XVI LATIN-AMERICAN CONGRESS ON CHROMATOGRAPHY

&

9th NATIONAL MEETING ON CHROMATOGRAPHY

FACULTY OF SCIENCES OF THE UNIVERSITY OF LISBON

Lisbon, PORTUGAL

January 05 - 09, 2016

ABSTRACT BOOK

XVI COLACRO

9ENC

Edited by: J.M.F. Nogueira (FCUL)

ABSTRACT BOOK

XVI COLACRO

&

9th ENC

5th - 9th January, 2016

Faculty of Sciences of the University of Lisbon

Lisbon, Portugal

WEDNESDAY JANUARY 6

Opening Ceremony and Morning Lectures

08:10 Open Ceremony, COLACRO & WARPA Awards (Main Auditorium)

- José Nogueira - Chairman of XVI COLACRO & 9ENC
  University of Lisbon, Portugal
- Fernando Lanças - Chairman of COLACRO
  University of São Paulo, Brazil
- Alejandro Cifuentes - COLACRO ISC
  National Research Council of Spain, Spain
- Luigi Mondello - COLACRO ISC
  University of Messina, Italy
- Elena Stashenko - COLACRO ISC
  University of Santander, Colombia
- Eugênia Queiroz - Chairman of WARPA
  University of São Paulo, Brazil
- Representative of SPQ
- Representative of FCUL

Morning Lectures 1 (Main Auditorium)

Session Chairs: Elena Stashenko - University of Santander, Colombia
Luigi Mondello - University of Messina, Italy

08:30 PL-01 COLACRO Thirty Years Later (1986-2016)
Fernando Lanças
University of São Paulo, Brazil

09:20 KNL-01 Global Warming Related to Organic Pollutant Transport and Its Deposition on Snow Samples from Chilean Andes and Northern Antarctic Peninsula: The case of polycyclic aromatic hydrocarbons (PAHs)
Francisco Cereceda
Technical University of Federico Santa Maria, Chile

09:50 KNL-02 Potential of Biological and Biomimetic Tools for the Selective Extraction of Compounds at the Trace Level in Complex Samples

Valérie Pichon

University of Paris, France

10:20 Coffee Break & Posters Session A

Morning Lectures 2 (Main Auditorium)

Session Chairs: Fábio Augusto - University of Campinas, Brazil
Carmen García-Jares - University of Santiago de Compostela, Spain

11:20 KNL-03 Bead Injection Technique: Contributions towards automatic sample treatment

Marcela Segundo

University of Oporto, Portugal

Morning Parallel Sessions 1

Oral Communications 1 (Main Auditorium)

Session Chairs: Fábio Augusto - University of Campinas, Brazil
Carmen García-Jares - University of Santiago de Compostela, Spain

11:50 OC-01 Solid-Phase Extraction Methods for the Determination of Pesticides, Nitroaromatic and Phenolic Compounds in Water Using HPLC

Viktoriia Raks, V. Turchyn and V. Zaitsev

Taras Shevchenko National University of Kiev, Ukraine

12:10 OC-02 Optimization Multivariate for the Dispersive Líquid–Líquid Microextraction in the Extraction of Pesticides in Soil Using HPLC-DAD

Luciana Bitencourt Oliveira, Walter Nei Lopes dos Santos, Sergio Luis Costa Ferreira, Marta Valéria Almeida Santana de Andrade, Luis Fabrício Santana Santos and Sandro Navickiene

Federal University of Bahia, Brazil

Oral Communications 2 (Conference Room A)

Session Chairs: Eduardo Carasek - Federal University of Santa Catarina, Brazil

11:50 OC-03 Determinación de la Presencia del Vino en las Tintas Medievales Valencianas de los Siglos XIII al XVI en el Archivo Municipal de Cocentaina

Gonzalo Fernández Martínez, Gemma Mª Contreras Zamorano, Miguel Gamón Vila, José Sancenón Buleo and Laura Fuster López

Generalitat Valenciana, Spain

12:10 OC-04 Smart Strategies Based on Capillary Electrophoresis-Mass Spectrometry for the Monitoring of Residues in Food and Water Samples

Ana M. García-Campaña, David Moreno-González, Francisco J. Lara and Laura Gámiz-Gracia

University of Granada, Spain

Oral Communications 3 (Conference Room B)

Session Chairs: José de Sousa Câmara - University of Madeira, Portugal

11:50 OC-05 Analysis of Regulated Synthetic Dyes in Cosmetic and Personal Care Products

Eugénia Guerra, Maria Celeiro, J. Pablo Lamas, Maria Llompart and Carmen Garcia-Jares

University of Santiago de Compostela, Spain

12:10 OC-06 Development and Validation of a Method for the Detection of Synthetic Forms of Endogenous Anabolic Androgenic Steroids in Urine by GC-C-IRMS

Alexandra Gonçalves, Beatriz Salema, João Ruivo, Sandra Ramos, Susana Luz, Thomas Chapman and Rodrigo Aguilera

Instituto Português do Desporto e Juventude, Portugal

12:30 Seminar - Implifying Methods Transfer: Novel Tools for Replicating Your Established Methods on an Acquity Arc System (Main Auditorium)

Paula Hong and Hélène Boiteux

Waters Corporation, France

13:00 Lunch

Afternoon Lectures 1 (Main Auditorium)

Session Chairs: Elina Caramão - Tiradentes University, Brazil
Cristina Delerue-Matos - School of Engineering Polytechnic of Oporto, Portugal

14:30 PL-02 The Influence of Charge Distribution on the Separation of Biocolloids by Electromigration Techniques

Bogusław Buszewski

Nicolaus Copernicus University, Poland

15:20 KNL-04 Chiral Separations Using Nano-Liquid Chromatography

Salvatore Fanali

National Research Council, Italy

Afternoon Parallel Sessions 1

Oral Communications 4 (Main Auditorium)

Session Chairs: Elina Caramão - Tiradentes University, Brazil
Cristina Delerue-Matos - School of Engineering Polytechnic of Oporto, Portugal

15:50 OC-07 Cromatografia Gasosa-Espetrometria de Massa no Auxílio ao Combate à Poluição do Mar por Hidrocarbonetos

Ana Catarina C. da Rocha and Palma, C.

Hydrographic Institute, Portugal

16:10 OC-08 Degradation of Compounds Present in Cork Boiling Water by Gamma Radiation

Joana Madureira, Lillian Barros, R. Melo, Pedro M.P. Santos, António N. Falcão, Sandra Cabo Verde, Isabel C.F.R. Ferreira and Fernanda M.A. Margaça

IST, University of Lisbon, Portugal

Oral Communications 5 (Conference Room A)

Session Chairs: João Queiroz - University of Beira Interior, Portugal

15:50 OC-09 Fractionation and Purification of Grape Seed (*Vitis Vinifera* L.) Proanthocyanidin Oligomers by Centrifugal Partition Chromatography and High-Performance Liquid Chromatography and its Correlation to Salivary Binding Ability in Model Wine

Wen Ma, Pierre Waffo-Téguo, Michäel Jourdes, Hua Li and Pierre-Louis Teissèdre
Northwest A & F University, China

16:10 OC-10 Multimodal Chromatography for the Purification of Monoclonal Antibodies: Towards a High-Throughput Optimization Using Micro-Columns on a Chip

Inês F. Pinto, R.R.G. Soares, M.R. Aires-Barros, V. Chu, J.P. Conde and A.M. Azevedo
IST, University of Lisbon, Portugal

Oral Communications 6 (Conference Room B)

Session Chairs: Sílvia Maria Rocha - University of Aveiro, Portugal

15:50 OC-11 Phenylboronic Acid Chromatography: A multimodal approach for the capture of monoclonal antibodies

Ana M. Azevedo, Sara A.S.L. Rosa, Raquel dos Santos and M. Raquel Aires-Barros
IST, University of Lisbon, Portugal

16:10 OC-12 Versatility of Arginine Monolithic Support in the Purification of Therapeutic DNA Vectors

Ana Margarida C. V. de Almeida, J.A. Queiroz, F. Sousa and A. Sousa
FCS, University of Beira Interior, Portugal

16:30 Coffee Break & Posters Session A

Afternoon Lectures 2 and Parallel Sessions 2 (Main Auditorium)

Session Chairs: Marco Gomes da Silva - New University of Lisbon, Portugal
Francisco Cereceda - Technical University of Federico Santa Maria, Chile

17:30 KNL-05 Opportunities of the New Generations of Flow Analysis for On-line Sorptive (Micro)extraction as a Front End to Column Separation Systems

Manuel Miró

University of the Balearic Islands, Spain

Oral Communications 7 (Main Auditorium)

Session Chairs: Marco Gomes da Silva - New University of Lisbon, Portugal
Francisco Cereceda - Technical University of Federico Santa Maria, Chile

18:00 OC-13 Quechers of Micropollutants: Mission in several matrices

Nuno Ratola, V. Homem, D. Capela, S. Ramos, J.A. Silva, C. Cunha, E. Silva, I. Magalhães, R. Araújo, L. Santos and A. Alves

FEUP, University of Oporto, Portugal

18:20 OC-14 Reliable Identification of Trace Levels of Compounds in Complex Matrices by Low-Resolution GC-MS

Ricardo J. N. Bettencourt da Silva

FCUL, University of Lisbon, Portugal

Oral Communications 8 (Conference Room A)

Session Chairs: José Coelho - School of Engineering Polytechnic of Lisbon, Portugal

18:00 OC-15 A Selective Chromatographic Method to Determine Phenolic Composition of Quinoa

Karem Henríquez-Aedo, Darlene Pettersen, Susana Fischer, Rosemarie Wilckens and Mario Aranda

University of Concepcion, Chile

18:20 OC-16 Otimização da Extração de Ergosterol Assistida por Microondas a partir de Agaricus Bisporus L., Aplicando a Técnica Estatística de Superfície e Resposta Combinada com a Técnica de HPLC-UV

Sandrina A. Heleno, M. A. Prieto, Patrícia Diz, Lillian Barros, Alírio E. Rodrigues, Maria Filomena Barreiro and Isabel C.F.R. Ferreira

Polytechnic Institute of Bragança, Portugal.

Oral Communications 9 (Conference Room B)

Session Chairs: Elisabete Lima, University of Azores, Portugal

18:00 OC-17 Hydrophilic Interaction Liquid Chromatography-MS Method for the Sensitive Analysis of Low Abundant Sugar Phosphates in the Plant Metabolome

Ana T. Mata, João Ferreira, Maria R. Bronze, Pedro Fevereiro, Diana Branco, Susana Araújo and Carla António

ITQB, New University of Lisbon, Portugal

18:20 OC18 Porous Graphitic Carbon Stationary Phase for the LC-MS Target Analysis of Raffinose Family Oligosaccharides

Tiago F. Jorge, Maria Helena Florêncio, Ana Ribeiro-Barros and Carla António

ITQB, New University of Lisbon, Portugal

19:00 "Wine & Cheese"

Local: Lisbon City Museum

OC-08 DEGRADATION OF COMPOUNDS PRESENT IN CORK BOILING WATER BY GAMMA RADIATION

Joana Madureira[a],*, Lillian Barros[b], R. Melo[a], Pedro M.P. Santos[a], António N. Falcão[a], Sandra Cabo Verde[a], Isabel C.F.R. Ferreira[b], Fernanda M.A. Margaça[a]

[a] Centro de Ciências e Tecnologias Nucleares (C^2TN), Instituto Superior Técnico, Universidade de Lisboa, Estrada Nacional 10, km 139.7, 2695-066 Bobadela, Loures, Portugal.

[b] Centro de Investigação de Montanha (CIMO), ESA, Instituto Politécnico de Bragança, Campus de Santa Apolónia, 1172, 5301-855 Bragança, Portugal.

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Cork boiling water is an aqueous and complex dark liquor with high concentration of phenolic compounds such as phenolic acids and tannins [1, 2], which are considered biorecalcitrants [2]. Ionizing radiation has been widely studied as an alternative technology for the degradation of organic contaminants without the addition of any other (e.g.: Fenton technologies).

The aim of this work was to identify the compounds present in cork boiling water and further evaluate the resulting stable degradation products after gamma irradiation.

The irradiation experiments of standard solutions were carried out at room temperature using a Co-60 experimental equipment. The applied absorbed doses were 20 and 50 kGy at a dose rate of 1.5 kGy/h, determined by routine dosimeters [3]. The identification of radiolytic products was carried out by HPLC-DAD-ESI/MS. The phenolic compounds were identified by comparing their retention times and UV–vis and mass spectra with those obtained from standard compounds, when available, as well as by comparing the obtained information with available data reported in the literature.

Concerning the obtained results and the literature review, the main cork wastewater components are: quinic, gallic, protocatechuic, vanillic, syringic and ellagic acids. Based on this, we used protocatechuic, vanillic and syringic acids as model compounds to study their degradation by gamma radiation in order to identify the corresponding radiolytic products. Standard aqueous solutions were irradiated and the derivatives of each model compound are represented in figure 1.

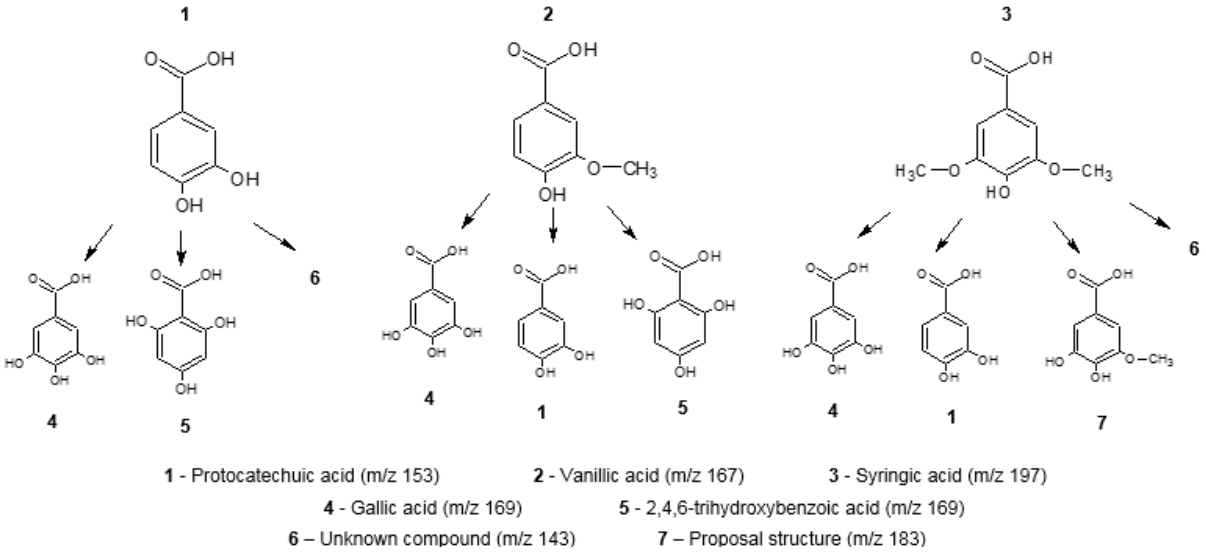

Figure 1. Squematic diagram of the derivatives of phenolic acids

The obtained results seem to demonstrate that the derivatives of the parent compounds could also be phenolic acids, since it was observed the loss of 44 u (CO_2) from the $[M-H]^-$ ions. Gallic and protocatechuic acids are identified as derivatives of vanillic and syringic acids, and gallic acid as a protocatechuic acid derivative. Compound 5 ($[M-H]^-$ at *m/z* 169) was tentatively identified as 2,4,6-trihydroxybenzoic acid, since its fragmentation pattern (*m/z* 151, 125 and 107) is similar to that previously reported in literature [4]. The structure of compound 7 was proposed based on the molecular ion and its fragmentation and compound 6 remains unknown.

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References:

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[3] B. Whittaker, M. Watts, Radiat. Phys. Chem. 2001, 60 (1-2), 101-110.

[4] U. Justesen, E. Arrigoni, Rapid Commun. Mass Spectrom. 2001, 15, 477-483.