IBSC

International Bioscience Conference and the
8th International PSU – UNS Bioscience Conference

Towards the SDG Challenges

ONLINE

25-26 November 2021, Novi Sad, Serbia

BOOK OF ABSTRACTS

IBCS2021 is organized jointly by:

University Prince of Songkla, Thailand

FACULTY OF SCIENCE

University of Novi Sad, Faculty of Sciences, Serbia

CIP - Каталогизација у публикацији
Библиотеке Матице српске, Нови Сад

631(082)(048.3)
602(082)(048.3)
502/504(082)(048.3)

THE International Bioscience Conference (2021 ; Novi Sad)
[Book of abstracts] / The International Bioscience Conference and the 8th International PSU - UNS Bioscience Conference IBSC 2021, 25-26 November, 2021 ; [editors Neda Mimica-Dukić, Slobodanka Pajević, Anamarija Mandić]. - Novi Sad : Prirodno-matematički fakultet, 2021. - 261 str. : ilustr. ; 30 cm

Način pristupa (URL): https://ibsc2021.pmf.uns.ac.rs/ebook-of-abstracts/. - Registar.

ISBN 978-86-7031-541-9

1. Joint international PSU-UNS Bioscience Conference (6 ; 2021 ; Novi Sad)
а) Пољопривреда -- Зборници -- Апстракти б) Биотехнологија -- Зборници -- Апстракти в) Животна средина -- Заштита -- Зборници -- Апстракти

COBISS.SR-ID 53483017

International Bioscience Conference (IBSC 2021) was supported by Ministry of Education, Science and Technological Development of the Republic of Serbia

Content

Committee

Organizing Committee

1. Slobodanka Pajević, President, University of Novi Sad, Faculty of Sciences, Serbia
2. Anamarija Mandić, Vice president, University of Novi Sad, Institute of Food Technology, Serbia
3. Srđan Rončević, University of Novi Sad, Faculty of Sciences, Serbia
4. Gordana Vlahović, University of Novi Sad, Faculty of Sciences, Serbia
5. Ivana Pejović, University of Novi Sad, Faculty of Sciences, Serbia
6. Živana Komlenov Mudrinski, University of Novi Sad, Faculty of Sciences, Serbia
7. Saša Rakić, University of Novi Sad, Faculty of Sciences, Serbia
8. Branislava Lalić, University of Novi Sad, Faculty of Agriculture, Serbia
9. Vesna Mijatović Jovin, University of Novi Sad, Faculty of Medicine, Serbia
10. Biljana Božin, University of Novi Sad, Faculty of Medicine, Serbia
11. Nataša Simin, University of Novi Sad, Faculty of Sciences, Serbia
12. Milan Borišev, University of Novi Sad, Faculty of Sciences, Serbia
13. Dejan Orčić, University of Novi Sad, Faculty of Sciences, Serbia
14. Emilija Svirčev, University of Novi Sad, Faculty of Sciences, Serbia
15. Danijela Arsenov, University of Novi Sad, Faculty of Sciences, Serbia
16. Milan Župunski, University of Novi Sad, Faculty of Sciences, Serbia
17. Aleksandra Tubić, University of Novi Sad, Faculty of Sciences, Serbia
18. Vidak Raičević, University of Novi Sad, Faculty of Sciences, Serbia
19. Jovana Grahovac, University of Novi Sad, Faculty of Technology, Serbia
20. Jaroslava Švarc-Gajić, University of Novi Sad, Faculty of Technology, Serbia
21. Neda Lakić, University of Novi Sad, Faculty of Medicine, Serbia
22. Mladen Horvatović, University of Novi Sad, Faculty of Sciences, Serbia
23. Oskar Marko, University of Novi Sad, BioSense Institute, Serbia
24. Miloš Ilić, University of Novi Sad, Faculty of Sciences, Serbia
25. Milana Rošul, University of Novi Sad, Institute of Food Technology, Serbia
26. Nataša Đerić, University of Novi Sad, Institute of Food Technology, Serbia
27. Nemanja Teslić, University of Novi Sad, Institute of Food Technology, Serbia
28. Dejan Ćaćić, University of Novi Sad, Faculty of Sciences, Serbia

Scientific Committee

1. Neda Mimica Dukić, President, University of Novi Sad, Faculty of Sciences, Serbia
2. Anchana Prathep, Prince of Songkla University (PSU), Thailand
3. Pimonsri Mittraparp-Arthorn, Prince of Songkla University (PSU), Thailand
4. Sara Bumrungsri, Prince of Songkla University (PSU), Thailand
5. Wipawadee Sianglum, Prince of Songkla University (PSU), Thailand
6. Chongdee Buranachai, Prince of Songkla University (PSU), Thailand
7. Pissared Muangnil, Prince of Songkla University (PSU), Thailand
8. Jaruwan Mayakul, Prince of Songkla University (PSU), Thailand
9. Komwit Surachat, Prince of Songkla University (PSU), Thailand
10. Patamarerk Engsontia, Prince of Songkla University (PSU), Thailand

11. Viktor Nedović, Ministry of Education, Science and Technological Development of the Republic of Serbia, University of Belgrade, Faculty of Agriculture, Serbia
12. Snežana Đorđević, University Colleague London (UCL), UK
13. Rudolf Bauer, University of Graz, Faculty of Pharmacy, Austria
14. Sari Kontunen-Soppela, University of Eastern Finland (UEF), Joensuu, Finland
15. Carmen Arena, University of Naples Federico II, Italy
16. Sílvia Rocha, University of Aveiro, Portugal
17. Declan Troy, The Agriculture and Food Development Authority (TEAGASC), Ireland
18. Brijesh Tiwary The Agriculture and Food Development Authority (TEAGASC), Ireland
19. Valerija Dunkić, University of Split, Croatia
20. Darko Modun, University of Split, Croatia
21. Olga Tzakou, University of Athens, Greece
22. Maria Couladis, University of Athens, Greece
23. Svetlana Kulevanova, University of Skopje, Macedonia
24. Rossella Russo, University of Calabria, Italy
25. Guido Jurgenliemk, University of Regensburg, Germany
26. Saša Orlović, University of Novi Sad, Institute of Lowland Forestry and Environment, Faculty of Agriculture, Serbia
27. Dragana Miladinović, Institute of Field and Vegetable Crops, Novi Sad, Serbia
28. Branko Ćupina, University of Novi Sad, Faculty of Agriculture, Serbia
29. Diana Bugarski, University of Belgrade, Institute for Medical Research, Serbia
30. Nada Kovačević, University of Belgrade, Faculty of Pharmacy, Serbia
31. Niko Radulović, University of Niš, Faculty of Sciences, Serbia
32. Jasmina Agbaba, University of Novi Sad, Faculty of Sciences, Serbia
33. Jadranka Luković, University of Novi Sad, Faculty of Sciences, Serbia
34. Snežana Radenković, University of Novi Sad, Faculty of Sciences, Serbia
35. Marijana Ačanski, University of Novi Sad, Faculty of Technology, Serbia
36. Jelena Pejin, University of Novi Sad, Faculty of Technology, Serbia
37. Aleksandar Fišteš, University of Novi Sad, Faculty of Technology, Serbia
38. Isidora Samojlik, University of Novi Sad, Faculty of Medicine, Serbia
39. Biljana Basarin, University of Novi Sad, Faculty of Sciences, Serbia
40. Ivana Beara, University of Novi Sad, Faculty of Sciences, Serbia
41. Nataša Nikolić, University of Novi Sad, Faculty of Sciences, Serbia
42. Aleksandra Mišan, University of Novi Sad, Institute of Food Technology, Serbia
43. Jaroslava Švarc-Gajić, University of Novi Sad, Faculty of Technology, Serbia
44. Jovan Matović, University of Novi Sad, BioSense Institute, Serbia
45. Milica Pojić, University of Novi Sad, Institute of Food Technology, Serbiaa
46. Suzana Jovanović-Šanta, University of Novi Sad, Faculty of Sciences, Serbia
47. Mihajla Đan, University of Novi Sad, Faculty of Science, Serbia
48. Silvana Andrić, University of Novi Sad, Faculty of Sciences, Serbia
49. Jelica Simeunović, University of Novi Sad, Faculty of Sciences, Serbia

RESULTS:

Anisotropic lipophilicity was quantified with retention constants, R_M^0 obtained by applying thin-layer reversed-phase chromatography for 13 newly synthesized 1-aryl-3-methyl succinimide derivates. All observed compounds are expected to have favorable Caco-2 permeability except compound 5 with carboxylic group which ionizes in physiological fluids. For all analyzed succinimide derivates short absorption times are expected as well as high absorption rate. Statistically significant parabolic correlation (r^2=0.447, p=0.021) was determined between Caco-2 permeability (calculated with pkCSM software) and anisotropic lipophilicity. Moreover, statistically significant parabolic association (r^2=0.710, p<0.001) was obtained between absorption constant, ka (i-lab 2.0 software) and experimentally determined anisotropic lipophilicity, RM0 for the observed compounds. Finally, the percent of the absorbed molecules, %absorbed (pkCSM software) was influenced by anisotropic lipophilicity with statistical significance (r^2=0.622, p=0.003) and described with parabolic function.

CONCLUSIONS:

Lipophilicity is the key characteristic in transport processes, including intestinal absorption and membrane permeability of 1-aryl-3-methyl succinimide derivates. The increment of lipophilicity of the 1-aryl-3-methyl succinimide core results in enhanced permeability, elevated absorption constants and enlarged bioavailability. However, the augmentation of the permeability through membranes and intestinal absorption as a result of increased lipophilicity is limited probably due to consequent solubility decrement of the studied compounds.

T3-P-11 Subchronic acrylamide treatment induces superoxide dismutase 1 expression in rat liver

Jelena Marković Filipović, Ivana Ivelja, Jelena Karan, Marko Miler, Verica Milošević[46], Milica Matavulj[47]

KEYWORDS: acrylamide; liver; superoxide dismutase 1

INTRODUCTION:

Acrylamide (AA) is a widely used chemical and an important monomer in various industrial and laboratory purposes. In addition, AA is formed in many types of fried and oven-baked foods during cooking. Considering proven neurotoxic, carcinogenic and mutagenic effects on living organisms, AA became a main topic of interest for many research groups.

OBJECTIVES:

The objective of our study was to determine whether acrylamide treatment affects superoxide dismutase 1 (SOD1) expression in rat liver.

METHOD / DESIGN:

Adult male Wistar rats were subchronicly (three weeks) treated with 25 mg/kg or 50 mg/kg body weight (b.w.) of AA. Formalin-fixed paraffin-embedded liver tissue was cut into 5 μm thin sections and immunostained with anti-SOD1 antibody. The amount of SOD1 in immunostained sections was determined using Windows based ImageJ program (ImageJ, Version 1.50f). The optical density (OD) and stained percentage color area of immunolabeled SOD1 were measured.

46 *Department of Cytology, Institute for Biological Research "Siniša Stanković", Serbia. Corresponding author: jelena.markovic@dbe.uns.ac.rs*

47 *University of Novi Sad, Faculty of Sciences, Department of Biology and Ecology, Novi Sad, Serbia. Corresponding author: jelena.markovic@dbe.uns.ac.rs*

RESULTS:

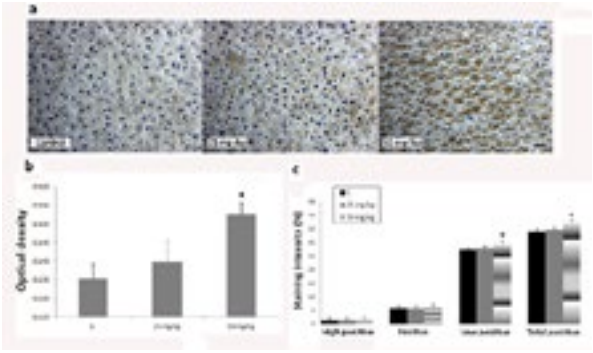

Figure 1. *Representative micrographs of superoxide dismutase 1 (SOD1) immunohistochemical staining in liver of control rats, rats treated with acrylamide (AA) in dose of 25 mg/kg b.w., and rats treated with acrylamide in dose of 50 mg/kg b.w. (a). Optical density of SOD1 immunopositive cells in control and AA-treated rats in doses of 25 mg/kg b.w. and 50 mg/kg b.w. (b). Percentage contribution of high positive, positive, low positive and total positive immunohistochemical staining of SOD1 in control and AA-treated rats in doses of 25 mg/kg b.w. and 50 mg/kg b.w. (c). Values in charts are means ± SEM; n = 10, *p < 0.05. In statistical analysis AA-treated animals were compared with the control group.*

CONCLUSIONS:

Immunostaining of SOD1 in liver of control rats showed weak cytoplasmic immunoreactivity in hepatocytes (*Fig. 1a*). AA application induced dose-dependent increase of immunostaining intensity (*Fig. 1a*). Significant increase of OD and percentage contribution of low positive and total positive cells of immunostained SOD1 was detected in group treated with AA in a dose of 50 mg/kg (*Fig.1b, c*).

T3-P-12 Correlation between anisotropic lipophilicity and *in silico* predicted human distribution of 1-aryl-3-methyl succinimide derivates

Dunja Marjanović, Nataša Milošević, Maja Milanović, Nataša Milić[48],
Nebojša Banjac[49], Gordana Uščumlić[50]

KEYWORDS: lipophilicity; volume of distribution; plasma protein binding; in silico; drug design

INTRODUCTION:

Lipophilicity of drug candidates is used in quantitative structure–activity relationship (QSAR) studies, as molecular descriptor in ADME-tox predictions and as structural information about their biological effects. The distribution of drugs in the body depends mainly on their lipophilicity and their potential to bind to plasma proteins.

OBJECTIVES:

To analyze the influence of lipophilicity on the distribution of newly synthesized succinimide derivates in the human body based on in silico predicted volume of distribution and affinity to bind to the plasma proteins.

METHOD / DESIGN:

Thirteen newly synthesized 1-aryl-3-methyl succinimide derivates were studied by reversed chromatography and their anisotropic lipophilicity was determined. Precoated RP-18W/UV 254 plates (Macherey-Nagel GMBH and Co., Düren, Germany) was used as stationary phase while binary solutions of methanol and water with a varying volume fraction of organic solvent were applied as the mobile phase. The spots were detected at 254 nm with UV lamp. Software package i-lab 2.0 (https://ilab.acdlabs.com/iLab2/) was used for determining volume of distribution (Vd) while pkCSM (http://biosig.unimelb.edu.au/pkcsm/) was applied for predicting the volume of distribution in stationary state (Vdss) and the fraction of the drug unbound

48 *University of Novi Sad, Faculty of Medicine, Department of Pharmacy, Novi Sad, Serbia. Corresponding author: m.dunja@hotmail.com*

49 *University of Belgrade, Faculty of Agriculture, Belgrade, Serbia*

50 *University of Belgrade, Faculty of Technology and Metallurgy, Belgrade, Serbia*