

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

BUILDING BRIDGES OF COOPERATION IN SEPARATION SCIENCE

ABSTRACT BOOK



All rights reserved (including those of translation into other languages). No part of this Abstract Book may be reproduced in any form – by photo-print, microfilm, or any other means – nor transmitted or translated into a machine language without the permission in writing of the editor.

Only single copies of contributions, or parts thereof, may be produced for personal use. This Abstract Book was carefully produced in all its parts. Nevertheless, authors and editors do not warrant the information contained therein to be free of errors.

Readers are advised to keep in mind that statements, data, illustrations, procedural details or other items may indivertibly be inaccurate.

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

Viktorija Raks, V. Turchyn and V. Zaitsev

Taras Shevchenko National University of Kiev, Ukraine

12:10 OC-02 Optimization Multivariate for the Dispersive Líquid-Liquid 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 M^a 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 Gármiz-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 Llompарт 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 Teissède
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-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,^[a,b] M. A. Prieto,^[a,d] Patrícia Diz,^[a,b] Lillian Barros,^[a] Alírio E. Rodrigues,^[c] Maria Filomena Barreiro^[b,*] e Isabel C.F.R. Ferreira^[a,*]

- [a] Centro de Investigação de Montanha (CIMO), ESA, Instituto Politécnico de Bragança, Portugal.
- [b] Laboratório de Processos de Separação e Reação (LSRE), Laboratório associado LSRE/LCM, Instituto Politécnico de Bragança, Portugal.
- [c] Laboratório de Processos de Separação e Reação (LSRE), Laboratório associado LSRE/LCM, Departamento de Engenharia Química, Faculdade de Engenharia, Universidade de Porto, Portugal
- [d] Grupo de Nutrição e Bromatologia, Faculdade Ciências e tecnologia alimentar, Universidade de Vigo, Campus de Ourense, Ourense, Espanha.
- [*] barreiro@ipb.pt; iferreira@ipb.pt

O aumento de consumo de cogumelos tem-se verificado em todo o mundo, não só pelo seu valor nutricional, sabor apurado e textura, mas também pelas suas propriedades medicinais. Existem vários estudos científicos que descrevem os benefícios do consumo de cogumelos, que advêm da sua riqueza em compostos bioativos, tais como micosteróis, em particular, ergosterol. *Agaricus bisporus* L. é o cogumelo mais consumido em todo o mundo, sendo a sua fração de esteróis constituída essencialmente por ergosterol (90%) [1], tornando a sua extração um tópico de elevado interesse já que esta molécula apresenta elevado valor comercial e inúmeras aplicações nas indústrias alimentar, farmacêutica e cosmética. Segundo a literatura, o teor de ergosterol pode variar entre 3 e 9 mg por g de cogumelo seco.

Atualmente, os métodos tradicionais tais como a maceração e a extração em Soxhlet estão a ser substituídos por metodologias emergentes, nomeadamente a extração assistida por microondas, visando diminuir a quantidade de solvente utilizado e o tempo de extração e, naturalmente, aumentar o rendimento da mesma. No presente trabalho, utilizou-se *A. bisporus* como fonte de ergosterol, tendo-se

otimizado as seguintes variáveis relevantes para a sua extração pela tecnologia de microondas (MAE): tempo (0-20 min), temperatura (60-210 °C) e razão sólido-líquido (1-20 g/L). O solvente utilizado foi o etanol tendo-se aplicado a técnica estatística de superfície de resposta por forma a gerar modelos matemáticos que permitissem maximizar a resposta e otimizar as variáveis que afetam a extração de ergosterol. O conteúdo em ergosterol foi monitorizado por HPLC-UV.

Os resultados demonstraram que a técnica MAE é promissora para a extração de ergosterol, tendo-se obtido, para as condições ótimas (20,4 min, 121,5°C e 1,6 g/L), 569,4 mg ergosterol/100 g de massa seca, valor similar ao obtido com extração convencional por Soxhlet (671,5±0,5 mg/100 g de massa seca).

Em síntese, a extração assistida por microondas demonstrou ser uma tecnologia eficiente para maximizar o rendimento de extração em ergosterol.

Agradecimentos:

À Fundação para a Ciência e a Tecnologia (FCT) pelo apoio financeiro ao CIMO (PEst-OE/AGR/UI0690/2014) e Sandrina A. Heleno (SFRH/BPD/101413/2014), FCT/MEC, FEDER programa PT2020 pelo apoio financeiro ao LSRE (Projeto UID/EQU/50020/2013) e QREN, ON2 e FEDER (Projetos NORTE-07-0124-FEDER-000014 e NORTE-07-0162-FEDER-000050). Xunta de Galicia pela bolsa de Pós Doutoramento de M.A. Prieto.

Referências:

[1] J.C.M. Barreira, M.B.P.P. Oliveira, I.C.F.R. Ferreira. Food Anal. Method., 2014, 7, 217-223.