



DRUŠTVO ZA ISHRANU SRBIJE

Knjiga apstrakata

15. KONGRES ISHRANE:

“Hrana, ishrana i zdravlje u okviru održivog razvoja”

www.conu2024.com

20-22. novembar 2024

Hotel M, Bulevar Oslobođenja 56a, Beograd

Podržan od strane

Ministarstvo nauke, tehnološkog razvoja i inovacija

Akreditovan od strane

Zdravstvenog saveta Ministarstva zdravlja Republike Srbije



SERBIAN NUTRITION SOCIETY

Book of abstracts

15th INTERNATIONAL CONGRESS ON NUTRITION

“Food, nutrition, and health within the framework of sustainable development”

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20-22nd November 2024

Hotel M, Bulevar Oslobodenja 56a, Belgrade

Supported by

Ministry of Science, Technological Development and Innovation
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WELCOME NOTE

The Serbian Nutrition Society (SNS) was established in 1956y as an independent non-profit organization. It has a tradition of gathering established experts and young ones from the fields of human and veterinary medicine, pharmacy, biology, chemistry, biochemistry, agriculture, food technology, food microbiology, dietitians-nutritionists and others with similar interests.

In 2023 SNS hosted the 14th European Nutrition Conference (ENC) with 1500 participants, mainly from Europe, but also from other continents.

The program of the 15th national congress on nutrition will cover wide areas across nutritional science plenary and parallel sessions, as well as oral and poster presentations. The programme will also include panel discussions/round tables and young experts' presentations, exhibitions and satellite symposia by food production and food trade stakeholder.

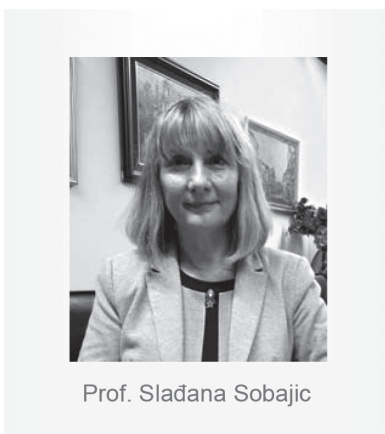
Belgrade is the capital of Serbia situated at the confluence of the Sava and Danube rivers. It is an important educational center. The University of Belgrade is on the Shanghai *ranking* list, one of the 500 most valuable universities in the world. It is also a cultural centre with interesting museums, theatres, art festivals, but also with lot of gastronomical events at local restaurants with traditional cuisine and music.

We are looking forward to hearing from you and welcoming you in Belgrade, from 20 to 22 November 2024.

*Prof. Ljiljana Trajkovic Pavlovic
& Prof. Slađana Sobajic
Co-chairs of the 15th Congress on Nutrition*



Prof. Ljiljana Trajkovic Pavlovic



Prof. Slađana Sobajic

REČ DOBRODOŠLICE

Društvo za ishranu Srbije (DIS), osnovano je 1956. g kao nevladina neprofitna organizacija. DIS tradicionalno okuplja stručnjake iz oblasti agronomije, biohemije, biologije, dijetetike, farmacije, hemije, humane i veterinarske medicine, mikrobiologije prehrambene tehnologije, i drugih obrazovnih profila koji se bave hranom i ishranom.

Društvo za ishranu Srbije saraduje sa brojnim domaćim i stranim obrazovnim i naučnim ustanovama i udruženjima. U 2023. godini u saradnji sa Federacijom evropskih društava za ishranu, DIS je organizovao 14. evropski kongres ishrane u Beogradu sa oko 1500 učesnika pretežno sa evropskog ali

i drugih kontinenata.

Glavne teme 15. kongresa ishrane obuhvataju veliki broj naučnih disciplina koje se bave hranom, ishranom i zdravljem u okviru održivog razvoja. Program kongresa osmišljen je tako da, kroz plenarna predavanja, paralelne sesije, posebne satelitske programe, panel diskusije, usmene i poster prezentacije, omogući da domaći i straini stručnjaci razmene mišljenja o opšte prihvaćenim naučnim dostignućima i rezultatima sopstvenih istraživanja.

Beograd, kao veliki univerzitetski i kulturni centar, ima tradiciju organizacije brojnih domaćih i međunarodnih stručnih skupova ali pruža i mogućnost korišćenja raznovrsnih turističkih ponuda povezanih sa bogatom istorijom i kulturološkim nasleđem.

Radujemo se još jednom lepom i uspešnom susretu sa eminentnim ali i mladim stručnjacima koji se bave hranom i ishranom u Beogradu od 20-22. novembra 2024. godine.

*Prof. Ljiljana Trajkovic Pavlovic
& Prof. Slađana Sobajic
Kopredsedavajući 15. Kongresa Ishrane*

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Contents

Plenaries

- Improving standards in the science of nutrition** 15
Philip C. Calder
- Overweight and obesity in children. How much does physical activity contribute to prevention and therapy?** 15
Sanja Mazic
- Mediterranean diet adherence indexes: comparison and towards a single one** 16
Jacques Delarue
- Gut microbiota - the key mediator between nutrition and health** 18
Mirjana Rajilić-Stojanović
- Scientific approach in using by-products for formulation food with added value: a focus on wine by-products** 18
Mirjana B. Pešić, Slađana P. Stanojević, Aleksandar Ž. Kostić, Danijel D. Milinčić
- Dietary nucleic acids: The overlooked food component with unrecognized nutritional role** 19
Anna Kościelak, Zuzanna Koziara, Joanna Cieślewicz and Agnieszka Bartoszek

Session: Nutrition during the life course

- Human milk nutrition** 20
Radmila Mileusnić-Milenović
- Nutrition of premature infants after hospital discharge** 20
Vesna Marinkovic
- Nutritional and antioxidant aspects of human milk in infant nutrition** 21
Nikoleta Lugonja
- Behavioral approach in childhood obesity – experiences from North Macedonia** 22
Igor Spiroski
- The Impact of Public Health Interventions on Children's nutritional status in Montenegro from 3 COSI rounds** 22
Enisa Kujundzic, Borko Bajic, Zorica Djordjevic, Amra Kazazovic, Snezana B. Labovic, Ivana Joksimovic
- Young Adults Nutrition Trajectories and Middle-Aged Liver Steatosis** 23
Danijela Ristic-Medic
- Nutrition and Aging - Development of osteosarcopenic obesity** 24
Vesna Vučić, Snježana Petrović, Aleksandra Arsić, Biljana Pokimica, Milena Žuža-Praštaló, Danijela Ristić-Medić
- Omega-3 fatty acids intake: Health benefits throughout life** 24
Aleksandra Arsic, Snjezana Petrovic, Danijela Ristic Medic, Milica Kojadinovic, Marija Paunovic, Nikola Prvulovic, Vesna Vucic

Session: Endocrine disruptors

- From Diet to Hormones: Endocrine Disruptors in our Daily Lives** 26
Aleksandra Buha Đorđević
- Challenges in Hazard Assessment of Endocrine Disruptors** 26
Biljana Antonijević
- Endocrine disrupting pesticides in food** 27
Danijela Đukić-Ćosić

Session: Drinking Water Safety, Availability and Sustainability

Youth, WASH and climate changes	28
<i>Sanja Bijelović, Tanja Popovicki, Miodrag Glušević, Lidija Kesar</i>	
Drinking water safety and sanitary conditions in schools in the Republic of Serbia	28
<i>Dragana Jovanovic, Katarina Paunovic</i>	
Searching for the most realistic and sustainable advanced WASH indicators (water, sanitation, hygiene)	29
<i>Katarina Paunović</i>	
Human health risk assessment of drinking water in Autonomous Province of Vojvodina	30
<i>Sanja Bijelović</i>	
Availability and drinking water safety from alternative water supply sources in the territory of AP Vojvodina	30
<i>Emil Živadinović, Sanja Bijelović, Nataša Dragić</i>	
Hydration among youth in North Bačka region	31
<i>Karolina Berenji, Momčilo Pavlović, Nada Kosić Bibić</i>	
Legionella in water systems	32
<i>I. Joksimovic, S. Bajraktarovic-Labovic, Z. Djordjevic, E. Kujundzic, M. Vujovic</i>	
Non-carcinogenic risk assessment of exposure to iron and manganese in the drinking water of South Bačka district	33
<i>Danijela Lukić, Sanja Bijelović, Stanka Bobić, Milan Jovanović, Igor Červenka, Nataša Stanojković, Emil Živadinović</i>	
Benefit of essential elements calcium and magnesium: drinking water vs. natural mineral water	33
<i>Stanka Bobić, Danijela Lukić, Emil Živadinović, Sanja Bijelović</i>	

Session: Microbiology food safety control: A tool for foodborne communicable diseases

Microbial Threats to Food Security	35
<i>Nedjeljko Karabasil, Tamara Bošković, Dragan Vasilev, Nevena Grković, Ivan Vičić, Marko Dmitrić, Mirjana Dimitrijević</i>	
Foodborne viruses: their significance and the need for further study	35
<i>Nevena Grković, Nedjeljko Karabasil, Nikola Čobanović, Branko Suvajdzic, Ivana Milošević, Dunja Mišić, Mirjana Dimitrijević</i>	
Importance of <i>Trichinella</i> spp. in food safety	36
<i>Marko Dmitrić, Vladimir Kurćubić, Saša Živković, Ivan Vičić, Tamara Bošković, Dragan Vasilev, Nedjeljko Karabasil</i>	
Microbiological analysis of various food products on the Serbian market and potential solutions	37
<i>Milica Mirković</i>	
The impact of bacterial biofilms on food safety	37
<i>Suzana Vidaković Knežević, Jelena Vranešević, Slobodan Knežević, Dubravka Milanov, ŽSunčica Kocić-Tanackov, Nedjeljko Karabasil</i>	
Environmentally transmitted parasites and the sustainability of free-range meat production	38
<i>Ivana Klun, Aleksandra Uzelac, Luca Villa, Nedjeljko Karabasil</i>	

Session: Antimicrobial drug resistance of food borne microorganisms

The Silent Threat: Antibiotic-Resistant Bacteria in food of animal origin	39
<i>Ina Gajic, Milos Jovicevic, Ivan Vivic, Dusan Kekic, Nemanja Mirkovic, Milica Mirkovic, Nedjeljko Karabasil</i>	
Monitoring and Antimicrobial Resistance in Food Producing Animals in Croatia	39
<i>Gordan Kompes, Boris Habrun, Antonela Bagarić</i>	

Incidence of salmonellosis and antimicrobial susceptibility in isolates of <i>Salmonella</i> strains from human cases in Belgrade, 2016-2023	40
<i>Nevenka Pavlović, Branislava Zlata, Danka Purtić-Kljajić</i>	
Antimicrobial Resistance of ESKAPE Bacteria in the Food Chain: Challenges and Current Status in Serbia	41
<i>Dunja Mišić, Neđeljko Karabasil, Vesna Đorđević, Vesna Janković, Brankica Lakićević, Radmila Mitrović, Lazar Milojević</i>	
Antimicrobial resistance profile of foodborne pathogens in human samples	42
<i>Snezana Barjaktarovic Labovic, Milena Lopičić, Ivana Joksimovic</i>	
Antimicrobial resistance of environmental strains in South Backa region of Vojvodina, Serbia	42
<i>Vera Gusman, Medić Deana, Lekić Jelena, Strajin Zoran, Bijelović Sanja</i>	
Session: Sustainable food production	
Sustainable use of pesticides as a prerequisite for sustainable food production	44
<i>Ferenc Bagi, Nemanja Pavković, Đina Konstantin, Milica Milinković, Slobodan Vlajić, Renata Iličić</i>	
Principles and methodology of risk analysis of aflatoxin M1 in milk: recent and present challenges	44
<i>Dragan Milićević and Božidar Udovički</i>	
Mycotoxins: A threat to food chain from farm to consumer	45
<i>Jelka Pleadin</i>	
Precision Agriculture Integrating Tools for Sustainable and High-Quality Food Production	46
<i>Miloš Rajković</i>	
Session: Nutrivigilance	
Interactions of food, dietary supplements, herbal preparations with drugs: Definition, Significance, Nutrivigilance	47
<i>Budimka Novaković</i>	
The Italian Nutrivigilance System	47
<i>Francesca Menniti Ippolito, Ilaria Ippoliti</i>	
Clinically significant interactions of phytopreparations with drugs and food	48
<i>Nebojša Kladar, Jelena Jovičić Bata, Budimka Novaković</i>	
Interactions of vitamin- and mineral-containing dietary supplements with medications	49
<i>Jelena Jovičić Bata, Grujičić Maja, Novaković Budimka</i>	
Session: Nutrition and diabetes mellitus	
Medical nutritional therapy of diabetes	50
<i>Miloš Maksimović</i>	
Impact of diabetes mellitus and nutrition on carotid endarterectomy outcomes	50
<i>Danka Vukasinovic</i>	
Nutritional status as an important indicator for dietary approaches in patients with chronic kidney disease	51
<i>Slavica Rađen</i>	
Diabetes in children and adolescents - importance of monitoring diet habits and physical activity for evidence based prevention	52
<i>Jelena Gudelj Rakić</i>	
Session: Food, nutrition and immunity	
Optimal nutrition to support the immune system with aging	53
<i>Philip C. Calder</i>	
Omega-3 Fatty Acids, Inflammation and Immunity	53
<i>Ivana Đuričić</i>	

Physical Activity and Immune Response	54
<i>Rajna Minić, Brižita Đorđević</i>	
Gut microbiome-mediated mechanisms in aging-related, metabolic and neurodegenerative diseases	55
<i>Nataša Golić, Miroslav Dinić, Nikola Popović, Milica Živković, Jelena Đokić, Maja Tolinački, Amarela Terzić-Vidojević</i>	
Session: GUEST Society-Albanian Nutrition Society “Assessment of nutritional status in health and diseases”	
Role of nutritional status assessment in the framework of 4P medicine “Personalized, Predictive, Preventive and Participatory”	56
<i>Angela Andreoli, Ersilia Buonomo</i>	
Study of lifestyle habits among young adults in Albania: focus on chronic diseases prevention	56
<i>Suela Kellici, Gea Myftari, Stefania Moramarco, Ersilia Buonomo, Erida Teliti, Angela Andreoli</i>	
Perceived obesity and nutrition among people with Diabetes	57
<i>Megi Lekbello, Dorina Ylli, Ermira Hana, Arbi Mulhaxhia, Sigi Mehalla, Angela Andreoli, Agron Ylli</i>	
Lifestyle, nutritional status, body composition and Vitamin D in young adults	58
<i>Sadmira Gjergji, Angela Andreoli, Ersilia Buonomo, Stefania Moramarco, Alketa Bicja, Artida Avdia, Anisa Buzi</i>	
Session: Prospects for risks and benefits in the context of food and health	
Health risk associated with biogenic amines exposure through fermented soy food	59
<i>Ljilja Torović, Maja Amidžić</i>	
The French Paradox in Serbia: A Decade of Research on the Polyphenol Profile and Biological Activity of Serbian Wines	59
<i>Ivana Beara, Tatjana Majkić, Ljiljana Milovanović, Ljilja Torović</i>	
Population dietary intake of soy isoflavones and associated health benefits (Serbia and Republic of Srpska)	60
<i>Maja Amidžić, Mira Mikulić, Ljilja Torović</i>	
Regulatory validity of health claims on omega-3 fatty acid food supplements	61
<i>Jelena Banović Fuentes, Ljilja Torović</i>	
Are culinary herbs and spices always pure herbs and spices?	62
<i>Mina Janković, Ljilja Torović</i>	
Session: Potential of dietary interventions	
Effects of supplementation with plant origin superoxide dismutase in a population of athletes	63
<i>Olina Dudašova Petrovičova, Brižita Đorđević, Neda Milinković, Violeta Dopsaj, Milivoj Dopsaj, Ivan Stanković</i>	
The influence of N-acetyl cysteine and propolis supplementation on the parameters of oxidative stress in people with chronic obstructive pulmonary disease	64
<i>O. Žuža, R. Minić, J. Kotur-Stevuljević, B. Đorđević</i>	
Chemical composition and in vitro biological activities of Lycium fruits cultivated in Serbia	64
<i>Tijana Ilić, Dragana Božić, Mirjana Marčetić, Bojana Vidović</i>	
New insights into biomarkers for monitoring the efficacy of probiotics in obesity treatment	65
<i>Nina Okuka, Brižita Đorđević, Nevena Ivanović</i>	
Session: Bioactive material from agro waste	
Fermentation in agro-waste processing: A tool to obtain bioactive products	67
<i>Marija Milić</i>	

Microwave extraction of modulators of microbial growth from medicinal plant waste <i>Milica Milutinović</i>	67
Multifunctional food protein and nanocarrier structure from waste leaf biomass delivered by enzyme technology <i>Zorica D. Knežević-Jugović, Sonja Jakovetić Tanasković, Jelena Mijalković, Nataša Šekuljica</i>	68
Session: Cardiovascular disease: A road to 2025	
Past, Present and Future of salt reduction strategies <i>Milka Popović, Radmila Velicki</i>	70
Obesity as a Risk Factor for Cardiovascular Diseases in Vojvodina <i>Ivana Radic, Sanja Harhaji, Sonja Čanković, Nataša Dragnić, Zorana Ostojić, Tanja Tomašević, Vesna Mijatović Jovanović</i>	70
Nutrition and cardiovascular disease: finding the perfect receipt <i>Dijana Stojanović, Dusica Stojanović</i>	71
Mediterranean diet and cardiovascular health <i>Radmila Velicki, Milka Popovic, Sanja Bijelovic, Natasa Dragic, Natasa Nikolic</i>	72
Characteristics of food environment in school settings of the Republic of Srpska: barriers and drivers of cardiovascular health <i>Dragana Stojisavljević, Jelena Niškanović, Dijana Manigoda</i>	73
Session: Food packaging materials: Issues important for food and environmental safety	
New insights in sustainable natural polymer-based food packaging <i>Sonja Jakovetić Tanasković, Nataša Šekuljica, Slađana Davidović, Zorica Knežević-Jugović</i>	74
Food packaging: types, challenges and sustainability <i>Vladimir Nikolić</i>	75
Microplastics, what is the news from the world? <i>Marijana Curcic</i>	75
Session: Oral presentations	
Research on the Use of Dietary Supplements in Montenegro <i>Mitar Delević, Bojana B. Vidović</i>	76
Fruit wine as a potential functional food <i>Uroš Čakar, Nikolina Živković, Maria Čebela, Aleksandar Petrović, Ivan Stanković, Brižita Đorđević</i>	76
A Dried Fruit Sample: Maximizing Bioaccessibility and Sensory Quality by using Ripeness and Drying Methods of Persimmon <i>Yasin ÖZDEMİR, Zekiye GÖKSEL, Hasret ALTUNKANAT, Seda KAYAHAN, Aysun ÖZTÜRK, Hye-young SUH</i>	77
Introduction of Dried Persimmon Production Technologies Used in South Korea and Determination of Some Quality Characteristics and Consumer Preferences of These Products <i>Zekiye GÖKSEL, Hasret ALTUNKANAT, Cuneyt TUNÇKAL, Yasin ÖZDEMİR, Seda KAYAHAN, Aysun ÖZTÜRK, M. Emin AKÇAY, Ahmet YEMENİCİOĞLU, Hye-young SUH, Damla Öykü ŞAHİN</i>	78
The roles of non-coding RNAs in cardiometabolic health-promoting properties of (poly)phenols <i>Tatjana Ruskovska, Dragan Milenkovic</i>	79
Evidence-based nutrition interventions through the life-course: examples from Republic of Srpska <i>Dragana Stojisavljević, Jelena Niškanović, Davorka Blagojević, Milena Todorović, Vesna Lazić, Natalija Komnenović, Ljiljana Stanivuk</i>	80
Association between Nutritional Habits and Quality of Life of Health Sciences Students from Eight South-East European Countries <i>Miloš Ilić, Budimka Novaković, Maja Grujičić</i>	81

The influence of diet and vitamin D status on the risk for long bone fractures due to falls in older Serbian subjects	82
<i>Ivana Šarac, Jelena Milešević, Andrijana Ćorić, Saša Karan, Stanislava Nikolić, Isidora Ždrale, Nemanja Gvozdenović</i>	
Menopause: nutrition and weight gain	82
<i>Joanna Bajerska</i>	
Relationship between body image and weight control behaviours among Serbian adolescents– data from Health Behaviour in School-aged Children Survey 2018	83
<i>Jelena Gudelj Rakić, Biljana Kilibarda, Miloš Maksimović, Biljana Vukčević Lacković, Verica Jovanović</i>	
Vegetable consumption among adults in Serbia	84
<i>Dragana Jovic</i>	
Dietary Patterns and Nutritional Status of Adolescents Aged 10-14 Years in Serbia: A National Survey Following EFSA EU MENU Methodology (2017-2022)	85
<i>Milica Zeković, Jelena Milešević, Ivana Šarac, Marija Takić, Marija Knez, Nevena Vidović, Mirjana Gurinović</i>	
Dietary intakes of adult men and women 18-65 years old, in Serbian EU Menu Dietary Survey 2017-2022	85
<i>Jelena Milešević, Milica Zeković, Ivana Šarac, Marija Takić, Jasmina Debeljak Martačić, Vuk Stevanović, Mirjana Gurinović</i>	
Correlation between water intake and birth weight in healthy pregnancy	86
<i>Ana Jovanovic, Dragana Davidovic, Sladjana Mihajlovic, Vera Kujundzic, Milan Lackovic, Ljiljana Bogdanovic</i>	
CHANGE Project (CHild malnutrition & Adult NCD: Generating Evidence on mechanistic links to inform future policy/practice): a multi-country cohort study	87
<i>Marko Kerac, CHANGE Project collaborators</i>	
Food system based dietary guidelines in MNE from a public health perspective	88
<i>Zorica Djordjević, Enisa Kujundžić, Snežana Labović - Barjaktarović, Dijana Đurović</i>	
Integrating Underutilized Crops into Sustainable Food Systems: A Multidisciplinary Approach to Enhancing Resilience and Nutrition in Europe through the DIVERSICROP Initiative	89
<i>Amil Orahovac, Marija Knez, Jelena Milešević, Suzana Pavlovic, Marija Takic, Bálint Balázs, Sonia Negrao</i>	
Session: Poster presentations	
Exploring innovative approaches to ensure adequate calcium intake	90
<i>Marija Knez, Marija Ranic, James Stangoulis, Jelena Milešević, Tamara Popovic, Marija Takic</i>	
Bermet wines as inhibitors of ICAM-1 expression in HMEC-1 cells	90
<i>Tatjana Majkić, Ljiljana Milovanović, Jörg Heilmann, Sabrina Zoelch, Guido Jürgenliemk, Ljilja Torović, Ivana Beara</i>	
Phytochemical Evaluation and Antioxidant Properties of <i>Satureja montana</i> L. tea	91
<i>Sofija Kilibarda, Sandra Vuković, Aleksandar Ž. Kostić</i>	
Chitosan production from <i>Agaricus bisporus</i> mushroom	92
<i>Vesna Lazić, Maja Kozarski, Nina Todorović, Milena Pantić</i>	
Chicory bee-collected pollen as source of antioxidants for novel food preparation	93
<i>Aleksandar Ž. Kostić, Nebojša Nedić, Danijel D. Milinčić, Slađana P. Stanojević, Mirjana B. Pešić</i>	
Hazards in food supplements: an EU RASFF notification analysis	93
<i>Mitar Delević, Uglješa Aćimović, Jelena Rajić, Milica Zrnić Ćirić, Vanja Todorović, Bojana Vidović</i>	
Risk and benefit of omega-3 fatty acids food supplements for pregnant and breastfeeding women	94
<i>Jelena Banović Fuentes, Milan Jovanović, Danijela Lukić, Ljilja Torović</i>	
Determination of anthocyanins content in three samples of herbal teas with cranberry, <i>Vaccinium macrocarpon</i> Aiton	95
<i>Tatjana Kundaković-Vasović, Glišović Natalija, Kukić-Marković Jelena, Ivanović Nevena</i>	

What about health benefits claimed on soy isoflavone food supplements?	95
<i>Milka Popović, Maja Amidžić, Ljilja Torović</i>	
Mandatory statements on food supplements: an example of soy isoflavones	96
<i>Radmila Velicki, Maja Amidžić, Ljilja Torović</i>	
Vitamin C in food supplements- is it as presented?	96
<i>Anđela Bojanić, Mirjana Đermanović, Aneta Stojmenovski, Ljubica Bojanić</i>	
Quality control of effervescent tablets in the Republic of Srpska market - disintegration	97
<i>Anđela Bojanić, Mirjana Đermanović, Aneta Stojmenovski</i>	
Health risk associated with elemental impurities in soy isoflavone food supplements	98
<i>Ljilja Torović, Maja Amidžić</i>	
Safety of untreated drinking water in Montenegro	98
<i>Snezana Barjaktarovic-Labovic, Ivana Joksimovic, Amra Kazazovic, Zorica Djordjevic</i>	
Drinking water safety in rural areas: A Case Study of Zenica Doboje Canton	99
<i>Jasmin Durmisevic, Nermin Rondic, Melita Lelic, Elma Kuduzovic, Suad Sivić</i>	
Near infrared spectroscopy (NIR)- analysis of proteins and fats in food	100
<i>Marina Peruničić-Lučić, Siniša Mašić</i>	
„Embellishment“ of culinary herbs and spices with food additives	100
<i>Mina Janković, Ljilja Torović</i>	
Challenges in developing a methodology for determining microplastics released from food contact materials	101
<i>Slobodan Radišić, Gordana Milojević Miodragović, Sanja Bijelović, Ljilja Torović</i>	
Our favorite black spice: pepper, with a burning marrow	102
<i>Slobodan Radišić, Mina Janković</i>	
Our favorite red spice: paprika, with a grain of salt	102
<i>Danijela Lukić, Mina Janković</i>	
Materials in contact with food - bamboo	103
<i>G. Milojević Miodragović, S. Bijelović</i>	
Prevalence of Salmonella serotypes in meat and meat products in South Bačka district of Vojvodina, in the period 2017-2023	104
<i>Jelena Lekić, Bijelović Sanja, Popović Milka, Medić Snežana, Zivlak Branka, Gusman Vera</i>	
Microbiological status of pig and cattle carcasses at different stages of slaughter in a large slaughterhouse	105
<i>Stefan Dončić, Ivan Vičić, Suzana Vidaković Knežević, Slobodan Knežević, Jelena Vranešević, Neđeljko Karabasil</i>	
Nutritional Habits Of Medical Students From The Western Balkans	106
<i>Miloš Ilić, Budimka Novaković</i>	
Dietary intake of vegetarians in Serbia: a cross-sectional study from the EU Menu Dietary Survey 2017-2022	106
<i>Ivana Šarac, Jelena Milešević, Marija Knez, Marta Despotović, Jasmina Debeljak Martačić, Marija Ranić, Mirjana Gurinović</i>	
Citrus flavanones affect the composition of the total lipids in old age livers	107
<i>Nevena Vidović, Jasmina Živanović, Vladimir Ajdžanović, Suzana Pavlović, Branko Filipović, Marija Takić, Marko Miler</i>	
Food, energy, and macronutrient intakes of adolescents 15-17 years old in Serbian EU Menu Dietary Survey 2017-2022	108
<i>Nevena Vidović, Jelena Milešević, Ivana Šarac, Vuk Stevanović, Slavica Ranković, Marija Takić, Mirjana Gurinović</i>	
Diet during pregnancy and symptoms of postpartum depression	109
<i>Joanna Bajerska, Karolina Łagowska</i>	

Dietary intakes of elderly population (65-74 years old) in the Serbian National EU Menu Dietary Survey 2017-2022	110
<i>Marija Takic, Ivana Šarac, Jelena Milešević, Milica Zeković, Jasmina Martačić-Debeljak, Marija Knez, Mirjana Gurinović</i>	
Coffee consumption among young adults in Serbia	111
<i>Rajić Jelena, Filip Marković, Mitar Delević, Mirjana Marčetić, Bojana Vidović</i>	
An assessment of iron intakes among student population	111
<i>Milica Zrnic Ciric, Marina Srebrenov, Olina Dudasova Petrovicova, Vanja Todorovic</i>	
Dietary Disparities Between Genders among Adolescents	112
<i>Branislava Teofilović, Aleksandar Takači, Nevena Grujić, Emilia Gligorić, Daniela Kenjerić</i>	
Isolating p-coumaric acid from Lamiaceae plants using environmentally friendly solvents	113
<i>Branislava Teofilović, Snežana Papović, Nevena Grujić, Emilia Gligorić, Teona Teodora Borović, Jovana Panić, Milan Vraneš</i>	
BioValue project – from fork-to-farm through the creation of novel recipes for dishes and food products	113
<i>Marija Ranic, Marija Knez, Mirjana Gurinović, Nevena Vidović, Vuk Stevanović, Konstantinos Mattas</i>	
Optimizing nutritional value of non- and underutilized genetically diverse crops and related food products with suitable processing methods	114
<i>Marija Ranic, Mirjana Gurinović, Nevena Vidović, Irina Solovieva, Andreas Katsiotis, Konstantinos Mattas, Marija Knez</i>	
Influence of maceration time on antioxidant activity of fermented grape pomace	115
<i>Uroš Čakar, Nikolina Živković, Aleksandar Petrović</i>	
HPLC determination of caffeine content in ground and instant coffee beverages	116
<i>Jelena Rajić, Filip Marković, Mitar Delević, Jasmina Bašić, Mirjana Marčetić, Bojana Vidović</i>	
Food policy research and review using rapid review methodology and constructing and visualizing bibliometric networks	116
<i>Jasmin Durmišević, Alen Mujčinović, Amir Ibrahimagić, Mufida Aljičević</i>	
Efficiency of eco-friendly solvent towards extraction of bioactives from grape skin	117
<i>Nevena Dabetic, Vanja Todorovic, Bojan Markovic, Manuela Panic, Ivana Radojic Redovnikovic, Sladjana Sobajic</i>	
Dietary zinc deficiency: current insights, biomarker findings (1963-2021) and potential solutions	118
<i>Marija Knez, Elad Tako, Eric Boy, Marija Takic, Ana Pantovic, James Stangoulis</i>	
Analysis of salt content and Nutri-score in breakfast cereals on the AP Vojvodina market in 2023	119
<i>Milica Prekratić, Sanja Brusin Beloš, Nataša Dragić, Sanja Bijelović, Radmila Velicki, Milka Popović</i>	
Myo-Inositol in Type 1 Diabetes - case report	120
<i>Veroslava Stanković, Dragana Jović, Simonida Mitić, Sava Mitić</i>	
Significance of nutritional interventions in patients with metabolic syndrome	121
<i>Amina Šeta</i>	
Allergens hidden in culinary herbs and spices	121
<i>Gordana Milojević Miodragović, Mina Janković, Ljilja Torović</i>	
Intake and associated health benefits of soy isoflavone in food supplements	122
<i>Maja Amidžić, Mira Mikulić, Ljilja Torović</i>	
Attitudes and habits regarding drinking water in population of Tuzla canton	123
<i>Selma Azabagić, Nadina Mokayes</i>	
Dietary intakes of adult men and women 18-65 years old, in Serbian EU Menu Dietary Survey 2017-2022	124
<i>Jelena Milešević, Milica Zeković, Ivana Šarac, Marija Takić, Jasmina Debeljak Martačić, Vuk Stevanović, Mirjana Gurinović</i>	

The roles of non-coding RNAs in cardiometabolic health-promoting properties of (poly)phenols

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(Poly)phenols are secondary plant metabolites with various biological roles. Approximately 8,000 (poly)phenols have been identified in plants, several hundred of which are relevant to human nutrition. Studies have shown that dietary (poly)phenols can have beneficial health effects, such as decreasing insulin resistance, improving blood lipids and vascular function, and reducing the risk for cardiovascular diseases. However, studies have also highlighted significant inter-individual variabilities in the health-promoting effects of (poly)phenols, phenomena that require complex, in-depth analyses to fully understand. At the molecular level, the health-promoting effects of (poly)phenols are linked to the genomic modifications, including changes in both protein coding and non-coding genes. Among the non-coding RNAs, several types of RNA molecules exist, such as miRNAs, lncRNAs, snoRNAs, and circRNAs. Of these, miRNAs, and to some extent lncRNAs, are the most extensively studied. The involvement of non-coding genes in the health-promoting effects of (poly)phenols has become increasingly evident through the use of untargeted transcriptomic analytical approaches. Elucidation of their cellular effects and molecular mechanisms of action is an important task. A systematic literature search identified 27 miRNAs significantly associated with the beneficial cardiometabolic health effects of (poly)phenols in humans. Additionally, a human intervention study demonstrated that 6 miRNAs and 244 lncRNAs were significantly modulated by the consumption of an extract of (poly)phenol-rich beverage. We utilized databases and bioinformatic tools, such as Mienturnet and LncRRlsearch, to identify miRNA- and lncRNA-targets, respectively. Following this, we conducted pathway enrichment analyses to elucidate the biological roles of the modulated non-coding RNAs. These analyses identified several cellular pathways significantly affected by dietary (poly)phenols at the miRNA level, including PI3K-Akt signalling pathway, Ras signalling pathway, MAPK signaling pathway, chemokine signaling pathway, and focal adhesion. At the lncRNA level, the affected pathways include tight junction, Ras signalling pathway, phytochemical activity on NRF2 transcriptional activation, and apoptosis. Subsequent multi-level bioinformatic analyses, which integrated genomic modulations at the mRNA, miRNA, and lncRNA level, identified several common cellular pathways. Notably, focal adhesion consistently emerged as one of the key cellular pathways significantly modulated by dietary (poly)phenols. These transcriptomic and integrative bioinformatic analyses, aimed at identifying the subtle molecular mechanisms of action of (poly)phenols, revealed key cellular processes and pathways affected by dietary (poly)phenols at the level of non-coding RNAs. The results of these analyses could help elucidate genetically induced inter-individual variabilities in the cardiometabolic health-protective properties of (poly)phenols, potentially paving the way for development of personalized nutrition recommendations. Authors declare no conflicts of interest.

Keywords: miRNAs, lncRNAs, polyphenols, cardiometabolic health, integrative bioinformatics

CIP - Каталогизација у публикацији
Народна библиотека Србије, Београд

613.2(048)
663/664(048)

КОНГРЕС исхране “Храна, исхрана и здравље у оквиру одрживог развоја” (15 ; 2024 ; Београд)
Book of abstracts / 15th International Congress on Nutrition “Food, nutrition, and health within the framework of sustainable development”, 20-22 nd November 2024, Belgrade ; [organizer] Serbian Nutrition Society = Knjiga apstrakata / 15. Kongres ishrane “Hrana, ishrana i zdravlje u okviru održivog razvoja”, 20.-22. novembar 2024, Beograd ; [organizator] Društvo za ishranu Srbije ; [urednici Ljiljana Trajković Pavlović, Slađana Šobajić, Božidar Udovički]. - Beograd : Društvo za ishranu Srbije, 2024 (Beograd : Ton plus). - 196 str. ; 30 cm

Tiraž 120.

ISBN 978-86-909633-7-9

а) Исхрана -- Апстракти б) Храна -- Апстракти

COBISS.SR-ID 156606473