Basile 47700 Rotarod Ugo Basile 47105 Aparat za merenje jačine stiska pacova
Projekti/ finansiranje:	Institucionalno finansiranje putem Ugovora sa MPNTR-om, evidencioni br. 451-03-9/2021-14/200161
Saradnje:	**Univerzitet u Beogradu - Farmaceutski fakultet** Istraživačka grupa Djekić Lj, Krajišnik D Istraživačka grupa Leposavić G, Istraživačka grupa Petrovic S, Maksimović Z **Institut za molekularnu genetiku i genetičko inženjerstvo (IMGGI)** Istraživačka grupa Golić N i Dinić M **Univerzitet u Beogradu - Biološki fakultet** Istraživačka grupa Jasnić N i Djordjević J

ISTRAŽIVAČKA GRUPA
PROF. DR RADICA STEPANOVIĆ-PETROVIĆ

Odabrane publikacije

Micov AM, **Tomić MA**, Todorović MB, Vuković MJ, **Pecikoza UB**, Jasnic NI, Djordjevic JD, **Stepanović-Petrović RM**. Vortioxetine reduces pain hypersensitivity and associated depression-like behavior in mice with oxaliplatin-induced neuropathy. Prog Neuropsychopharmacol Biol Psychiatry. 2020;103:109975. (IF=5,067/2020)

Tomić M, **Pecikoza U**, **Micov A**, Vučković S, **Stepanović-Petrović R**. Antiepileptic drugs as analgesics/adjuvants in inflammatory pain: current preclinical evidence. Pharmacol Ther. 2018;192:42-64. (IF= 12,310/2020)

Pecikoza UB, **Tomić MA**, **Micov AM**, **Stepanović-Petrović RM**. Metformin Synergizes With Conventional and Adjuvant Analgesic Drugs to Reduce Inflammatory Hyperalgesia in Rats. Anesth Analg. 2017;124:1317-1329. (IF= 5,108/2020)

Tomić MA, **Pecikoza UB**, **Micov AM**, **Stepanović-Petrović RM**. The Efficacy of Eslicarbazepine Acetate in Models of Trigeminal, Neuropathic, and Visceral Pain: The Involvement of 5-HT1B/1D Serotonergic and CB1/CB2 Cannabinoid Receptors. Anesth Analg. 2015;121:1632-9. (IF= 5,108/2020)

Stepanović-Petrović RM, **Micov AM**, **Tomić MA**, Kovačević JM, Bošković BD. Antihyperalgesic/antinociceptive effects of ceftriaxone and its synergistic interactions with different analgesics in inflammatory pain in rodents. Anesthesiology. 2014;120:737-750. (IF= 7,892/2020)

Stepanović-Petrović RM, **Micov AM**, **Tomić MA**, Ugrešić ND. The local peripheral antihyperalgesic effect of levetiracetam and its mechanism of action in an inflammatory pain model. Anesth Analg. 2012;115:1457-66. (IF= 5,108/2020)

Micov A, **Tomić M**, Popović B, **Stepanović-Petrović R**. The antihyperalgesic effect of levetiracetam in an inflammatory model of pain in rats: mechanism of action. Br J Pharmacol. 2010;161:384-392. (IF=8,379/2020)

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Vuković SM, **Tomić MA**, **Stepanović-Petrović RM**, Ugresić N, Prostran MS, Bosković B. The effects of alpha2-adrenoceptor agents on anti-hyperalgesic effects of carbamazepine and oxcarbazepine in a rat model of inflammatory pain. Pain. 2006;125:10-9. (IF= 6,961/2020)

Tomić MA, Vučković SM, **Stepanović-Petrović RM**, Ugrešić N, Prostran MS, Bošković B. The anti-hyperalgesic effects of carbamazepine and oxcarbazepine are attenuated by treatment with adenosine receptor antagonists. Pain. 2004;111:253-260. (IF= 6,961/2020)

Ostali radovi:
Repozitorijum Farmaceutskog fakulteta - FarFaR (link)

ISTRAŽIVAČKA GRUPA DR ALEKSANDRA JANOŠEVIĆ-LEŽAIĆ, VANR. PROF.

F I Z I Č K A H E M I J A

Naslov istraživačke teme:	Sinteza i karakterizacija polimernih materijala i kompozita na bazi heteropoli jedinjenja sa ciljem njihove primene u elektrokonverziji, farmaciji i reakcijama od značaja za zaštitu životne sredine
Članovi tima:	Dr Snežana Uskoković-Marković, vanredni profesor Dr Aleksandra Janošević-Ležaić, docent
Oprema i metode:	Amel Instruments, Italy, A MEL 433-A Polarographic Analyser; UV/Vis spectrophotometer, GBC Scientific Equipment, Australia, Cintra 20; Raman spectrometer, Ahura Scientific, Waltham, USA, PortableTruScan.
Projekti/ finansiranje:	Institucionalno finansiranje putem Ugovora sa MPNTR-om, evidencioni br. 451-03-9/2021-14/200161.
Saradnje:	Univerzitet u Beogradu - Fakultet za fizičku hemiju; Department of Inorganic Chemistry, Institute of Chemistry of Romanian Academy, Timisoara, Romania; Advanced Materials Department, Institut Jožef Stefan, Ljubljana, Slovenija; Institute of Macromolecular Chemistry, Czech Academy of Sciences, Prague, Czech Republic

ISTRAŽIVAČKA GRUPA DR ALEKSANDRA JANOŠEVIĆ-LEŽAIĆ, VANR. PROF.

Odabrane publikacije

D Janićijević, **S Uskoković-Marković**, D Ranković, M Milenković, A Jevremović, B Nedić Vasiljević, M Milojević-Rakić, D Bajuk-Bogdanović, Double active BEA zeolite/silver tungstophosphates – Antimicrobial effects and pesticide removal. Science of the Total Environment, 2020, 735, 139630.

Z Jovanović, Ž Mravik, D Bajuk-Bogdanović, S Jovanović, S Marković, M Vujković, J Kovač, D Vengust, **S Uskoković-Marković**, I Holclajtner-Antunović. Self-limiting interactions in 2D–0D system: A case study of graphene oxide and 12-tungstophosphoric acid nanocomposite. Carbon, 156, 2020, 166-178.

I Holclajtner-Antunović, **S Uskoković-Marković**, A Popa, A Jevremović, B Nedić Vasiljević, M Milojević-Rakić, D Bajuk-Bogdanović. Ethanol dehydration over Keggin type tungstophosphoric acid and its potassium salts supported on carbon. Reaction Kinetics, Mechanisms and Catalysis 2019, 128(1), 121-137.

Kashima K., Fujisaki T., Serrano-Luginbühl S., Kissner R., **Janošević Ležaić A.**, Bajuk-Bogdanović D., Ćirić-Marjanović G., Busato S., Ishikawa T., Walde P.: Effect of Template Type on the Trametes versicolor Laccase-Catalyzed Oligomerization of the Aniline D

Pašti I, **Janošević Ležaić A.**, Gavrilov N., Ćirić-Marjanović G., Mentus S.: Nanocarbons derived from polymers for electrochemical energy conversion and storage. *Synthetic Metals* (2018) 246:267-281

Janošević Ležaić A., Bajuk-Bogdanović D., Radoičić M., M. Mirsky V., Ćirić-Marjanović G.: Influence of synthetic conditions on the structure and electrical properties of nanofibrous polyanilines and their nanofibrous carbonized forms, *Synthetic Metals* 214, (2016)

Pašti I., **Janošević Ležaić A.,** Ćirić-Marjanović G., Mirsky V.: Resistive gas sensors based on the composites of nanostructured carbonized polyaniline and Nafion. *Journal of Solid State Electrochemistry*, 20(11), (2016) 3061-3069

Ostali radovi:
Repozitorijum Farmaceutskog fakulteta - FarFaR (link)

ISTRAŽIVAČKA GRUPA PROF. DR NELI KRISTINA TODOROVIĆ VASOVIĆ

F I Z I K A I M A T E M A T I K A

Naslov istraživačke teme:	Modeliranje i numeričke simulacije složenih višečestičnih sistema
Članovi tima:	Dr Neli Kristina Todorović Vasović, redovni profesor Dr Dragana Ranković, docent Mast. mat. Danijela Milenković, asistent Mast. mat. Marija Minić, asistent
Oprema i metode:	Matlab R Python Origin
Projekti/ finansiranje:	Institucionalno finansiranje putem Ugovora sa MPNTR-om, evidencioni br. 451-03-9/2021-14/200161
Saradnje:	Institut za Fiziku u Beogradu Matematički fakultet Univerziteta u Beogradu Prirodno-matematički fakultet Univerziteta u Novom Sadu
Odabrane publikacije	Prekrat D., Todorović-Vasović K.N., Ranković D., Detecting scaling in phase transitions on the truncated Heisenberg algebra, Journal of High Energy Physics, 2021, 2021(3), 197 Kostić S., Vasović N., Todorović K., Franović I., EFFECT of colored noise on the generation of seismic fault MOVEMENT: Analogy with spring-block model DYNAMICS, Chaos, Solitons and Fractals, 2020, 135, 109726 Kostić S., Vasović N., Todorović K., Franović I., Nonlinear dynamics behind the seismic cycle: One-dimensional phenomenological modeling, Chaos, Solitons and Fractals, 2018, 106, pp. 310–316 Kostić S., Vasović N., Franović I., Klinshov V., Nekorkin V., Dynamics of fault motion in a stochastic spring-slider model with varying neighboring interactions and time-delayed coupling, Nonlinear Dynamics, 2017, 87(4), pp. 2563–2575 Vasović N., Kostić S., Franović I., Todorović K., Earthquake nucleation in a stochastic fault model of globally coupled units with interaction delays, Communications in Nonlinear Science and Numerical Simulation, 2016, 38, pp. 117–129

Ostali radovi:
Repozitorijum Farmaceutskog fakulteta - FarFaR (link)

ISTRAŽIVAČKA GRUPA
DOC. DR MARIN JUKIĆ

F I Z I O L O G I J A

Naslovi istraživačkih tema	**Neurobiologija emocija (NEMO)** Značaj razvoja mozga u emocionalnosti Precizno doziranje antidepressiva i antipsihotika
Članovi tima:	**Stalni članovi grupe** Dr Marin Jukić, docent Mag. farm. Filip Milosavljević, dokotorant Mag. farm. Aleksandra Jeremić, doktorant Dr Zorana Pavlović (Psihijatar, Medicinski fakultet i Klinički Centar Srbije – Klinika za Psihijatriju) Dr Čedo Miljević, docent (Psihijatar, Medicinski fakultet i Institut za Mentalno zdravlje) Dr Zvezdana Stojanović, docent (Psihijatar, Medicinski fakultet Vojnomedicinske akademije i VMA-Klinika za Psihijatriju) pp. Dr Danilo Joković (Psihijatar, Medicinski fakultet Vojnomedicinske akademije i VMA-Klinika za Psihijatriju) **Saradnici na projektima NEMO grupe** Dr Bojan Batinić, docent (PsyCise projekat) Dr Bojan Marković, vanredni profesor (PsyCise projekat) Dr Sandra Vladimirov (PsyCise projekat)
Oprema:	QuantStudio 5 – rtPCR mašina FujiLAS-1000plus – hemilumiscentni i fluorescentni imidžer Pumpa za transkardijalnu perfuziju glodara Azotni uparivač pridružen na generator azota Sitna oprema koja se koristi za pripremu uzoraka za PCR i HPLC
Metode:	Post mortem MRI mozga glodara visoke rezolucije (u saradnji sa Karolinska Institutom – KERIC neuroimidžing centrom) Bihejvioralna analiza glodara Western Blot rtPCR – genotipizacija i genska ekspresija Imunohistohemija Određivanje koncentracije psihijatrijskih lekova u plazmi

ISTRAŽIVAČKA GRUPA
DOC. DR MARIN JUKIĆ

Projekti/ finansiranje

PsyCise – Fond za nauku Republike Srbije 199.872,88 EUR
PGx-PSY – Horison 2020 research and innovation inicijativa 484.981,25 EUR
Pokreni se za nauku inicijativa 1.200.000 RSD

Saradnje

Univerzitet u Beogradu - Farmaceutski fakultet
- Grupa Prof. Vesne Pešić
- Grupa Prof. Miroslava Savića
- Grupa Prof. Svetlane Ignjatović
- Katedra za Farmaceutsku hemiju (HPLC aparat/metoda)
- Katedra za Medicinsku Biohemiju (HPLC aparat/metoda)

Univerzizet u Beogradu – Medicinski fakultet
- Grupa Prof. Nađe Marić Bojović
- Grupa Prof. Branislava Filipovića

Inostrane kolaboracije
- Karolinska Institut, Stokholm, Švedska; grupa Prof. Magnusa Ingelmana-Sundberga
- Karolinska Institut, Stokholm, Švedska; grupa Dr. Petera Damberga (KERIC neuroimidžing centar)
- Univerzitet u Stockholmu, Švedska; grupa Čunlianga Vanga
- Univerzitet u Oslu, Norveška; grupa Prof. Espena Moldena
- Medicinski Univerzitet u Beču, Austrija; grupa Prof. Ruperta Lanzenbergera
- Univerzitet u Munsteru, Nemačka; grupa Prof. Uda Danlovskog
- Univerzitet u Bonu, Nemačka; grupa Prof. Markusa Nutena
- Univerzitet Merilend, Bethseda, SAD; grupa Prof. Toda Gulda
- Univerzitet u Mastrihtu, Holandija; grupa Doc. Ros van Vesterhenen
- Univerzitet u Torontu, Kanada; grupa Prof. Rejčel Tindejl

Odabrane publikacije

Milosavljevic F, Bukvic N, Pavlovic Z, Miljevic C, Pešic V, Molden E, Ingelman-Sundberg M, Leucht S, Jukic MM. Association of CYP2C19 and CYP2D6 Poor and Intermediate Metabolizer Status With Antidepressant and Antipsychotic Exposure: A Systematic Review and Meta-analysis. ***JAMA Psychiatry***. 2020 Nov 25 (ahead of print)

Jukic MM, Smith RL, Haslemo T, Molden E, Ingelman-Sundberg M. Effect of CYP2D6 genotype on exposure and efficacy of risperidone and aripiprazole: a retrospective, cohort study. ***Lancet Psychiatry*** 2019 May;6(5):418-426.

Jukic MM, Haslemo T, Molden E, Ingelman-Sundberg M. Impact of CYP2C19 Genotype on Escitalopram Exposure and Therapeutic Failure: A Retrospective Study Based on 2,087 Patients. ***Am J Psychiatry*** 2018 May 1;175(5):463-470.

Jukić MM, Opel N, Ström J, Carrillo-Roa T, Miksys S, Novalen M, Renblom A, Sim SC, Peñas-Lledó EM, Courtet P, Llerena A, Baune BT, de Quervain DJ, Papassotiropoulos A, Tyndale RF, Binder EB, Dannlowski U, Ingelman-Sundberg M. Elevated CYP2C19 expression is associated with depressive symptoms and hippocampal homeostasis impairment. ***Mol Psychiatry.*** 2017 Aug;22(8):1155-1163.

Jukic MM, Carrillo-Roa T, Bar M, Becker G, Jovanovic VM, Zega K, Binder EB, Brodski C. Abnormal development of monoaminergic neurons is implicated in mood fluctuations and bipolar disorder. ***Neuropsychopharmacology***. 2015 Mar;40(4):839-48.

Ostali radovi:
Repozitorijum Farmaceutskog fakulteta - FarFaR (link)

ISTRAŽIVAČKA GRUPA
PROF. DR VESNA PEŠIĆ

F I Z I O L O G I J A

Naslovi istraživačkih tema:	NEURONAUKE Stres i depresija Neuroendokrinologija Neuromodulatorna uloga oksitocina Ketamin kao brzodelujući antidepresiv
Članovi tima:	Katedra za fiziologiju Dr Vesna Pešić, redovni profesor Dr Dušanka Stanić, docent Dr Bojan Batinić, docent Dr sci Jelena Petrović, asistent Mag. farm. Ana Ivanović, asistent Dr med. Gorana Nikolašević, asistent Institut za mentalno zdravlje, Medicinski fakultet Univerziteta u Beogradu Dr Bojana Pejušković, docent (psihijatar) Dr med. Mihailo Ilić Dr med. Neda Ognjanović Dr med. Jelena Đekić Dr med. Marija Lero Dr Marija Kundaković, docent, Fordham University, New York, USA-konsultant
Oprema i metode:	Analiza moždanog tkiva – Western Blot, Imunohistohemijske analize RT-PCR – genska ekspresija na ćelijama pacijenata i eksperimentalnih životinja Testovi ponašanja eksperimentalnih životinja- FST, NORT, LDB i sl. Neurobiohemija – analiza nivoa neurotransmitera i hormona Laboratorija za rad sa ćelijskim kulturama
Projekti/ finansiranje:	COST project CONNECT CA19127 nephro-neurology Institucionalno finansiranje putem Ugovora sa MPNTR-om, evidencioni br. 451-03-9/2021-14/200161

ISTRAŽIVAČKA GRUPA
PROF. DR VESNA PEŠIĆ

Saradnje:

Farmaceutski fakultet Univerziteta u Beogradu
Grupa doc. Marina Jukića
Grupa prof. Svetlane Ignjatović
Katedra za farmaceutsku hemiju

Institut za mentalno zdravlje

Medicinski fakultet Univerziteta u Beogradu
- Katedra za histologiju i embriologiju
- Katedra za biohemiju

Međunarodna saradnja
- Sagol school of neuroscience, Tel Aviv, Israel
- Sackler faculty of medicine, University of Tel Aviv, Israel
- Department of physiology and pharmacology, Karolinska Institute, Stockholm Sweden
- Goethe Universitat, Frankfurt am Main, Department of Psychiatry, Psychosomatic and Psychotherapy
- Fordham University, Department of Biological science, New York, USA

Odabrane publikacije:

Stanić D., Oved K., Israel-Elgali I., Jukić M., Batinić B., Puškaš N., Shomron N., Gurwitz D., Pešić V.: Synergy of oxytocin and citalopram in modulating Itgb3/Chl1 interplay: relevance to sensitivity to SSRI therapy. Psychoneuroendocrinology 2021, 129 105234. category Psychiatry 41/216 IF=5.663

Stanić D., Plećaš-Solarović D., Mirković D., Jovanović P., Dronjak S., Marković B., Đorđević T., Ignjatović S., Vesna Pešić: Oxytocin in corticosterone-induces chronic stress model: Focus on adrenal gland function. Psychoneuroendocrinology 2017 80: 137-146, category Psychiatry 41/216 IF=5.663

Jelena Petrović, Dušanka Stanić, Zorica Bulat, Nela Puškaš, Milica Labudović-Borović, Bojan Batinić, Duško Mirković, Svetlana Ignjatović, and Vesna Pešić: ACTH-induced model of depression resistant to tricyclic antidepressants: Neuroendocrine and behavioral changes and influence of long-term magnesium administration. Hormones and Behavior 2018, 105: 1-10, category Behavioral Sciences 10/53 IF=4.304

Dangoor I., Stanić D., Reshef L., Pešić Vesna, Gophna U.: Specific changes in the mammalian gut microbiome as a biomarker for oxytocin-induced behavioral changes. Microorganisms 2021, 9 1938. category Microbiology 37/135 IF=4.152

Jelena Petrović, Vesna Pešić, Volker Lauschke: Frequencies of clinically important CYP2C19 and CYP2D6 alleles are graded across Europe. European Journal of Human Genetics 2020, 28: 88–94. category Genetics &Heredity 61/125 IF=4.440

Dušanka Stanić, Bosiljka Plećaš-Solarović, Jelena Petrović, Nataša Bogavac-Stanojević, Miron Sopić, Jelena Kotur-Stevuljević, Svetlana Ignjatović, and Vesna Pešić: Hydrogen peroxide-induced oxidative damage in peripheral blood lymphocytes from rats chronically treated with corticosterone: the protective effect of oxytocin treatment. Chemico- Biological interactions 2016, 256:134-141 category Pharmacology &Pharmacy 56/275 IF=5.192

Preostale publikacije na website-u Katedre za fiziologiju

Ostali radovi:
Repozitorijum Farmaceutskog fakulteta - FarFaR (link)

ISTRAŽIVAČKA GRUPA
PROF. DR SVETLANA IGNJATOVIĆ

M E D I C I N S K A B I O H E M I J A

Naslov istraživačke teme: Procena biomarkera bolesti i disfunkcije organa

Članovi tima:

Dr Svetlana Ignjatović, redovni profesor
Dr Aleksandra Topić, redovni profesor
Dr Miloš Žarković, redovni profesor *
Dr Jasmina Ćirić, redovni profesor *
Dr Biljana Nedeljković Beleslin, docent *
Dr Duško Mirković, vanredni profesor
Dr Mirjana Bećarević, redovni profesor **
Dr Neda Milinković, asistent
Marija Sarić Matutinović, istraživač pripravnik
* Univerzitet u Beogradu-Medicinski fakultet
** Univerzitet u Novom Sadu-Medicinski fakultet

Oprema i metode:

- Deep freeze refrigerator, SANYO-3254 Ultra low
- Olympus AU400 biochemistry analyzer (Beckman Coulter)
- Access 2 immunochemical analyzer (Beckman Coulter)
- Hematological analyzer, Beckman Coulter, ACT DIFF
- Flow cytometer, BD Biosciences, USA, FA CSCALIBUR 4–COLOR
- Rayto ELISA reader and Rayto Mikroplate washer
- Liquid Chromatograph (HPLC), Shimadzu Corporation, Tokyo, Japan, HPLC Nexera i LC2040C 3D Liquid Chromatograph
- Ultra high pressure liquid chromatography with mass-mass detection (UHPLC/MS/MS), Thermo ACCELA Scientific), Agilent Technologies

ISTRAŽIVAČKA GRUPA
PROF. DR SVETLANA IGNJATOVIĆ

Projekti/ finansiranje: 2011–2019: Biomarkeri oštećenja i disfunkcije organa (#175036); Kompleksne bolesti kao model sistem za proučavanje modulacije fenotipa-strukturna i funkcionalna analiza molekularnih biomarkera (#173008) / Ministarstvo prosvete, nauke i tehnološkog razvoja Republike Srbije

Saradnja: Research group from the Laboratory for Molecular Thyroid Research, Johannes Gutenberg University (JGU) Medical Centre in Mainz, Germany

Odabrane publikacije:

Ignjatovic S, Majkic-Singh N, Mitrovic M, Gvozdenovic M. Biochemical evaluation of patients with acute pancreatitis. Clin Chem Lab Med 2000; 38: 1141–4.

Lukic V, Ignjatovic S. Optimizing moving average control procedures for small-volume laboratories: can it be done? Biochem Medica 2019;3:030710.

Žarković M, et al. Asymmetry indicates more severe and active disease in Graves' orbitopathy: results from a prospective cross-sectional multicentre study. J Endocrinol Invest 2020;43: 1717–1722.

Nedeljković-Beleslin B, Ćirić J, Stojković M, et al. Comparison of efficacy and safety of parenteral versus parenteral and oral glucocorticoid therapy in Graves' orbitopathy. Int J Clin Pract 2020 Jul 10;e13608.

Topic A, Francuski Dj, Markovic B, et al. Gender-related reference intervals of urinary 8-oxo-7,8-dihydro-2′-deoxyguanosine determined by liquid chromatography-tandem mass spectrometry in Serbian population. Clin Biochem 2013;46:321-326.

Becarevic M, Mirkovic D, Ignjatovic S. Double positivity of the IgG isotype of both anticardiolipin and anti-β2gpI antibodies is associated with the highest number of vascular impairment parameters in patients with primary antiphospholipid syndrome: preliminary data. Clin Rheumatol 2016;35:2947–54.

Milinković N, Jovičić S, Ignjatović S. Measurement uncertainty as a universal concept: can it be universally applicable in routine laboratory practice? Crit Rev Clin Lab Sci 2020 Jul 16;1–12. doi: 0.1080/10408363.2020.1784838.

Ostali radovi:
Repozitorijum Farmaceutskog fakulteta - FarFaR (link)

ISTRAŽIVAČKA GRUPA
PROF. DR JELENA ANTIĆ STANKOVIĆ

M I K R O B I O L O G I J A

Naslov istraživačke teme:	Investigation of antimicrobial and anti-proliferative compounds
Članovi tima:	Dr Jelena Antić Stanković, redovni profesor Dr Dragana Božić, vanredni profesor Dr Brankica Filipić, vanredni profesor Dr Slađana Tanasković, vanredni profesor Dr Branka Dražić, docent
Oprema i metode:	Our group is mainly focused on pharmaceutical (medicinal) chemistry of the new compounds with potential antimicrobial activities and anti-proliferative effects. Also, we investigate antimicrobial and anti-proliferative effects of compounds of natural origin, especially essential oils, as well as new synthesized mixed-ligand transitional metal complexes with different macrocycles and additional aromatic and aliphatic carbocylates. The structure of the complexes is defined using physico-chemical methods. We determine *in vitro* cytotoxic activity of samples according to cell lines originating from different types of cancer, as well as the selectivity of cytotoxic action on the established line of normal human cells. Also, we analyze the effect of samples from plant material on cell distribution at different stages of the cell cycle, as well as the type of cell death. We use the diffusion, microdilution and agar microdilution method to determine the antimicrobial effect of the samples.
Projekti/ finansiranje:	Institucionalno finansiranje putem Ugovora sa MPNTR-om, evidencioni br. 451-03-9/2021-14/200161.

ISTRAŽIVAČKA GRUPA
PROF. DR JELENA ANTIĆ STANKOVIĆ

Odabrane publikacije

Mirjana Antonijević-Nikolić, Jelena Antić Stanković, Branka Dražić, Sladjana Tanasković, New macrocyclic Cu(II) complex with bridge terephthalate: synthesis, spectral properties, *in vitro* cytotoxic and antimicrobial activity. Comparison with related complexes, J Mol Struct. 2019, 1184(15):41-48

Antonijević-Nikolić M, Dražić B, Antić-Stanković J, Tanasković S New mixed-ligand Ni(II) and Zn(II) macrocyclic complexes with bridged bicyclo-[2,2,1]-hept-5-en-endo-2,3-cis-dicarboxylate: synthesis, characterization, antimicrobial and cytotoxic activit, J. Serb. Chem. Soc. 2019; 841–13

Antonijevic Nikolic M, Antic Stankovic J, Tanaskovic S: Synthesis, characterization and *in vitro* antiproliferative and antibacterial studies of tetraazamacrocyclic complexes of Co(II) and Cu(II) with pyromellitic acid, J Coord Chem, 2018, 71(10): 1542-59

Perovic S, Veinovic G, Antic Stankovic J: A review on antibiotic resistance: origin and mechanisms of bacterial resistance as biological phenomenon, Genetika. 2018, 50(3): 1123-35

Milovic S , Kundakovic TD, Macic V, Antic-Stankovic J, Grozdanic N, Djuricic I, Stankovic I, Anti α-glucosidase, antitumour, antioxidative, antimicrobial activity, nutritive and health protective potential of some seaweeds from the Adriatic coast of Montenegro, Farmacia. 2017, 65 (5): 731-740

Damjanović Ana, Kalinić Marko, Tasić Gordana, Erić Slavica, Antić Stanković Jelena, Savić Vladimir: Synthesis, cytotoxicity and computational study of novel protoberberine derivatives, Journal of the Serbian Chemical Society,2016, 81 (2): 103–123

Matej S, Žižak Ž, Antić Stanković J, Prijatelj M, Turk S, Juranić Z, Mlinarić Rašćan I, Gobec S: Cinnamic Acid Derivates Induce Cell Cycle Arrest in Carcinoma Cell Lines, Medicinal chemistry, 2013, vol 9 (5), 633-641

Erić Slavica, Ke Song, Barata Teresa, Solmajer Tom, Antić Stanković Jelena, Juranić Zorica, Savić Vladimir, Zloh Mire: Target fishing and docking studies of the novel derivates of aryl-aminopyridines with potential anticancer activity, Biorganic & medical chemistry, 2012, vol 20 (17), 5220-5228

Stanić Vojislav, Dimitrijević Suzana, Antić-Stanković Jelena, Mitrić Miodrag, Jokić Bojan, Plećaš Ilija, Raičević Slavica: Synthesis, characterization and antimicrobial activity of copper and zinc-doped hydroxyapatite nanopowders, Applied surface science, 2010, 256 (20), 6083-6089

Mirjana Antonijević-Nikolić, Jelena Antić-Stanković, Branka Dražić, Sladjana Tanasković, New macrocyclic Cu(II) complex with bridge terephthalate: synthesis, spectral properties, in vitro cytotoxic and antimicrobial activity. Comparison with related complexes, J Mole Struct. 2018, ISSN 0022-2860, https://doi.org/10.1016/j.molstruc.2018.10.027

Cirkovic I, Bozic DD, Draganic V, Lozo J, Beric T, Kojic M, Arsic B, Garalejic E, Djukic S, Stankovic S. Licheniocin 50.2 and Bacteriocins from *Lactococcus lactis* subsp. *lactis* biovar. *diacetylactis* BGBU1-4 inhibit biofilms of coagulase negative Staphylococci and *Listeria monocytogenes* clinical isolates. PLoS One. 2016; 11(12):e0167995. doi: 10.1371/journal.pone.0167995.

Samardžić S, Arsenijević J, Božić D, Milenković M, Tešević V, Maksimović Z. Antioxidant, anti-inflammatory and gastroprotective activity of *Filipendula ulmaria* (L.) Maxim. and *Filipendula vulgaris* Moench. Journal of Ethnopharmacology 2018;213:132-137. DOI 10.1016/j.jep.2017.11.013

Cirkovic I, Pavlovic B, Bozic DD, Jotic A, Bakic Lj, Milovanovic J. Antibiofilm effects of topical corticosteroids and intranasal saline in patients with chronic rhinosinusitis with nasal polyps depend on bacterial species and their biofilm-forming capacity. Eur Arch Otorhinolaryngol 2017 274:1897–1903. DOI 10.1007/s00405-017-4454-6

Cirkovic I, Jocic D, Bozic DD, Djukic S, Konstantinovic N, Radak Dj. The Effect of Vacuum-Assisted Closure Therapy on Methicillin-Resistant *Staphylococcus aureus* Wound Biofilms. ADV SKIN WOUND CARE 2018; 31(8):361-364.

Usjak D, Ivkovic B, Bozic DD, Boslovic L, Milenkovic M. Antimicrobial activity of novel chalcones and modulation of virulence factors in hospital strains of *Acinetobacter baumannii* and *Pseudomonas aeruginosa*. Microbial Pathogenesis 2019; 131:186-196.

Božić DD, Milenković MT, Ivković BM, Larsen AR, Ćirković IB. Inhibitory effect of newly-synthesized chalcones on hemolytic activity of methicillin-resistant *Staphylococcus aureus*. Polish Journal of Microbiology 2015; 64 (4): 379-382.

Miljkovic M, Jovanovic S, O'Connor PM, Mirkovic N, Jovcic B, Filipic B, Dinic M, Studholme DJ, Fira D, Cotter PD, Kojic M. *Brevibacillus laterosporus* strains BGSP7, BGSP9 and BGSP11 isolated from silage produce broad spectrum multi-antimicrobials. PLoS One. 2019 May 10;14(5):e0216773. doi: 10.1371/journal.pone.0216773. PMID: 31075157; PMCID: PMC6510442.

Lukić J, Strahinić I, Jovčić B, Filipić B, Topisirović L, Kojić M, Begović J. Different roles for lactococcal aggregation factor and mucin binding protein in adhesion to gastrointestinal mucosa. Appl Environ Microbiol. 2012 Nov;78(22):7993-8000.

Ostali radovi:
Repozitorijum Farmaceutskog fakulteta - FarFaR (link)

ISTRAŽIVAČKA GRUPA
PROF. DR VLADIMIR SAVIĆ

O R G A N S K A H E M I J A

Naslov istraživačke teme:	Nove sintetske metodologije i njihova primena u sintezi prirodnih i biološko aktivnih jedinjenja
Članovi tima:	Dr Vladimir Savić, redovni profesor Dr Milena Simić, vanredni profesor Dr Miloš Petković, vanredni profesor Dr Gordana Tasić, docent Dr Miloš Jovanović, asistent Dr Predrag Jovanović, docent Dr Zorana Tokić Vujošević, vanredni profesor Mag. Farm. Mladen Koravović
Oprema i metode:	Bruker Avance 400 (400 MHz NMR) Synthetic organic chemistry
Projekti/ finansiranje:	Design and synthesis of Hsp90 PROTAC degraders as potential anticancer agents (StJude) Next generation DNA encoded libraries platform (Totient)
Saradnje:	St Jude Children Research Hospital, Memphis, USA Totient, Beograd
Odabrane publikacije	Cyclative Cascades of Allenamides Derived from Amino Acids: Synthesis of Annulated Indoxyl Derivatives; Milos Petkovic, Veselin Nasufovic, Dimitrije Djukanovic, Zorana Tokic Vujosevic, Milka Jadranin, Radomir Matovic, Vladimir Savic; Eur. J. Org. Chem. 2016, 1279–1282 Stereocontrolled Synthesis of Highly Substituted trans α,β-Unsaturated Ketones with Potent Anticancer Properties from Glycals; Predrag Jovanovic, Milos Petkovic, Milena Simic, Milos Jovanovic, Gordana Tasic, Marija Djordjic Crnogorac, Zeljko Zizak, Vladimir Savic; Eur. J. Org. Chem. 2019, 4701–4709 Proline Derived Bicyclic Derivatives through Metal Catalysed Cyclisations of Allenes: Synthesis of Longamide B, Stylisine D and their Derivatives; Milos Jovanovic,Milos Petkovic, Predrag Jovanovic, Milena Simic, Gordana Tasic, Slavica Eric,Vladimir Savic; Eur. J. Org. Chem. 2020, 295–305

Ostali radovi:
Repozitorijum Farmaceutskog fakulteta - FarFaR (link)

ISTRAŽIVAČKA GRUPA
PROF. DR BILJANA SPREMO-POTPAREVIĆ

P A T O B I O L O G I J A

Naslov istraživačke teme:	Evaluacija stepena DNK oštećenja i parametara oksidativnog stresa u izmenjenim fiziološkim uslovima i različitim patološkim stanjima
Članovi tima:	Dr Biljana Spremo-Potparević, redovni profesor Dr Lada Živković, vanredni profesor Dr Dijana Topalović, asistent Marija Bruić, istraživač saradnik
Oprema i metode:	Laboratorija za rad sa ćelijskim kulturama i aparatura za komet test (horizontalna elektroforeza) Metoda komet testa za praćenje DNK oštećenja i procene efikasnosti reparacije oštećenja, u različitim vrstama ćelija.
Projekti/ finansiranje:	Institucionalno finansiranje putem Ugovora sa MPNTR-om, evidencioni br. 451-03-9/2021-14/200161.
Saradnje:	Fakultet Veterinarske Medicine UB; Institut za Medicinska Istraživaja UB; Institut za Nuklearne Nauke „Vinča“; INEP-Zemun; Univ. PM, Ancona, Italy; King Abdullah University of Science and Technology, SA; UTSA-Dept. of Biology, Texas, USA

ISTRAŽIVAČKA GRUPA
PROF. DR BILJANA SPREMO-POTPAREVIĆ

Odabrane publikacije

Antigenotoxic and antioxidant potential of medicinal mushrooms (Immune Assist) against DNA damage induced by free radicals-an *in vitro* study.
Živković L, Bajić V, Bruić M, Borozan S, Popić K, Topalović D, Santibanez J, Spremo-Potparević B. Mutat Res. 2019 Sep;845:403078. doi: 10.1016/j.mrgentox.2019.06.008. Epub 2019 Aug 1.

Dry olive leaf extract attenuates DNA damage induced by estradiol and diethylstilbestrol in human peripheral blood cells *in vitro*.
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Ostali radovi:
Repozitorijum Farmaceutskog fakulteta - FarFaR (link)

ISTRAŽIVAČKA GRUPA
PROF. DR GORDANA LEPOSAVIĆ

P A T O B I O L O G I J A

Naslov istraživačke teme:	Plastičnost imunskog sistema tokom starenja: imunomodulatorni potencijal estrogena
Članovi tima:	Dr Gordana Leposavić, redovni profesor Dr Nevena Arsenović-Ranin, redovni profesor Dr Zorica Stojić-Vukanić, redovni profesor Dr Biljana Bufan, vanredni profesor Dr Mirjana Nacka-Aleksić, docent Dr med. Jasmina Đuretić, saradnik u nastavi Dr med. Marija Stojanović, saradnik u nastavi
Oprema i metode:	Real-time PCR za specifično određivanje i kvantifikaciju nukleinskih kiselina u ćelijama i tkivima. Protočni citofluorimetar za imunofenotipizaciju, određivanje broja i vijabilnosti ćelija, ćelijskog ciklusa i funkcije ćelija. Inkubator sa CO_2 i laminarna komora za *in vitro* rad sa ćelijskim i tkivnim kulturama. Čitač za mikrotitar ploče za enzimske imunotestove (ELISA).
Projekti/ finansiranje:	Institucionalno finansiranje putem Ugovora sa MPNTR-om, evidencioni br. 451-03-9/2021-14/200161.
Saradnje:	U okviru programa saradnje srpske nauke sa dijasporom, saradnja sa Institutom za neurodegenerativne bolesti, Univerziteta u Bordou, Francuska

ISTRAŽIVAČKA GRUPA
PROF. DR GORDANA LEPOSAVIĆ

Odabrane publikacije

Pilipović I, Stojić-Vukanić Z, Prijić I, Jasnić N, Leposavić Gordana. Propranolol diminished severity of rat EAE by enhancing immunoregulatory/protective properties of spinal cord microglia. Neurobiology of Disease 2020, 134: 104665. https://doi.org/10.1016/j.nbd.2019.104665

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Ostali radovi:
Repozitorijum Farmaceutskog fakulteta - FarFaR (link)

ISTRAŽIVAČKA GRUPA
PROF. DR DUŠANKA KRAJNOVIĆ

S O C I J A L N A F A R M A C I J A

Naslov istraživačke teme:	Istraživanje upotrebe lekova u kontekstu unapređenja farmaceutskih usluga i zdravstvenih ishoda kod pacijenata
Članovi tima:	Dr Dušanka Krajnović, redovni profesor Dr Valentina Marinković, redovni profesor Dr Ivana Tadić, vanredni profesor Dr Marina Odalović, vanredni profesor Dr Dragana Lakić, vanredni profesor Dr Andrijana Milošević Georgiev, asistent Mag. farm. Sofija Šesto, asistent Mag. farm. Ivana Stević
Oprema i metode:	Oprema: Software SPSS ver. 25, TreeAge Metode: kvalitativna i kvantitativna istraživanja u farmaceutskoj praksi (uključujući farmakoepidemiološka, farmakoekonomska istraživanja, istraživanja upotrebe lekova i mnoga druga)
Projekti/ finansiranje:	Institucionalno finansiranje putem Ugovora sa MPNTR-om, evidencioni br. 451-03-9/2021-14/200161. Farmaceutska usluga za pacijente sa dijabetesom – razvoj e-portala i mobilne aplikacije kao koncepta za podršku zasnovanog na potrebama korisnika / Fond za inovacionu delatnost Republike Srbije, Rukovodilac projekta dr. sc. Marina Odalović, vanr. prof. COST CA 19132 „European network to advance best practices & technology on medication adherence“, 2020-2024 COST CA 19113 „The European Researchers' Network Working on Second Victims“, 2020-2024
Saradnje:	-Međunarodna saradnja i saradnja sa drugim akademskim institucijama: Univerzitet medicinskih nauka u Kaunasu-Farmaceutski fakultet, Univerzitet u Sarajevu-Farmaceutski fakultet, Triniti collage Dublin-Farmaceutski fakultet, Medicinski Univerzitet u Sofiji-Farmaceutski fakultet, Karlov Univerzitet u Pragu-Farmaceutski fakultet, Medicinski Univerzitet u Bukureštu-Farmaceutski fakultet -Saradnja sa drugim akademskim institucijama: Medicinski fakultet Univerziteta u Novom Sadu -Saradnja sa drugim ministarstvima i organizacijama: Farmaceutska komora Srbije, Privredna komora Srbije, Ministarstvo zdravlja, Republički institut za javno zdravlje “Dr Milan Jovanović Batut“, Agencija za akreditaciju zdravstvenih ustanova Srbije

ISTRAŽIVAČKA GRUPA
PROF. DR DUŠANKA KRAJNOVIĆ

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Ostali radovi:
Repozitorijum Farmaceutskog fakulteta - FarFaR (link)

ISTRAŽIVAČKA GRUPA
PROF. DR BILJANA ANTONIJEVIĆ

T O K S I K O L O G I J A

Naslov istraživačke teme:	Toksikologija smeša – Procena rizika po zdravlje ljudi
Članovi tima:	Dr Biljana Antonijević, redovni profesor Dr Zorica Bulat, redovni profesor Dr Danijela Đukić-Ćosić, vanredni profesor Dr Marijana Ćurčić, docent Dr Aleksandra Buha Đorđević, docent Dr Evica Antonijević Miljaković, asistent Katarina Baralić Dragana Javorac
Oprema i metode:	Atomski apsorpcioni spektrofotometar UV-Vis spektrofotometri GC/TCD Mikrotalasna pećnica Derek Nexus softver PROAST softver @RISK softver
Projekti/ finansiranje:	Institucionalno finansiranje putem Ugovora sa MPNTR-om, evidencioni br. 451-03-9/2021-14/200161.
Saradnje:	Univerzitet u Beogradu - Medicinski fakultet; Univerzitet u Beogradu - Stomatološki fakultet; Institut za higijenu i tehnologiju mesa - Beograd; Centar za kontrolu trovanja VMA; Prehrambeno-biotehnološki fakultet, Sveučilište u Zagrebu; Fakultet prirodnih nauka, Univerzitet u Hradec Kralove, Češka; Faramaceutski fakultet Gazi Univerzitet, Ankara, Turska; Departman za toksikologiju, Univerzitet Miguel Hernandez, Elče, Španija

ISTRAŽIVAČKA GRUPA
PROF. DR BILJANA ANTONIJEVIĆ

Odabrane publikacije:

Radovanović J, Antonijević B, Kolarević S, Milutinović-Smiljanić S, Mandić J, Vuković-Gačić B, Bulat Z, Ćurčić M, Kračun-Kolarević M, Sunjog K, Kostić-Vuković J. Genotoxicity of Fluoride Subacute Exposure in Rats and Selenium Intervention. Chemosphere 2020, 128978. https://doi.org/10.1016/j.chemosphere.2020.128978

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Baralić K, Jorgovanović D, Živančević K, Miljaković EA, Antonijević B, Djordjevic AB, Ćurčić M, Đukić-Ćosić D. Safety assessment of drug combinations used in COVID-19 treatment: in silico toxicogenomic data-mining approach. Toxicology and Applied Pharmacology. 2020; 406:115237.

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David R. Wallace, Yasmeen M. Taalab, Sarah Heinze, Blanka Tariba Lovakovic, Alica Pizent, Elisavet Renieri, Aristidis Tsatsakis, Ammad Ahmad Farooqi, Dragana Javorac, Milena Andjelkovic, Zorica Bulat, Biljana Antonijevic, Aleksandra Buha Djordjevic. Toxic-Metal-Induced Alteration in miRNA Expression Profile as a Proposed Mechanism for Disease Development. Cells 2020; 9, 901; doi:10.3390/cells9040901.

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Andjelkovic M, Buha-Djordjevic A, Antonijevic E, Antonijevic B, Stanic M, Kotur-Stevuljevic J, Spasojevic-Kalimanovska V, Jovanovic M, Boricic N, Wallace D, Bulat Z. Toxic Effect of Acute Cadmium and Lead Exposure in Rat Blood, Liver, and Kidney. International Journal of Environmental Research and Public Health 2019;16(2):274.

Antonijevic E, Musilek K, Kuca K, Djukic-Cosic D, Andjelkovic M, Buha Djordjevic A, Antonijevic B. Comparison of oximes K203 and K027 based on Benchmark dose analysis of rat diaphragmal acetylcholinesterase reactivation. Chemico-Biological Interactions 2019; 308(): 385-91 https://doi.org/10.1016/j.cbi.2019.05.034.

Milic J, Curcic M, Brnjas Z, Carapina H, Randjelovic J, Krinulovic K, Jovovic A. The socio-economic impact timeline in Serbia for persistent organic pollutants (POPs). Science of the total environment. 2019;688:486-93.

Antonijevic E, Musilek K, Kuca K, Djukic-Cosic D, Curcic M, Miladinovic DC, Bulat Z, Antonijevic B. DOSE-RESPONSE modeling of reactivating potency of oximes K027 and K203 against a direct acetylcholinesterase inhibitor in rat erythrocytes. Food Chem Toxicol 2018; 121:224-30.

Sljivic Husejnovic M, Bergant M, Jankovic S, Zizek S, Smajlovic A, Softic A, Music O, Antonijevic B. Assessment of Pb, Cd and Hg soil contamination and its potential to cause cytotoxic and genotoxic effects in human cell lines (CaCo-2 and HaCaT). Environ Geochem Health 2018; 40(4):1557-1572. https://doi.org/10.1007/s10653-018-0071-6

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Curcic M, Buha A, Stankovic S, Milovanovic V, Bulat Z, Đukić-Ćosić D, Antonijević E, Vučinić S, Matović V, Antonijević B. Interactions between cadmium and decabrominated diphenyl ether on blood cells count in rats—Multiple factorial regression analysis. Toxicology 2017, 376: 120-125.

Ostali radovi:
Repozitorijum Farmaceutskog fakulteta - FarFaR (link)

ISTRAŽIVAČKA GRUPA
DOC. DR ALEKSANDRA BUHA ĐORĐEVIĆ

T O K S I K O L O G I J A

Naslov istraživačke teme:	Endokrini ometači – Toksikologija smeša
Članovi tima:	Dr Aleksandra Buha Đorđević, docent Dr Zorica Bulat, redovni profesor Dr Danijela Đukić-Ćosić, vanredni profesor Dr Evica Antonijević-Miljaković, asistent Mag. farm.-med. biohem. Katarina Baralić, istraživač saradnik Mag. farm. Dragana Javorac, istraživač saradnik Dr Stefan Mandić-Rajčević, saradnik u nastavi (Medicinski fakultet, Univerzitet u Beogradu) Saradnici kroz institucionalno finansiranje: Đurđica Marić, istraživač pripravnik Eksterni saradnici/doktorandi: Đurđica Marić, istraživač pripravnik Vera Bonderović, istraživač pripravnik
Oprema i metode:	Atomski apsorpcioni spektrofotometar UV-Vis spektrofotometri Mikrotalasna pećnica PROAST softver @RISK softver
Projekti/ finansiranje:	„Istraživanje uloge ekspozoma u endokrinom zdravlju“ (br. projekta 6066532) Program za izvrsne projekte mladih istraživača – PROMIS; Fond za nauku R.Srbije
Saradnje:	Univerzitet u Beogradu - Medicinski fakultet; Veterinarski fakultet, Univerzitet u Kembridžu, Velika Britanija; Elsie Widdowson Laboratory, Kembridž, Velika Britanija; Kings College London, Velika Britanija; Oklahoma Univerzitet, SAD; Medicinski fakultet, Univerzitet u Kritu, Grčka; Institut za forenzičku medicinu, Hajdelberg, Nemačka; Medicinski fakultet, Univeritet u Sasariju, Italija; Norveški Univerzitet primenjenih nauka, Norveška; Institut za medicinska istraživanja i zdravlje na radu, Zagreb, Hrvatska; Laboratorija za onkologiju i personalizovanu terapiju, Lahore, Pakistan

ISTRAŽIVAČKA GRUPA
DOC. DR ALEKSANDRA BUHA ĐORĐEVIĆ

Odabrane publikacije

Buha A, Baralić K, Djukic-Cosic D, Bulat Z, Tinkov A, Panieri E, Saso L. The role of toxic metals and metalloids in NrF2 signaling. Antioxidants. 2021, https://doi.org/10.3390/antiox10050630

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Djordjevic V, Wallace DR, Schweitzer A, Boricic N, Knezevic Dj, Matic S, Grubor N, Kerkez M, Radenkovic D, Bulat Z, Antonijevic B, Matovic V, Buha A. Environmental cadmium exposure and pancreatic cancer: Evidence from case control, animal and *in vitro* studies. Environ Int 2019, 128: 353-361.

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Andjelkovic M, Buha Djordjevic A, Antonijevic E, Antonijevic B, Stanic M, Kotur-Stevuljevic J, Spasojevic-Kalimanovska V, Jovanovic M, Boricic N, Wallace DR, Bulat Z. Toxic Effect of Acute Cadmium and Lead Exposure in Rat Blood, Liver, and Kidney. International Journal of Environmental Research and Public Health 01/2019; 16(2):274.

Buha A, Matovic V, Antonijevic B, Bulat Z, Curcic M, Renieri EA, Tsatsakis AM, Schweitzer A, Wallace D. Overview of Cadmium Thyroid Disrupting Effects and Mechanisms. Int. J. Mol. Sci. 2018, 19(5), 1501.

Ostali radovi:
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