

Volume 61 | Supplement 5 | 2015

ACTA MEDICA MARISIENSIS

OFFICIAL PUBLICATION OF THE
UNIVERSITY OF MEDICINE AND PHARMACY OF TÂRGU MUREȘ

ACTA MEDICA MARISIENSIS

Volume 61 | Supplement 5 | 2015

The 15th International Symposium and Summer School on Bioanalysis

13-18 July 2015

BOOK OF ABSTRACTS

ISSN-L 2068-3324
ISSN 2068-3324



www.ammjournal.ro

**The 15th International Symposium
and Summer School on
Bioanalysis**

Tirgu Mures, Romania

13-18 July 2015

BOOK OF ABSTRACTS

Disclaimer

The professional and the grammatical quality of the abstracts is the author's responsibility. Contributions have been editorially modified. Text has not undergone proofreading.

Acta Medica Marisiensis

Editor-in-Chief

Professor Sanda-Maria Copotoiu
University of Medicine and Pharmacy Tîrgu Mureş

Associate Editors

Professor Leonard Azamfirei
University of Medicine and Pharmacy of Tîrgu Mureş

Associate Professor Vlad Bacărea
University of Medicine and Pharmacy of Tîrgu Mureş

Professor György Benedek
University of Szeged, Faculty of Medicine

Professor Imre Benedek
University of Medicine and Pharmacy of Tîrgu Mureş

Professor Angela Borda
University of Medicine and Pharmacy of Tîrgu Mureş

Professor Klara Brânzaniuc
University of Medicine and Pharmacy of Tîrgu Mureş

Professor Constantin Copotoiu
University of Medicine and Pharmacy of Tîrgu Mureş

Professor Carol Csedő
University of Medicine and Pharmacy of Tîrgu Mureş

Professor Radu Deac
University of Medicine and Pharmacy of Tîrgu Mureş

Professor Dan Dobreanu
University of Medicine and Pharmacy of Tîrgu Mureş

Professor Minodora Dobreanu
University of Medicine and Pharmacy of Tîrgu Mureş

Professor Daniela Dobru
University of Medicine and Pharmacy of Tîrgu Mureş

Professor Grigore Dogaru
University of Medicine and Pharmacy of Tîrgu Mureş

Professor Imre Egyed
University of Medicine and Pharmacy of Tîrgu Mureş

Professor Tiberiu Ezri
Wolfson Medical Center, Holon, Affiliated to Tel Aviv
University, Israel, Israel Board of Examiners in Anesthesia

Professor István Édes
University of Debrecen, Hungary

Professor Dietmar Glogar
Medical University of Vienna, Austria

Professor Gabriel M. Gurman
Professor Emeritus of Anesthesiology and Critical Care, Ben
Gurion University of Negev, Faculty of Health Sciences Beer
Sheva, Director Anesthesia - Critical Care, MHMC Bnai Brak,
Member ESCTAIC Board

Associate Professor Simona Gurzu
University of Medicine and Pharmacy of Tîrgu Mureş

Professor Silvia Imre
University of Medicine and Pharmacy of Tîrgu Mureş

Professor Miklós Kásler
National Institute of Oncology, Budapest

Professor Desideriu Kovács
University of Medicine and Pharmacy of Tîrgu Mureş

Professor Marius Măruşter
University of Medicine and Pharmacy of Tîrgu Mureş

Associate Professor Monica Monea Pop
University of Medicine and Pharmacy of Tîrgu Mureş

Professor Daniela Lucia Muntean
University of Medicine and Pharmacy of Tîrgu Mureş

Professor Őrs Nagy
University of Medicine and Pharmacy of Tîrgu Mureş

Professor Ioan Nicolaescu
University of Medicine and Pharmacy of Tîrgu Mureş

Professor Aurel Nireştean
University of Medicine and Pharmacy of Tîrgu Mureş

Professor Francisco Nogales
University of Granada, Faculty of Medicine, Department of
Pathology

Professor Sorin Popşor
University of Medicine and Pharmacy of Tîrgu Mureş

Professor Lucian Puşcaşiu
University of Medicine and Pharmacy of Tîrgu Mureş

Professor Monica Sabău
University of Medicine and Pharmacy of Tîrgu Mureş

Professor Rosa Marin Saez
Facultat de Farmàcia, Universitat de València, ESPANA

Professor Ario Santini
University of Edinburgh, Scotland, United Kingdom

Professor Toru Schimizu
Institute of Multidisciplinary Research for Advanced Materials,
Sendai, Japan

Professor Francisc Schneider
University of Medicine and Pharmacy Timişoara

Professor Dan Teodor Simionescu
Biocompatibility and Tissue Regeneration Laboratory,
Clemson University, Department of Bioengineering 501
Rhodes Engineering Research Center, Clemson, USA

Associate Professor Emese Sipos
University of Medicine and Pharmacy of Tîrgu Mureş

Associate Professor Mircea Suciuc
University of Medicine and Pharmacy of Tîrgu Mureş

Professor Béla Szabó
University of Medicine and Pharmacy of Tîrgu Mureş

Professor Zoltán Szentirmay
National Institute of Oncology, Budapest

Professor Tibor Szilágyi
University of Medicine and Pharmacy of Tîrgu Mureş

Professor Peter Szmuk
Department of Anesthesiology and Pain Medicine, University
of Texas Southwestern Medical Center, Dallas and Children's
Medical Center at Dallas

Associate Professor Camil E. Vari
University of Medicine and Pharmacy of Tîrgu Mureş

Scientific Secretary

Professor Theodora Benedek
University of Medicine and Pharmacy of Tîrgu Mureş

Production Editor

Lecturer Valentin Nădăşan
University of Medicine and Pharmacy of Tîrgu Mureş

DTP

Enikő Réka Korodi-Szász
Vasile Deák

Acta Medica Marisiensis is the official publication of the Târgu Mureş University of Medicine and Pharmacy. We publish editorials, original research, systematic reviews, case reports, brief communications, guidelines and recommendations of national and international scientific associations, book reviews and announce events on a broad range of topics related to general medicine, dentistry and pharmacy.

Acta Medica Marisiensis (ISSN: 2068-3324) is published by University Press Târgu Mureş.

Information for contributors

Papers should be submitted using the online manuscript submission system Editorial Manager available for *Acta Medica Marisiensis* at www.editorialmanager.com/amma

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
or sent by e-mail to office@ammjournal.ro

Abstracting & Indexing

Acta Medica Marisiensis is covered by the following services:

Celdes
CNPIEC
EBSCO Discovery Service
Google Scholar
J-Gate
Naviga (Softweco)
Primo Central (ExLibris)
Summon (Serials Solutions/ProQuest)
TDOne (TDNet)
Ulrich's Periodicals Directory/ulrichsweb
WorldCat (OCLC)

Copyright © 2014 by *Acta Medica Marisiensis*. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise without either the prior written permission of the Publisher.

Disclaimer

The views expressed in this journal represent those of the authors or advertisers only. In no way can they be construed necessarily to reflect the view of either the Editors or the Publishers.

Unindexed supplement

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. Mureş.

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-19 / OPTIMIZATION AND VALIDATION OF A MICROWAVE DIGESTION METHOD FOR ANALYSIS OF ELEMENTS IN WINE USING ICP-MS

Violeta Ivanova-Petropulos^{1*}, Biljana Balabanova^{1#}, Sasa Mitrev¹, Violeta Dimovska¹, Rubin Gulaboski¹, Trajce Stafilov²

¹Faculty of Agriculture, University "Goce Delčev", Krste Misirkov bb, 2000 Štip, Republic of Macedonia

²Institute 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, #e-mail: biljana.balabanova@ugd.edu.mk

Determination of the content of metals in wine is very important since it can contain toxic elements such as Pb, Cd, As that could be harmful for the human health, but also nutritional elements, such as Fe, K, Na, Zn, Mn important for the humans. For that purpose, sample pre-treatment of wine is necessary in order to remove the complex organic matrix consisting of ethanol, polyphenols, carbohydrates, proteins and other compounds. In this study, we developed a microwave digestion method for wine sample preparation followed by inductively coupled plasma - mass spectrometry (ICP-MS) for multi-element analysis. The method was optimized and validated, and following parameters were determined: linearity, limit of quantification (LOQ), limit of detection (LOD), inter- and intra- day repeatability and reproducibility. Successful digestion of wine was obtained with 5 mL nitric acid, obtaining best recoveries for all analysed elements and values R > 90 %, on average, for total elements content. The calibration curves at seven concentration levels (0.5, 1, 3, 5, 10, 30, 50 µg/L) were constructed presenting good linearity and satisfactory correlation coefficients. A standard addition method was applied to check the method accuracy, obtaining good repeatability and reproducibility with relative standard deviation lower than 10 % for all elements. Validated method was applied on analysis of real samples and in total, 38 elements (Ag, Al, As, B, Ba, Be, Bi, Ca, Cd, Co, Cr, Cs, Cu, Fe, Ga, Ge, In, Li, Mg, Mn, Mo, Na, Ni, P, Pb, Pd, Rb, S, Sb, Se, Si, Sn, Sr, Te, Ti, Tl, V, Zn) were determined in red and white wines.

Keywords: microwave digestion, elements, ICP-MS; wines.

Acknowledgement: Financial support provided by the Research Fund of the University "Goce Delčev" – Štip, R. Macedonia for the project titled "Polyphenolic and aroma profile of Vranec wines fermented with isolated yeasts from Tikveš wine area" is gratefully acknowledged.

References: Ivanova-Petropulos V., Balabanova B., Mitrev S., Nedelkovski D., Dimovska V., Gulaboski R. (2015). Optimization and validation of a microwave digestion method for multi-element characterization of Vranec wines. *Food Analytical Methods*, in press

P-20 / DNA METHYLATION ANALYSIS OF GENES PLAYING A ROLE IN MULTIDRUG RESISTANCE

Maria Kaltenbrunner¹, Melanie Spitzwieser¹, Petra Heffeter^{2,4}, Walter Berger^{2,4}, Bernhard Keppler^{3,4}, Margit Cichna-Markl¹

¹ Department of Analytical Chemistry, Faculty of Chemistry, University of Vienna

² Institute of Cancer Research, Department of Medicine I, Medical University of Vienna

³ Department of Inorganic Chemistry, Faculty of Chemistry, University of Vienna

⁴ Research and Platform "Translational Cancer Therapy Research" Vienna

* e-mail: a1005747@unet.univie.ac.at

Multidrug resistance (MDR), which describes the resistance against a wide range of chemotherapeutics with different mechanisms of action, is one of the major reasons for failure of chemotherapy. There are various mechanisms involved in resistance development. Among others, enhanced activation of detoxifying systems and activation of DNA repair mechanisms are playing an important role in acquired and intrinsic drug resistance. While acquired drug resistance is developed during drug treatment in formerly chemosensitive cancer cells, intrinsic resistance is often tissue specific.

KP772, [tris(1,10-phenanthroline)lanthanum(III)] trithiocyanate, is an anticancer compound, showing promising activity in multidrug resistant cells. The aim of this study is to investigate alterations of DNA methylation in genes playing a role in multidrug resistance of cancer cells like glutathione S-transferase P1 (GSTP1) and O-6-methylguanine-DNA methyltransferase (MGMT) in KP772-treated and untreated cells.

DNA from various cultured cells was extracted and treated with bisulfite. The DNA methylation level was determined by both, methylation sensitive high resolution melting (MS-HRM) analysis and pyrosequencing (PSQ). MS-HRM provides information about the average DNA methylation status, while PSQ allows detailed analysis of single CpGs.

So far, our results indicate cell type-specific methylation levels for GSTP1. In case of MGMT, the methylation status seems to depend on the specific target region in the promoter of MGMT.

Keywords: multidrug resistance, KP772, DNA methylation, MS-HRM, pyrosequencing