

**Ss Cyril and Methodius University, Faculty of Natural Sciences and
Mathematics, Institute of Chemistry,
Skopje, Republic of Macedonia**

**Goce Delčev University, Faculty of Agriculture,
Štip, Republic of Macedonia**

17th International Symposium and Summer School on Bioanalysis

BOOK OF ABSTRACTS



2–8 July 2017

Congress Centre, Ohrid, Republic of Macedonia

Organizers and sponsors:

**Ss Cyril and Methodius University,
Skopje, Republic of Macedonia**

**Goce Delčev University,
Štip, Republic of Macedonia**

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WELCOME

Dear Colleagues and partners in the CEEPUS network,

It is my pleasure and honor to welcome you and your co-workers to the 17th International Symposium and Summer School on Bionalysis (17th ISSSB) organized in Ohrid, Republic Macedonia, from 2 to 8 July 2017.

The event is organized in the framework of CEEPUS CIII-RO-0010-11-1617 network. The aim of the Symposium and Summer School is to enable students and young researchers to learn and share knowledge, information and ideas about the current progress in the analytical techniques.

The symposium focuses on the recent achievements in the mainstream fields of application of analytical techniques and bioanalytical methods in chemical and pharmaceutical research, and related topics.

The scientific program includes plenary lectures, oral and poster presentations. Special attention will be given to the young researchers with sessions of podium poster communications.

I wish you a pleasant and memorable stay in Ohrid.

Trajče Stafilov

Symposium Chair, 17th ISSSB

17th International Symposium and Summer School on Bioanalysis

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Prof. **Trajče Stafilov**, Institute of Chemistry, Faculty of Natural Sciences and Mathematics, Ss Cyril and Methodius University, Skopje, R. Macedonia

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Zorica Lelova, Faculty of Agriculture, Goce Delčev University, Štip, R. Macedonia

SCIENTIFIC PROGRAM

SUNDAY, 02.07.2017

15:00–19:00	Registration of participants, Congress Center, Ohrid
19:00–00:00	Welcome party, Congress Center, Ohrid

MONDAY, 03.07.2017

SESSION 1

Chairman: Trajče Stafilov (Ss Cyril and Methodius University, Skopje)

OPENING CEREMONY		
9:00–9:30	OC	Rector of Ss Cyril and Methodius University; Rector of Goce Delčev University; Ministry of Education and Science of the Republic of Macedonia; Dean of the Faculty of Natural Sciences and Mathematics, Dean of the Faculty of Agriculture, CEEPUS network coordinator
9:30–10:00	PL-01	NOVEL CE-MS METHOD TO PROFILE THE TOXIC PHOSPHOGLYCOLIPID PART OF BACTERIAL ENDOTOXINS <u>Ferenc Kilár, Anikó Kilár, Szandra Péter, Viktor Sándor, Ágnes Dörnyei, Béla Kocsis</u>
10:00–10:20	O-01	ENHANCED BIOAVAILABILITY OF DRUGS BY NANOFIBERS <u>Gabriella Donáth-Nagy, Emese Sipos, Zoltán István Szabó, Emőke Rédei, Robert Vincze, Mónika Zsombori</u>
10:20–10:40	O-02	MICROCHIP ELECTROPHORESIS IN BIOANALYSIS <u>Marián Masár, Jasna Hradski, Peter Troška, Róbert Bodor</u>
10:40–11:10	CB	Coffee break

SESSION 2

Chairman: Marián Masár (Comenius University in Bratislava)

11:10–11:40	PL-02	COMPLEXATION PROPERTIES OF AROYLHYDRAZONES <u>Nives Galić</u>
11:40–12:10	PL-03	SURFACE CHARACTERISTICS OF PDMS AND THEIR EFFECTS ON ELECTROPHORETIC SEPARATIONS <u>Attila Gaspar</u>
12:10–12:30	O-03	MICROCHIP ELECTROPHORESIS OF NONSTEROIDAL ANTI-INFLAMMATORY DRUGS <u>Peter Troška, Lucia Chropeňová, Marián Masár</u>
12:30–12:50	O-04	SWEEPING OF CHARGED ANALYTES BY NEUTRAL CYCLODEXTRIN IN CAPILLARY ELECTROPHORESIS <u>Milan Boublík, Martina Riesová, Pavel Dubský, Bohuslav Gaš</u>
13:00–14:00	L	Lunch

SESSION 3

Chairman: Ferenc Kilár (University of Pécs)

14:00–14:30	PL-04	ADAPTING NATURAL ENZYMES TO UN-NATURAL SUBSTRATES <u>Florin Dan Irimie</u> , Csaba Paizs, Monica Ioana Tosa
14:30–15:00	PL-05	BRAIN CHEMISTRY PROTEOMIC AND MRI/MRS ANALYSIS TOOLS <u>Kiro Stojanoski</u> , Milena S. Kolevska, Vladimir Rendevski, Vasko Aleksovski
15:00–15:20	O-05	1H MRS METABOLITE QUANTITATION METHODS IN BRAIN CHEMISTRY <u>Milena Spasovska Kolevska</u> , Vasko Aleksovski, Vladimir Rendevski, Kiro Stojanoski
15:20–15:40	O-06	ASSESSMENT OF CHANGES IN FREEZE-DRIED PROTEIN PHARMACEUTICALS <u>Katarina Smilkov</u> , Darinka Gjorgieva Ackova, Emilija Janevik-Ivanovska, Trajče Stafilov, Zorica Arsova-Sarafinovska, Petre Makreski, Icko Gjorgoski
15:40–16:10	CB+PS	Coffee break + Poster session
16:10–17:20	PPP-01	Podium poster presentation Chairwoman: Andrea Molnar and Chairman: Leon Stojanov
19:00–21:00	D	Dinner

THUESDAY, 04.07.2017

9:00–10:30		Visit to Hydrobiological Institute – Ohrid
10:30–14:00		Ohrid city tour
14:30–15:30	L	Lunch
SESSION 4		
Chairman: Irimie Florin Dan (Babes Bolyai University of Cluj Napoca)		
15:30–16:00	PL-06	NEUROTENSIN ANALOGUES: POTENTIAL TOOLS FOR THERAPY AND IMAGING <u>Tamara Pajpanova</u>
16:00–16:30	PL-07	POLYMERIC NANOPARTICLES WITH AGRICULTURAL AND BIOMEDICAL APPLICATIONS <u>Ede Bodoki</u>
16:30–16:40	O-07	DEGRADATION PROFILE OF ZEIN NANOPARTICLES AS TARGETED DELIVERY SYSTEMS <u>Kacsó Tímea</u> , Ioan O. Neaga, Arnold Erincz, Carlos E. Astete, Cristina M. Sabliov, Radu Oprean, Ede Bodoki
16:40–17:00	O-08	CHARACTERIZATION OF A POLY(DIMETHYLSILOXANE) MICROFLUIDIC CHIP CONTAINING IMMOBILIZED TRYPSIN FOR RAPID PROTEIN DIGESTION

		<u>Adam Kecskemeti</u> , Cynthia Nora Nagy, Attila Gaspar
17:00–17:20	O-09	CHEMICAL CHARACTERIZATION OF STATIONARY PHASES FOR FAST LIQUID CHROMATOGRAPHY <u>Dóra Zelenyánszki</u> , Nándor Lambert, Nobuo Tanaka, Attila Felinger
17:20–20:00		Swimming

WEDNESDAY, 05.07.2017

SESSION 6

Chairwoman: Marina Stefova (Ss Cyril and Methodius University, Skopje)

9:30–10:00	PL-08	PHENOLIC, VOLATILE AND ELEMENTAL COMPOSITION OF MACEDONIAN WINES <u>Violeta Ivanova-Petropulos</u> , Trajče Stafilov, Marina Stefova, Ernst Lankmayr, Ferenc Kilar
10:00–10:20	O-10	SIMPLE AND RAPID DETERMINATION OF BIOGENIC AMINES IN WINE BY ULTRA-PERFORMANCE LIQUID CHROMATOGRAPHY-TRIPLE QUADRUPOLE MASS SPECTROMETRY (UPLC TQ/MS) <u>Krste Tašev</u> , Violeta Ivanova-Petropulos, Marina Stefova
10:20–10:40	O-11	MALDI-TOF CHARACTERISATION OF BOTANICAL EXTRACTS FOR ENOLOGICAL APPLICATIONS <u>Arianna Ricci</u> , Giuseppina Paola Parpinello, A. Pizzi, Andrea Versari
10:40-11:00	CB	Coffee break

SESSION 7

Chairwoman: Violeta Ivanova-Petropulos (Goce Delčev University, Štip)

11:00–11:30	PL-09	MEASURING POLYMERIC PIGMENTS AND TANNINS USING SELECTED ANALYTICAL METHODS <u>Andrea Versari</u> , Arianna Ricci, Giuseppina Paola Parpinello
11:30–11:50	O-12	INFRARED SPECTROSCOPY FOR THE PREDICTION OF PHENOLICS IN WINE <u>Giuseppina Paola Parpinello</u> , Arianna Ricci, Andrea Versari
11:50–12:10	O-13	<i>IN VITRO</i> PROFILING OF MICROBIAL METABOLISM OF PHENOLIC ACIDS USING LC-MS/MS <u>Malgorzata Gwiazdon</u> , Joanna Gasik, Dorota Korsak, Magdalena Biesaga
12:10–12:30	O-14	OPTIMIZATION OF SAMPLE PRETREATMENT PHASES IN GC-MS ANALYSIS OF FATTY ACIDS Katalin Nagy, <u>Ioana Tiuca</u> , Radu Oprean
12:30–14:00	L	Lunch

SESSION 8

Chairwoman: Margit Cichna-Markl (University of Vienna)

14:00–14:30	PL-10	STABILITY OF POLYPHENOLS DURING EXTRACTION METHODS <u>Magdalena Biesaga</u>
14:30–14:50	O-15	EXTRACTS OF FOREST HERBS AND FRUITS – THE ANTIOXIDANT ACTIVITY AND THE CONTENT OF BIOPHENOLS <u>Paulina Drózdź</u> , <u>Krystyna Pyrzyńska</u>
14:50–15:10	O-16	DETERMINATION OF THE POLYPHENOLIC PROFILE OF SELECTED APPLE CULTIVARS FROM MACEDONIA WITH LC-MS ⁿ <u>Ana Petkovska</u> , <u>Jasmina Petreska Stanoeva</u> , <u>Marina Stefova</u>
15:10–15:30	O-17	COMPARISON OF DIFFERENT TYPE REVERSED PHASE STATIONARY PHASES BY MANUAL AND AUTOMATIZED COLUMN-REVERSAL METHOD <u>Adrienn Mester</u> , <u>Dóra Zekenyánszki</u> , <u>Attila Felinger</u>
15:30:16:00	CB+PS	Coffee break + Poster session
16:00-17:00	PPP-02	Podium poster presentation Chairwoman: <u>Jasna Hradski</u> and Chairman: <u>Darko Kontrec</u>
17:00–20:00		Swimming
20:00–00:00	CM	Dinner/Coordination meeting

THURSDAY, 06.07.2017

SESSION 9

Chairwoman: Magdalena Biesaga (University of Warsaw)

9:00–09:30	PL-11	IDENTIFICATION OF BERRY SPECIES AND CULTIVARS BY DNA BARCODING <u>Iva Nikolikj</u> , <u>Milena Stojkovska</u> , <u>Jasmina Petreska Stanoeva</u> , <u>Marina Stefova</u> , <u>Margit Cichna-Markl</u>
09:30–09:50	O-18	CHARACTERIZATION OF LACTIC ACID PRODUCTION USING <i>LACTOBACILLUS CASEI B-26</i> STRAIN IN DIFFERENT GROWTH CONDITIONS <u>Csilla Albert</u> , <u>Zsolt Bodor</u> , <u>Hunor Bartos</u> , <u>Gyöngyvér Mara</u>
09:50–10:10	O-19	POPPY SEED TEA, A POSSIBLE SOURCE OF MORPHINE ADDICTION OR OVERDOSE <u>Croitoru Mircea Dumitru</u> , <u>Fülöp Ibolya</u> , <u>Fogarasi Erysebet</u> , <u>Irimia-Constrantin Maria-Raluca</u>
10:10–10:30	O-20	ISATIS TINCTORIA OR INDIGOFERA TINCTORIA? <u>Monika Ganeczko</u> , <u>Bartłomiej Witkowski</u> , <u>Magdalena Biesaga</u> , <u>Marcin Grzybowski</u> , <u>Magdalena Woźniak</u> , <u>Tomasz Gierczak</u>

10:30–10:50	O-21	STUDY OF CYTOTOXIC EFFECT OF NOVEL AVPI-RGD HYBRID PEPTIDES <u>Maya Georgieva</u> , R. Detcheva, Tamara Pajpanova
11:30–20:00		Boat trip to Monastery Saint Naum of Ohrid and Ohrid springs
20:00–00:00	D	Dinner

FRIDAY, 07.07.2017

SESSION 10

Chairwoman: Tamara Pajpanova (Bulgarian Academy of Sciences)

9:30–10:00	PL-12	GEOCHEMICAL ATLAS OF THE REPUBLIC OF MACEDONIA <u>Trajče Stafilov</u> , Robert Šajn
10:00–10:30	P-13	INDUCTIVELY COUPLED PLASMA SPECTROMETRY FOR THE ANALYSIS OF ENGINEERED IRON NANOPARTICLES <u>Sanda Rončević</u> , Ivan Nemet
10:30–10:50	O-22	EFFICACY OF A BIOMONITORING (MOSS) TECHNIQUE FOR DETERMINING HEAVY METALS DEPOSITION TRENDS. CASE STUDY BREGALNICA RIVER BASIN, REPUBLIC OF MACEDONIA <u>Biljana Balabanova</u> , <u>Trajče Stafilov</u> , Robert Šajn
10:50–11:20	CB	Coffee break

SESSION 11

Chairwoman: Nives Galić (University of Zagreb)

11:20–11:40	O-23	THE EFFECT OF PGP BACTERIAL INOCULATION ON THE ACCUMULATION OF HEAVY METALS IN CROP PLANTS <u>Gyöngyvér Mara</u> , Éva Boglárka Vincze, Annamária Becze, Csilla Albert
11:40–12:10	O-24	THE INFLUENCE OF UV-VIS IRRADIATION AND OXIDATION ON ARSENIC AND CHROMIUM SPECIATION IN WATER <u>Ewa Biaduń</u> , Beata Krasnodębska-Ostreęa, Krzysztof Miecznikowski
12:10–12:30	O-25	SORPTION OF Sc(III) ON SOLID CARBON NANOMATERIALS <u>Mateusz L. Pegier</u> , Krzysztof Kilian, Krystyna Pyrzyńska
13:00–14:00	L	Lunch

SESSION 12

Chairwoman: Livia Uncu (State University of Medicine and Pharmacy "Nicolae Testemitanu")

14:00–14:30	PL-14	CHEMISTRY, ENVIRONMENTAL FATE AND TRANSFORMATION OF HEXACHLOROCYCLOHEXANES INTO ECOLOGICALLY ACCEPTABLE DERIVATIVES <u>Jane Bogdanov</u>
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14:30–14:50	O-26	APPLICATION OF 2-D ELECTROPHORESIS AND MALDI TOF MS ANALYSIS FOR THE QUALITY STUDY OF BIOLOGICS <u>Dashnor Nebija</u> , Christian Noe, Christina Mladenovska and Bodo Lachmann
14:50–16:10	O-27	STUDY OF THE OXIDATIVE METABOLIZATION PATTERN OF BETA-BLOCKERS <u>Ruxandra Chira</u> , Ede Bodoki, Viktor Sándor, Ferenc Kílár, Radu Oprean
16:10–17:00	CB+PS	Coffee break + Poster session
17:00–18:10	PPP-03	Podium poster presentation Chairwoman: Cynthia Nora Nagy and Chairman: Georg Clemens Pretsch
18:10–20:00	CB-02	Swimming
20:00–21:00	D	Dinner

SATURDAY, 08.072016

SESSION 13

Chairwoman: Gabriella Donáth-Nagy (University of Medicine and Pharmacy of Tg. Mureş)

9:30–10:00	PL-15	THE USE OF HPLC METHOD IN ANALYSIS OF MULTICOMPONENT DRUGS <u>Livia Uncu</u>
10:00–10:20	O-28	THE OPTIMIZATION OF THE BIOAVAILABILITY OF THE PROPYLTHIOCINOTHIAZOLE <u>Andrei Uncu</u> , Ana Podgornîi, Anastasia Smetanscaia, Fliur Macaev, Vladimir Valica, Eva Tesarova
10:20–10:40	O-29	NOVEL APPROACH FOR DNA METHYLATION ANALYSIS IN REGULATORY REGIONS OF MGMT IN GLIOBLASTOMA <u>Katja Zappe</u> , Ru Wang Qiu, Andreas Böhm, Sabine Spiegl-Kreinecker, Margit Cichna-Markl
10:40–11:00	O-30	DETERMINATION OF MIDAZOLAM AND ITS MAIN METABOLITES IN URINE AND SERUM SAMPLES BY LC-UV AND LC-MS <u>Mariusz Proczak</u> , Sebastian Rojek, Michael Hiesmayr, Margit Cichna-Markl
11:00–11:30	CB	Coffee break

SESSION 14

Chairman: Attila Gaspar (University of Debrecen)

11:30–12:00	PL-16	QUALITY ASSESSMENT OF THE DOCTORAL SCHOOLS IN THE FIELD OF BIOANALYSIS <u>Radu Oprean</u>
12:00–12:20	O-31	GUEST – HOST INTERACTION STUDIES BETWEEN PROPRANOLOL AND B-CYCLODEXRIN AT SOLID/LIQUID INTERFACE <u>Ioan – Adrian Stoian</u> , Bogdan-Cezar Iacob, Ede Bodoki, Radu Oprean
12:20–12:40	O-32	FOOD ADULTERATION – A TETRAPLEX REAL-TIME PCR ASSAY FOR THE SIMULTANEOUS DETERMINATION OF FOUR FREQUENTLY

		CONSUMED GAME ANIMALS <u>Maria Kaltenbrunner, Rupert Hochegger, Margit Cichna-Markl</u>
13:00-14:00	L	Lunch
14:00-14:30		Closing remarks

POSTER PRESENTATIONS

PPP-01	Podium poster presentation-01
P-01	<p>THE USE OF ELECTROLYTE SYSTEMS COMPATIBLE TO MASS SPECTROMETRIC DETERMINATION FOR CAPILLARY ELECTROPHORESIS</p> <p><u>Andrea Molnar</u>, Adam Kecskemeti, Attila Gaspar</p>
P-02	<p>TRYPTIC DIGESTION OF TEAR SAMPLES USING A MICROFLUIDIC ENZYME REACTOR</p> <p><u>Cynthia Nora Nagy</u>, Adam Kecskemeti, Attila Gaspar</p>
P-03	<p>ANALYTICAL INSTRUMENTS FOR BIOPHARMACEUTICAL CHARACTERIZATION</p> <p><u>Darinka Gjorgieva Ackova</u>, Katarina Smilkov, Emilija Janevik-Ivanovska, Trajče Stafilov, Zorica Arsova-Sarafinovska, Petre Makreski</p>
P-04	<p>EVALUATION OF THE REDOX INTERACTION OF RUTIN WITH SOME MEDICINAL SUBSTANCES BY CYCLIC VOLTAMMETRY</p> <p><u>Mihail Aleksandrov</u>, Viktorija Maksimova, Rubin Gulaboski</p>
P-05	<p>CYTOTOXICITY ASSESSMENT OF AROYLHYDRAZONE DERIVATIVES</p> <p><u>Darko Kontrec</u>, Ivan Iliev, Roumiana Detcheva, Nives Galić, <u>Tamara Paipanova</u></p>
P-06	<p>SIGNIFICANCE OF THE NON-COVALENT INTERMOLECULAR INTERACTIONS IN MOLECULAR COMPLEXES OF PHARMACEUTICAL RELEVANCE</p> <p><u>Aleksandar Cvetkovski</u></p>
P-07	<p>USE OF MICROBORE SIZE-EXCLUSION CHROMATOGRAPHY FOR THE CHARACTERIZATION OF MACROMOLECULAR SAMPLES</p> <p><u>Erik Beño</u>, Róbert Góra, Milan Hutta</p>
P-08	<p>PRELIMINARY RESULTS OF COUPLING MICROCHIP ELECTROPHORESIS WITH ION MOBILITY SPECTROMETRY</p> <p><u>Jasna Hradski</u>, Michaela Nováková, Martin Sabo, Štefan Matejčík, Marián Masár</p>
P-09	<p>HYBRID PH-SENSITIVE NANOPARTICLES AS PLATFORMS FOR DELIVERY OF CURCUMIN</p> <p><u>Elena Drakalska</u>, Denitsa Momekova, Nikolay Lambov, Stanislav Rangelov, Bistra Angelovska</p>
P-10	<p>FREEZE DRIED KIT FORMULATION OF TRASTUZUMAB IMMUNOCONJUGATES</p> <p><u>Marija Sterjova</u>, Emilija Janevik-Ivanovska, Paulina Apostolova, Predrag Dzodic</p>
P-11	<p>DNA METHYLATION ANALYSIS OF HIPPOCAMPAL TISSUE FROM AGED RATS</p> <p><u>Georg Clemens Pretsch</u>, Margit Cichna-Markl</p>
P-12	<p>IN VITRO EVALUATION OF FOOD-DICLOFENAC INTERACTIONS</p> <p><u>Ibolya Fülöp</u>, Mircea Dumitru Croitoru, Andrea Vajda, Irén Jakab, Erzsébet Fogarasi</p>

PPP-02	Podium poster presentation-02
P-13	OPTIMIZATION AND VALIDATION OF CAPILLARY ELECTROPHORESIS METHOD FOR SMALL-ANIONS MEASUREMENT IN RED WINES <u>Zorica Lelova</u> , Violeta Ivanova-Petropulos, Marián Masár, Klemen Lisjak, Róbert Bodor
P-14	DEVELOPMENT OF HPLC/DAD/MSn METHOD FOR AUTHENTICATION OF FRUIT PRODUCTS <u>Milena Stojkovska</u> , Jasmina Petreska Stanoeva, Marina Stefova, Margit Cichna-Markl
P-15	PINDOLOL – ENANTIOSEPARATION AND VALIDATION OF THE METHOD <u>Martin Ansorge</u> , Lívie Kanizsová, Iva Zusková
P-16	RRLC-UV CHROMATOGRAPHIC METHOD USED FOR DETERMINATION OF CHLOROGENIC ACID IN GREEN COFFEE <u>Lenche Velkoska-Markovska</u> , <u>Mirjana S. Jankulovska</u> , Biljana Petanovska-Ilievska, Kristijan Hristovski
P-17	COUPLING CHROMATOGRAPHIC MICROFLUIDIC DEVICES WITH GRAPHITE FURNACE ATOMIC ABSORPTION SPECTROMETER <u>Arpad Kiss</u> , Attila Gaspar
P-18	APPLICATION OF Q-ICP-MS FOR SENSITIVE DETERMINATION OF LEAD ISOTOPE RATIOS IN VARIOUS ORGANICALLY BASED MATRIXES <u>Biljana Balabanova</u> , Violeta Ivanova-Petropulos, Blazo Boev
P-19	ASSESSING THE BIOAVAILABILITY AND TRANSLOCATION EFFICIENCY OF MINERAL ELEMENTS IN <i>Lycium barbarum</i> SPECIES FROM R. MACEDONIA AND R. CHINA <u>Biljana Balabanova</u> , Violeta Ivanova-Petropulos, Tiberiu Frentiu, Michaela Ponta, Eniko Covaci, Marin Senila
P-20	CHEMICAL PROPERTIES OF CERTAIN VARIETIES OF TOBACCO <u>Romina Kabranova</u> , Zlatko Arsov, Zoran Dimov, Mirjana S. Jankulovska
P-21	PHOSPHORUS AND POTASSIUM AVAILABILITY IN SOILS USED FOR TOBACCO CULTIVATION IN THE REPUBLIC OF MACEDONIA <u>Biljana Jordanoska</u> , Valentina Pelivanoska, Trajče Stafilov
P-22	UV SPECTROSCOPY METHOD USED IN DETERMINATION OF DISSOCIATION CONSTANT OF SOME p-NITRO-p-SUBSTITUTED BENZOILHYDRAZONES <u>Mirjana S. Jankulovska</u> , Vesna Dimova, Ilinka Spirevska
P-23	STUDY OF THE RELATIONSHIPS BETWEEN THE STRUCTURE AND BIOLOGICAL ACTIVITY OF SOME SUBSTITUTED AROMATIC HYDRAZONES Vesna Dimova, <u>Mirjana Jankulovska</u>
P-24	SYNTHESIS OF NOVEL AMINOMETHYL DERIVATES OF QUINOLONES <u>Emilija Gjorgieva</u> , Emil Popovski

PPP-03	Podium poster presentation-03
P-25	REPARATION OF SILVER NANOPARTICLES USING ASCORBIC ACID AND GLUTATHIONE AS REDUCTIVE REDOX AGENTS <u>Leon Stojanov</u> , Valentin Mirceski
P-26	RELATION BETWEEN STRUCTURE AND ACTIVITY OF ANTISEPTICS AND DISINFECTANTS THAT ARE USED IN CLINICS Biljana Gorgeska, <u>Andonela Janeva</u> , Ivana Iceva, Dino Karpicarov, Antonela Velkova, Viktorija Krzovska, Ana Dimitrova, Natali Delipetrova
P-27	FAST DETERMINATION OF GLYPHOSATE IN BEER BY ULTRA-PERFORMANCE LIQUID CHROMATOGRAPHY-TRIPLE QUADRUPOLE MASS SPECTROMETRY <u>Krste Tašev</u> , Valentina Pantò, Angelo Faberi, Suzana Krstevska, Ana Stefanovska, Ljupka Kostovska
P-28	IDENTIFICATION OF PESTICIDES IN GROUNDWATER SITUATED UNDER GREENHOUSE AGRICULTURE PRODUCTION AND DROPPING IRRIGATION, USING GC/MS PULSED SPLITLESS INJECTION <u>Biljana Kovacevik</u> , Zoran Zdravkovski, Sasa Mitrev
P-29	DEVELOPMENT OF A SINGLE-DROP MICROEXTRACTION METHOD FOR GC-MS ANALYSIS OF BISPHENOL A IN WATER SOLUBLE MATRICES <u>Katarina Josifovska</u> , Zoran Zdravkovski
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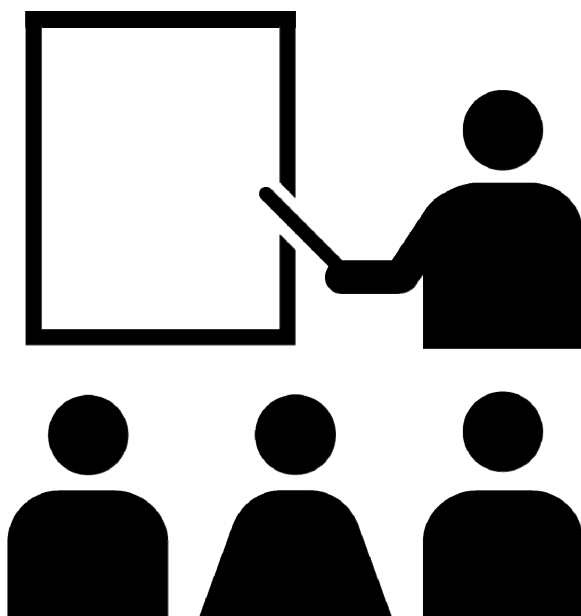
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PLENARY LECTURES



PL-08

PHENOLIC, VOLATILE AND ELEMENTAL COMPOSITION OF MACEDONIAN WINES

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Wine is a very complex mixture of a large number of compounds, including phenolics (anthocyanins, flavan-3-ols, flavonols, phenolic acids, stilbenes), volatiles (alcohols, esters, aldehydes, volatile phenols), minerals (Al, Zn, Cu, Fe, Pb), organic acids, carbohydrates, proteins, vitamins etc. All these compounds significantly influence the quality of wine, affecting the sensory perception such as flavor, aroma and colour, pH, chemical and microbiological stability of wines. Their amount in wine depends on various factors such as grape variety, environmental factors, ripening stage, vine cultivation and winemaking practices applied for wine production. The winemaking process is one among these factors that can be controlled, and mainly includes a range of modifications during fermentation and maceration, such as fermentation temperature, yeast strain, racking duration, type of lees, etc. This paper summarize the results obtained for phenolic, volatile and elemental composition of Macedonian wines, commercial as well as wines produced under different winemaking techniques, analyzed with the most sophisticated techniques such as HPLC-DAD-ESI-MS/MS, MALDI-TOF-MS, CZE-ESI/QTOF-MS, HS-GC-MS and ICP-MS [1-10]. Obtained results give us new information about the quality of wines, which is important to support the viticulture and wine strategy in Macedonia as well as to increase the competitiveness of Macedonian wines on the global market as products with specific quality characteristics, such as high content of phenolics and antioxidants, rich in color and aroma.

Keywords: phenolic compounds, volatiles, elemental composition, wine, analytical techniques.

References

- [1] V. Ivanova-Petropulos et al., *J. Food Compos. Anal.*, 41, **2015**, 1-41. [2] V. Ivanova-Petropulos et al., *Food Anal. Methods*, 8, **2015**, 1947-1952. [3] V. Ivanova Petropulos et al., *Food Chem.*, 165, **2014**, 506-514. [4] V. Ivanova Petropulos et al., *Food Anal. Methods*, 7(4), **2014**, 820-827. [5] V. Ivanova-Petropulos et al., *Maced. J. Chem. Chem. Eng.*, 32(2), **2013**, 265-281. [6] V. Ivanova et al., *Food Bioprocess. Tech.*, 6(6), **2013**, 1609-1617. [7] V. Ivanova et al., *Food Anal. Methods*, 5, **2012**, 1427-1434. [8] V. Ivanova et al., *Food Res. Int.*, (9), **2011**, 2851-2860. [9] V. Ivanova et al., *Food Anal. Methods*, 4, **2011**, 108-115. [10] V. Ivanova et al., *Food Chem.*, 124(1), **2011**, 316-325.

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