

## BIOGRAFIJA - ČOLOVIĆ MIRJANA



### Podaci za kontakt

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### Obrazovanje i profesionalno iskustvo

doktor nauka - hemija i hemijska tehnologija, Tehnološko-metalurški fakultet, Univerzitet u Beogradu, 2014

naslov doktorske disertacije: Bioanalitičke metode za detekciju i evaluaciju toksičnosti organo-tiofosfatnih insekticida i proizvoda njihove degradacije

dipl.inž. tehnologije za biohemijsko inženjerstvo i biotehnologiju, Tehnološko-metalurški fakultet, Univerzitet u Beogradu, 2004.

naučni saradnik, Laboratorija za fizičku hemiju, Institut za nuklearne nauke „Vinča“ 2015-

istraživač saradnik, Laboratorija za fizičku hemiju, Institut za nuklearne nauke „Vinča“ 2008-2014.

istraživač pripravnik, Laboratorija za fizičku hemiju, Institut za nuklearne nauke „Vinča“ 2006-2008.

istraživač-volonter, Laboratorija za fizičku hemiju, Institut za nuklearne nauke „Vinča“ 2005.

### Istraživačka interesovanja

poliokso-metalati, metalni kompleksi, ATPaze, organofosfatni insekticidi i proizvodi degradacije, toksični efekti, biosenzori za detekciju insekticida, acetilholinesteraza, oksidativni stres

### Naučne aktivnosti

#### NACIONALNI PROJEKTI

1. „Mehanizmi interakcije fiziološki aktivnih jedinjenja sa biomolekulima“ (projekat br. 142051, Ministarstvo za nauku Republike Srbije) 2006-2010.

2. „Istraživanja interakcija enzima sa toksičnim i farmakološki aktivnim molekulima“ (projekat br. 172023, Ministarstvo za nauku i tehnološki razvoj Republike Srbije) 2011-2018.

## MEĐUNARODNI PROJEKTI

1. COST action CM0701 – „Cascade Chemoenzymatic Processes - New Synergies Between Chemistry and Biochemistry“, 2008 – 2012.
2. COST action CM0804 – „Chemical Biology with Natural Products“, 2009 – 2012.
3. Bilateralna naučna saradnja CNRS, Francuska - Ministarstvo za nauku Republike Srbije, „Experimental and theoretical studies of the interaction of some polyoxovanadates with  $\text{Na}^+$ ,  $\text{K}^+$ -ATPase and  $\text{Ca}^{2+}$ -ATPase“, 2011 – 2012.
4. COST action CM1203 PoCheMoN – „Polyoxometalate Chemistry for Molecular Nanoscience“, 2012– 2016. (član Upravnog odbora)
5. COST action MP1302 – „NanoSpectroscopy“, 2013–2017.
6. Bilateralna naučna saradnja Ministarstvo prosvete, nauke i tehnološkog razvoja, Srbija – Ministarstvo nauke, obrazovanja i ekonomije (Austrijska agencija za međunarodnu mobilnost i saradnju u obrazovanju, nauci i istraživanju - OeAD), Austrija, „Polyoxometalates as potential anticancer and anti-Alzheimer drugs: modulation of  $\text{Na}^+$ ,  $\text{K}^+$ -ATPase and acetylcholinesterase activity“, projekat broj 451-03-01039/2015-09/18, 2016–2017. (rukovodilac projekta)
7. Bilateralna naučna saradnja Ministarstvo prosvete, nauke i tehnološkog razvoja, Srbija – Deutscher Akademischer Austauschdienst (DAAD), Nemačka, „Polyoxopalladates ATPases inhibition studies and toxicity evaluation“, 2016–2017.

## NAUČNA USAVRŠAVANJA

- (i) The Advanced Course of Biosensors and Biodynamics: From Basics to Applications (ICBB 2006) - International Centre of Biodynamics, Bukurešt, Rumunija, 18. maj – 2. jun 2006.
- (ii) Hands-on training on liquid chromatography, (SENARC summer school) – Institute of Public Health, Maribor, Slovenija, 3. jul – 14. jul 2006.
- (iii) Hands-on training on determination of  $^{13}\text{C}/^{12}\text{C}$ ,  $^2\text{H}/^1\text{H}$  and  $^{18}\text{O}/^{16}\text{O}$  isotope ratios in water, fruit juices and alcoholic beverages (IAEA project) – Jozef Stefan Institute, Department of Environmental Sciences, Ljubljana, Slovenija, 2. mart – 3. april 2008.
- (iv) Training school within COST scientific programme on Cascade Chemoenzymatic Processes - New Synergies between Chemistry and Biochemistry, Siena, Italija, 27. april – 1. maj 2011.
- (v) Short Time Scientific Mission (STSM), COST CM1203 PoCeMoN: Polyoxotungstates and acetylcholinesterase: structural and conformational modifications, Laboratory of Bioinorganic Chemistry, Department of Chemistry, KU Leuven, Belgija, 03.–16.april 2016.
- (vi) Jacobs University, Bremen, Nemačka, 22.-29. avgust 2016.
- (vii) Institut für Biophysikalische Chemie, Fakultät für Chemie, Universität Wien, Austrija, 03.- 10. decembar 2016.
- (viii) Short Time Scientific Mission (STSM), COST MP 1302 “Nanospectroscopy”: Effect of polyoxometalates on membrane structure, Istituto di Struttura della Materia, Consiglio Nazionale delle Ricerche, Rim, Italija, 12. – 19. septembar, 2017.

## NAGRADE

1. Godišnja nagrada za rezultate u oblasti primenjenih istraživanja u kategoriji mladih istraživača, INN „Vinča”, 2011.
2. Stipendija za realizaciju naučnog projekta „Development of bioanalytical method for rapid detection of pesticides in water” - Carlsberg Srbija, 2009.
3. V. Vasić, K. Krinulović, M. Čolović, Diploma sa zlatnom plaketom za eksponat “Bioanalitički komplet za brzu detekciju pesticida BIOPEST”, INOST mladih 2008, Savez inovatora Republike Srpske, Banjaluka, 2008.
4. V. Vasić, K. Krinulović, M. Čolović “Bioanalitički komplet za brzu detekciju pesticida BIOPEST” bronzana medalja, XXVII Tradicionalna izložba – Pronalazaštvo Beograd 2007, organizator: Savez pronalazača Beograda, 2007.
5. V. Vasić, K. Krinulović, M. Čolović, “Bioanalitički komplet za brzu detekciju pesticida BIOPEST”, zlaten medal na 28-ta internacionalna izložba na pronajdoci, tehnički unapređivanja, novi proizvodi i tvoreštbo na mladi „MAKINOVA 2007“, SPATUM, Skopje, Makedonija, 2007.
6. V. Vasić, K. Krinulović, M. Čolović, “Biosenzor za detekciju pesticida na bazi holinesteraze”, bronzan medal na 28-ta internacionalna izložba na pronajdoci, tehnički unapređivanja, novi proizvodi i tvoreštbo na mladi „MAKINOVA 2007“, SPATUM, Skopje, Makedonija, 2007.
7. M. Čolović, Nagrada mladi pronalazač „Mladen Selak“, Savez pronalazača Srbije i Crne Gore, 2007.

## NAUČNE PUBLIKACIJE

32 rada objavljena u međunarodnim časopisima, 4 poglavlja u knjizi, 3 rada objavljena u nacionalnim časopisima, > 50 saopštenja sa međunarodnih i domaćih naučnih skupova

## RECENZIRANI RADOVI

1. *European Journal of Medicinal Chemistry*, 2012, **M21**, **IF (2012) = 3,499** (ISSN 0223-5234)
2. *Medicinal Research Reviews*, 2013, **M21a**, **IF (2011) = 10,700** (ISSN 0198-6325)
3. *Journal of Hazardous Materials*, 2014, **M21**, **IF (2013) = 4,331** (ISSN 0304-3894)
4. *Journal of Applied Biomedicine*, 2014, **M23**, **IF (2013) = 1,775** (ISSN 1214-021X)
5. *Journal of Photochemistry and Photobiology B: Biology*, 2015, **M22**, **IF(2014) = 2.960** (ISSN 1011-1344)
6. *Phosphorus, Sulfur, and Silicon and the Related Elements*, 2016, (ISSN 1042-6507)
7. *Anaesthesia Critical Care & Pain Medicine*, 2016, **M23**, **IF(2015) = 0.917** (ISSN 2352-5568)
8. *Pharmacological Reports*, 2016, **M22**, **IF(2015) = 2.251** (ISSN 1734-1140)
9. *Journal of Medicine and Health Research*, 2016.
10. *Life Sciences*, 2017, **M22**, **IF(2015) = 2.685** (ISSN 0024-3205)
11. *Environmental Science and Pollution Research*, 2017, **M21**, **IF(2015) = 2.760** (ISSN 0944-1344)
12. *Journal of Pharmaceutical Analysis*, 2017, (ISSN 2095-1779)
13. *The Journal of Physical Chemistry*, 2017.

14. *Current Enzyme Inhibition*, 2017, (ISSN 1573-4080)
15. *Journal of Chemical Engineering and Bioanalytical Chemistry*, 2017.
16. *Scientific Reports*, 2017. **M21, IF(2016) = 4.259** (ISSN 2045-2322)
17. *Journal of Inorganic Biochemistry*, 2017. **M21, IF(2016) = 3.348** (ISSN 0162-0134)
18. *European Journal of Medicinal Chemistry*, 2017. **M21a, IF(2016) = 4.519** (ISSN 0223-5234)

## RECENZIRANI PROJEKTI

1. Czech Science Foundation, Republika Češka, 2014, 1 predlog projekta.
2. National Science Centre, Poljska, 2015, 1 predlog projekta.
3. Bulgarian National Science Fund, Bugarska, 2016, osnovna istraživanja (hemija), 3 projektna predloga.
4. Bulgarian National Science Fund, Bugarska, 2016, istraživanja za mlade (hemija), 3 projektna predloga.
5. Czech Science Foundation, Češka, 2017, 1 predlog projekta.

**CITIRANOST (Scopus, bez autocitata autora):** 458 (h index = 9)

**ČLANSTVO:** Srpsko hemijsko društvo, Naučno veće INN „Vinča“, Veće oblasti hemije INN „Vinča“, Komisija za normativnu delatnost Naučnog veća INN „Vinča“ (potpredsednik)

## Naučne publikacije (međunarodni časopisi i poglavlja):

1. **M.B. Čolović**, B. Medić, M. Četković, T. Kravić Stevović, M. Stojanović, W. Ayass, A.S. Mougharbel, M. Radenković, M. Prostran, U. Kortz, D.Z. Krstić, Toxicity evaluation of two polyoxotungstates with antiacetylcholinesterase activity. *Toxicology and Applied Pharmacology*, 2017, 333, 68–75. doi: 10.1016/j.taap.2017.08.010
2. **M. Čolović**, V. Vasić, D. Djurić, D. Krstić, Sulphur-containing amino acids: protective role against free radicals and heavy metals. *Current Medicinal Chemistry*, 2017, DOI: 10.2174/0929867324666170609075434
3. A. Bondžić, **M. Čolović**, G. Janjić, B. Zarić, S. Petrović, D. Krstić, T. Marzo, L. Messori, V. Vasić, The influence of oxo-bridged binuclear gold(III) complexes on Na/K-ATPase activity: a joint experimental and theoretical approach. *Journal of Biological Inorganic Chemistry*, 2017, 22(6), 819–832.
4. A. Rašić-Marković, D. Hrnčić, D. Krstić, **M. Čolović**, E. Djurić, B. Rankov Petrović, V. Sušić, O. Stanojlović, D. Djurić, The effect of subchronic supplementation with folic acid and L-arginine on homocysteine-induced seizures. *Canadian Journal of Physiology and Pharmacology*, 2016, 94(10), 1083–1089.
5. T.D. Lazarević-Pašti, **M.B. Čolović**, Organophosphorus insecticides: toxic effects and detoxification. In: *Organophosphorus Pesticides: Structural Characteristics, Mechanisms of Toxicity and Effects of Exposure on Health*, Nova science Publishers, Inc. NY, USA, 2016, in press. (ISBN: 978-1-63485-450-4)
6. X. Xu, N. Bošnjaković-Pavlović, **M.B. Čolović**, D.Z. Krstić, V.M. Vasić, J.-M. Gillet, P. Wu, Y. Wei, A. Spasojević-de Biré, A combined crystallographic analysis and *ab initio* calculations to interpret the reactivity of functionalized hexavanadates and their inhibitor potency toward Na<sup>+</sup>/K<sup>+</sup>-ATPase. *Journal of Inorganic Biochemistry*, 2016, 161, 27–36.

7. D. Krstić, N. Tomić, B. Radosavljević, N. Avramović, V. Dragutinović, S. Radojević Škodrić, **M. Čolović**, Biochemical Markers of Renal Function. *Current Medicinal Chemistry*, 2016, 23(19), 2018–2040.
8. **M.B. Čolović**, V.M. Vasić, N.S. Avramović, M.M. Gajić, D.M. Djurić, D.Z. Krstić, *In vitro* evaluation of neurotoxicity potential and oxidative stress responses of diazinon and its degradation products in rat brain synaptosomes. *Toxicology Letters*, 2015, 233, 29–37.
9. A. Rašić-Marković, B. Rankov-Petrović, D. Hrnčić, D. Krstić, **M. Čolović**, Dj. Macut, D. Djurić, O. Stanojlović, The effect of subchronic supplementation with folic acid on homocysteine induced seizures. *Acta Physiologica Hungarica*, 2015, 102(2), 151–162.
10. **M.B. Čolović**, T.D. Lazarević-Pašti, V.M. Vasić, Toxic effects of chlorpyrifos and its metabolites on some physiologically important enzymes: ATPases, cholinesterases, peroxidases. In: *Chlorpyrifos: Toxicological Properties, Uses and Effects on Human Health and the Environment*, Nova science Publishers, Inc. NY, USA, 2015, 87-140. (ISBN: 978-1-63482-111-7)
11. T.G. Momić, **M.B. Čolović**, T.D. Lazarević-Pašti, V.M. Vasić, Metal based compounds, modulators of Na, K-ATPase with anticancer activity. In: *Regulation of Membrane Na<sup>+</sup>-K<sup>+</sup> ATPase, Advances in Biochemistry in Health and Disease*, Springer International Publishing Switzerland, S. Chakraborti, N.S. Dhalla (eds.), 2016, 15, 389–425. (ISBN: 978-3-319-24750-2)
12. Hrnčić, D., Rasić-Marković, A., Leković, J., Krstić, D., **Čolović, M.**, Macut, D., Sušić, V., Djurić, D., Stanojlović, O., Exercise Decreases Susceptibility To Homocysteine Seizures: The Role of Oxidative Stress. *International Journal of Sports Medicine*, 2014, 35(07), 544-550.
13. V. Petrović, S. Petrović, G. Joksić, J. Savić, **M. Čolović**, M.A. Cinellu, L. Massai, L. Messori, V. Vasić, Inhibition of Na<sup>+</sup>/K<sup>+</sup>-ATPase and cytotoxicity of a few selected gold(III) complexes. *Journal of Inorganic Biochemistry*, 2014, 140, 228–235.
14. **M.B. Čolović**, D.Z. Krstić, T.D. Lazarević-Pašti, A.M. Bondžić, V.M. Vasić, Acetylcholinesterase Inhibitors: Pharmacology and Toxicology. *Current Neuropharmacology* 2013, 11(3), 315–335.
15. V. Petrović, **M. Čolović**, D. Krstić, A. Vujačić, S. Petrović, G. Joksić, Ž. Bugarčić, V. Vasić, *In vitro* effects of some gold complexes on Na<sup>+</sup>/K<sup>+</sup> ATPase activity and cell proliferation. *Journal of Inorganic Biochemistry* 2013, 124, 35–41.
16. A.M. Bondžić, T. Lazarević-Pašti, B.P. Bondžić, **M.B. Čolović**, M.B. Jadranin, V.M. Vasić, Investigation of Reaction between Quercetin and Au (III) in Acidic Media: Mechanism and Identification of Reaction Products. *New Journal of Chemistry* 2013, 37(4), 901–908.
17. **M.B. Čolović**, D.Z. Krstić, V.M. Vasić, A.M. Bondžić, G.S. Ušćumlić, S.D. Petrović, Organophosphorus insecticides: toxic effects and bioanalytical tests for evaluating toxicity during degradation processes. *Hemijska industrija* 2013, 67(2), 217–230.
18. D. Mladenović, D. Krstić, **M. Čolović**, T. Radosavljević, A. Rašić-Marković, D. Hrnčić, Đ. Macut, O. Stanojlović, Different Sensitivity of Various Brain Structures to Thioacetamide-Induced Lipid Peroxidation. *Medicinal Chemistry* 2012, 8(1), 52-58.
19. N. Avramović, V. Dragutinović, D. Krstić, **M.B. Čolović**, A. Trbović, S. de Luka, I. Milovanović, T. Popović, The effects of omega 3 fatty acid supplementation on brain tissue oxidative status in aged wistar rats. *Hippokratia* 2012, 16(3), 250-254.
20. **M.B. Čolović**, D.V. Bajuk-Bogdanović, N.S. Avramović, I.D. Holclajtner-Antunović, N.S. Bošnjaković-Pavlović, V.M. Vasić, D.Z. Krstić, Inhibition of rat synaptic membrane Na<sup>+</sup>/K<sup>+</sup>-ATPase and ecto-nucleoside triphosphate diphosphohydrolases by 12- tungstosilicic and 12- tungstophosphoric acid. *Bioorganic & Medicinal Chemistry* 2011, 19(23), 7063-7069.
21. **M.B. Čolović**, D.Z. Krstić, G.S. Ušćumlić, V.M. Vasić, Single and simultaneous exposure of acetylcholinesterase to diazinon, chlorpyrifos and their photodegradation products. *Pesticide Biochemistry and Physiology* 2011, 100(1), 16–22.

22. T. Lazarević-Pašti, **M. Čolović**, J. Savić, T. Momić, V. Vasić, Oxidation of diazinon and malathion by myeloperoxidase. *Pesticide Biochemistry and Physiology* 2011, 100(2), 140-144.
23. T. Momić, **M. Čolović**, D. Krstić, V. Vasić, Inhibition of  $\text{Na}^+, \text{K}^+$ -ATPase and  $\text{Mg}^{2+}$ -ATPase by Metal Ions and Complexes. *Advances in Chemistry Research* 2011, 9, 93-137. 2011 Nova science Publishers, Inc (ISBN 978-1-61209-702-2)
24. **M. Čolović**, D. Krstić, S. Petrović, A. Leskovac, G. Joksić, J. Savić, M. Franko, P. Trebše, V. Vasić, Toxic effects of diazinon and its photodegradation products. *Toxicology Letters* 2010, 193 (1), 9–18.
25. D. Krstić, **M. Čolović**, N. Bošnjaković-Pavlović, A. Spasojević-de Bire, V. Vasić, Influence of Decavanadate on Rat Synaptic Plasma Membrane ATPases Activity. *General Physiology and Biophysics* 2009, 28, 302-308.
26. D. Vasić, J. Savić, Ž. Bugarčić, D. Krstić, N. Tomić, **M. Čolović**, M. Petković, V. Vasić, Interaction of  $[\text{PtCl}_2(\text{DMSO})_2]$  complex with L-cysteine. *Zeitschrift für Naturforschung C* 2009, 64c, 103-108.
27. A. Rašić-Marković, O. Stanojlović, D. Hrnčić, D. Krstić, **M. Čolović**, V. Sušić, T. Radosavljević, D. Djurić, The activity of erythrocyte and brain  $\text{Na}^+/\text{K}^+$  and  $\text{Mg}^{2+}$ -ATPases in rats subjected to acute homocysteine and homocysteine thiolactone administration. *Molecular and Cellular Biochemistry* 2009, 327, 39-45.
28. **M. Čolović**, D. Krstić, K. Krinulović, T. Momić, J. Savić, A. Vujačić and V. Vasić,  $\text{Na}^+/\text{K}^+$ -ATPase-Activity and Inhibition. *Russian Journal of Physical Chemistry A* 2009, 83(9), 1602-1608.
29. V.M. Vasić, **M.B. Čolović**, D.Z. Krstić, Mechanism of  $\text{Na}^+/\text{K}^+$ -ATPase and  $\text{Mg}^{2+}$ -ATPase inhibition by metal ions and complexes. *Hemijaska industrija* 2009, 63(5a), 499-509.
30. D. Krstić, **M. Čolović**, M. Bavcon-Kralj, M. Franko, K. Krinulović, P. Trebše, V. Vasić, Inhibition of AChE by malathion and some structurally similar compounds. *Journal of Enzyme Inhibition & Medicinal Chemistry* 2008, 23(4), 562–573.
31. D. Krstić, **M. Čolović**, M. Bavcon-Kralj, P. Trebše, K. Krinulović, V. Vasić, The Influence of Malathion and Its Decomposition Products on Free and Immobilized Acetylcholinesterase. *Russian Journal of Physical Chemistry A* 2008, 82(4), 663–668.
32. V. Vasić, K. Krinulović, T. Momić, **M. Čolović**, A. Vujačić, Effects of some organic and inorganic compounds on ATPase activity. *Journal of Environmental Protection and Ecology* 2008, 9(3), 583-591.
33. V. Vasić, D. Kojić, K. Krinulović, **M. Čolović**, A. Vujačić, D. Stojić, Time-Dependent Inhibition of  $\text{Na}^+/\text{K}^+$ -ATPase Induced by Single and Simultaneous Exposure to Lead and Cadmium. *Russian Journal of Physical Chemistry A* 2007, 81(9), 1402-1406.
34. D. Krstić, **M. Čolović**, K. Krinulović, D. Djurić, V. Vasić, Inhibition of AChE by single and simultaneous exposure to malathion and its degradation products. *General Physiology and Biophysics* 2007, 26(4), 247–253.