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13-18 July 2015

BOOK OF ABSTRACTS

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Correspondence
All correspondence should be addressed to the Editorial Office:

Acta Medica Marisiensis
University of Medicine and Pharmacy of Târgu Mureş
38, Gh. Marinescu St, 540139 Târgu Mureş, România
Scientific Secretary Professor Theodora Benedek
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FOREWORD

It is our great honor to welcome you to the 15th International Symposium and Summer School on Bioanalysis (15th ISSSB) that will be held between July 13 – 18, 2015 at University of Medicine and Pharmacy of Tg. Mureș.

The event is organized in the frame of CEEPUS CIII-RO-0010-09-1415 network, and takes part of the series of events organized under "UMF 70". The 15th ISSSB provides an overview of a broad range of interdisciplinary subjects in bioanalysis. Its main purpose is to offer an opportunity for young researchers to learn more about the current progress in the analytical techniques.

The symposium will focus on the application of bioanalytical methods in chemical and pharmaceutical research, and related topics. The scientific program will include oral lectures and poster presentations as well as practical courses on bioanalysis.

Gabriella Donath-Nagy,

Symposium chair

ORAL PRESENTATIONS

P-17 / THE POTENTIAL OF ION MOBILITY SPECTROMETRY DETECTION FOR MICROCHIP ANALYSIS OF ORGANIC ACIDS

Jasna Hradski[1*], Martin Sabo[2], Štefan Matejčík[2], Marián Masár[1]

[1] Department of Analytical Chemistry, Faculty of Natural Sciences, Comenius University in Bratislava, Mlynská dolina, Ilkovičova 6, SK-84215 Bratislava, Slovak Republic
[2] Department of Experimental Physics, Faculty of Mathematics, Physics and Informatics, Comenius University in Bratislava, Mlynská dolina, SK-84248 Bratislava, Slovak Republic

* e-mail: hradski@fns.uniba.sk

Ion mobility spectrometry (IMS) is an analytical technique based on the separation of gaseous ions with respect to their different mobilities in a weak electric field. Main advantages of this technique are fast and reliable analysis, low cost, portability and relatively easy manipulation with IMS instrumentation. IMS has been applied to detection of explosives, chemical warfare agents, pharmaceuticals, and analysis of biomolecules.

In this work introduction of the liquid samples to IMS by electrospray and ionization by corona discharge (CD) are shown. Point to ring geometry was employed for introducing the sample into the IMS. The main advantages of this sample ionization technique are relatively high signal intensity, ability to change the reactant ions, simple instrumentation and applicability to a wide range of analytes. CD operated in negative polarity in both reverse and standard gas flow mode. Ionization process by CD was optimized in order to achieve selective generation of reactant ions.

Developed technique was applied to direct identification of organic acids in the wine samples. Organic acids primary found in wine, as well as other organic acids formed during winemaking or storage process were studied (tartaric, malic, citric, and lactic).

Proposed combination of sample introduction and ionization can be applied to similar applications. Furthermore, it has the potential to be coupled with miniaturized separation techniques, such as microchip electrophoresis or liquid chromatography performed on microscale.

The research was supported by the Slovak Research and Development Agency (APVV-0259-12), the Scientific Grant Agency of the Ministry of Education, science, research and sport of the Slovak Republic and the Slovak Academy of Sciences (VEGA 1/0340/15) and by the Grant of Comenius University in Bratislava (UK/141/2015).

Keywords: ion mobility spectrometry; corona discharge ionization; organic acids

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P-18 / ANALYSIS OF FATTY ACIDS IN SELECTED MACEDONIAN EDIBLE OILS

Violeta Ivanova-Petropulos[1*], Sasa Mitrev[1], Erich Leitner[2], Ernst Lankmayr[2], Barbara Siegmund[2], Trajce Stafilov[3]

[1]Faculty of Agriculture, University "Goce Delčev", Krste Misirkov bb, 2000 Štip, Republic of Macedonia
[2]Institute of Analytical Chemistry and Food Chemistry, Graz University of Technology, Graz, Stremayrgasse 9/II, A8010 Graz, Austria
[3]Institute of Chemistry, Faculty of Natural Sciences and Mathematics, Ss. "Cyril and Methodius" University, Arhimedova 5, 1000 Skopje, Republic of Macedonia

* e-mail: violeta.ivanova@ugd.edu.mk

The fatty acid composition of few Macedonian edible oils, including sunflower, pumpkin seed, flax, rapeseed and sesame seeds, was determined using GC-FID analysis after derivatisation with BF_3-methanolic solution. Six different types of fatty acids (FAs) were found in the oils samples. Palmitic acid (C16:0) and stearic acid (C18:0) were common in all saturates. Myristic acid (C14:0) was present in the sunflower and pumpkin seed oil. Oleic acid (C18:1), linoleic acid (C18:2) and α-linolenic (C18:3) were dominant in the unsaturated FAs of all oils. In terms of variety, α-linoenic acid (C18:3) was the main unsaturated FA in flax seed oil (56.2 % of total FA), oleic acid (C18:1) dominated in rapeseed and sesame oils (65.3 and 43 % of total FA, respectively) and linoleic acid (C18:2) was the dominant compound in sunflower and pumpkin seed oil (59.2 and 59.5 % of total FA, respectively). Principal Component Analysis was employed, showing separation and grouping of the oils according to their variety.

Keywords: fatty acids; edible oils; gas chromatography.

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