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NACIONAL
DE CROMATOGRÁFIA

20 anos
CROMATOGRÁFIA

11th NATIONAL MEETING ON CHROMATOGRAPHY

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Caparica | **Portugal**



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Universidade NOVA de Lisboa



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15:40 O10 *The Use of Ion Mobility-MS to Resolve and Discover Sample Complexity In Small Molecule Analysis*

Alberto Méndez¹

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16:05 O11 *Analysis of skin volatiles using a membrane-SPME/GC-MS approach to unveil putative biomarkers for neurodegenerative diseases*

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16.25 Coffee Break & Posters Session

AFTERNOON SESSION

Session 4 Chair: Cristina Dias - Universidade de Évora

17:00 O12 *Determination of the phenolic composition of vine-canes subcritical water extracts and its utilization for production of a topical formulation*

Manuela M. Moreira¹, **Francisca Rodrigues**¹, **Olena Dorosh**^{1,2}, **Diana Pinto**¹, **Andreia F. Peixoto**³, **Paulo Costa**⁴, **Simone Morais**¹, **Cristina Freire**³, **Cristina Delerue-Matos**¹

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17:20 O13 *HPLC and UHPLC Selectivity – Finding a Selectivity Starting Point*

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17:45 O14 *Separation of Nadolol Racemates by High pH Reversed-Phase Fixed-Bed and Simulated Moving Bed Chromatography*

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18:05 O15 *Pharmaceutical drugs as emerging pollutants in aqueous media of Northeast Portugal*

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Index

PL01 <i>From amino acid analysis in 1969 to characterization of protein biopharmaceuticals in 2019</i> <i>Pat Sandra</i>	2
PL02 <i>Extraction of chemical information from untargeted chemical profiling (GC-MS) data</i> <i>Rasmus Bro</i>	3
PL03 <i>"Smart" Gradients for Enhancing Peak Capacity in Comprehensive Two-dimensional Liquid Chromatography under Reversed-phase Conditions: Application to Polyphenols in Food and Natural Real-world Samples</i> <i>Paola Dugo, Francesco Cacciola, Katia Arena, Luigi Mondello</i>	4
PL04 <i>PL04 Comprehensive Two-Dimensional Gas Chromatography – Expectations beyond Design?</i> <i>Marriott P</i>	5
O01 <i>Impurity Profiling: know the unknown by HRMS</i> <i>Liliana Silva, Marco Galesio</i>	7
O02 <i>High sensitivity applications with High Resolution MS-QTOF: Analysis of PCB's and PCDD's in fish tissue by GC-APCI-QTOF</i> <i>Miguel Ángel Pérez</i>	8
O03 <i>Effect of gamma radiation on bioactive compounds of olive wastes</i> <i>Madureira J, Dias MI, Barros L, Santos-Buelga C, Margaça FMA, Ferreira ICFR, Cabo Verde S</i>	9
O04 <i>Seasonal effect on the Polycyclic Aromatic Hydrocarbons contents of F. spiralis, Porphyra spp. and Ulva spp. seaweed species harvested in the Portuguese coast</i> <i>Vieira EE, Soares C, Ramalhosa MJ, Sousa S, Oliva-Teles MT, Correia M, Carvalho AP, Domingues VF, Marais S, Delerue-Matos C</i>	10
O05 <i>How far can you get in the analysis of complex mixtures through 2D-LC?</i> <i>António Chana</i>	11
O06 <i>An improved method for determination of sotolon in Port wines</i> <i>Milheira J, Vilamarim R, Filipe-Ribeiro L, Cosme F, Nunes FM</i>	12
O07 <i>Cytinus hypocistis (L.) L. extract as a source of anti-aging cosmeceutical ingredients</i> <i>Ana Rita Silva, Taofiq Oludemi, José Pinela, Marla Inês Dias, Ricardo C. Calheira, Maria José Alves, Andrei Mocan, Pablo A. Garcia, Lillian Barros, Isabel C.F.R. Ferreira</i>	13
O08 <i>Combining analytical pyrolysis and chemometrics: A powerful approach to study complex organic matrices</i> <i>Jiménez-Morillo NT, Miller AZ, Palma V, Dias Barrocas C, Cabrita MJ</i>	14
O09 <i>Integration of data from GC-MS and UPLC-QTOF-MS to better understand wine ageing: a new graphical interface</i> <i>A.R. Manforte, A. C. Silva Ferreira</i>	15
O10 <i>The Use of Ion Mobility-MS to Resolve and Discover Sample Complexity in Small Molecule Analysis</i> <i>Alberto Méndez</i>	16
O11 <i>Analysis of skin volatiles using a membrane-SPME/GC-MS approach to unveil putative biomarkers for neurodegenerative diseases</i> <i>Beatriz Andrade, Jorge Pereira, José Câmara</i>	17
O12 <i>Determination of the phenolic composition of vine-canes subcritical water extracts and its utilization for production of a topical formulation</i> <i>Manuela M. Moreira, Francisca Rodrigues, Olena Dorosh, Diana Pinto, Andreia F. Peixoto, Paulo Costa, Simone Morais, Cristina Freire, Cristina Delerue-Matos</i>	18
O13 <i>HPLC and UHPLC Selectivity – Finding a Selectivity Starting Point</i> <i>Zeshan Aqeel, Felipe Silva, Jason Anspach, Ryan Splitstone</i>	19
O14 <i>Separation of Nadolol Racemates by High pH Reversed-Phase Fixed-Bed and Simulated Moving Bed Chromatography</i> <i>R. Arafah, A. Ribeiro, A. Rodrigues, L. Pais</i>	20
O15 <i>Pharmaceutical drugs as emerging pollutants in aqueous media of Northeast Portugal</i> <i>A. Oliveira, A. Ribeiro, P. Brito, A. Queiroz</i>	21
O16 <i>New coloring strategy for dairy products using anthocyanin extracts from edible flowers</i> <i>Tânia C.S.P. Pires, Rúbia C.G. Corrêa, Maria Inês Dias, Lillian Barros, João C.M. Barreira, Celestino Santos-Buelga, Isabel C.F.R. Ferreira</i>	22
O17 <i>Natural colorants in cookies: evaluation of the incorporation effects on the physico-chemical composition</i> <i>Custódio L. Roriz, Eliana Pereira, Sandrina Helena, Márcio Carocha, Patricia Morales, Lillian Barros, Isabel C.F.R. Ferreira</i>	23
O18 <i>Determination of pyrrolizidine alkaloids in plant material using SFC-MS/MS</i> <i>Raymond Wong, Anja Grüning, Gesa J. Schad, Jan Stenzler, Manuel Lucini</i>	24
O19 <i>High Throughput Bar Adsorptive Microextraction (HT-BAμE): A simple and effective tool for the simultaneous enrichment of ketamine and norketamine from large number of urine matrices</i> <i>S. M. Ahmad, J. M. F. Nogueira</i>	25
O20 <i>Validation of a method to quantify acrylamide in biscuits</i> <i>João Sampaio, Fernanda Cosme, Fernando M. Nunes</i>	26
O21 <i>Very Fast analysis of TCA in cork Disks by HS-SPME GC/MS/MS – A Proof-of-concept</i> <i>Cátia Santos, Renato Cres, Marco Gomes da Silva, Eduardo Mateus</i>	27
O22 <i>Polar Pesticides Anions in water and food using a new and unique Ion Chromatography and Mass Spectrometry High Resolution MSM or MSMS method</i> <i>Ettlin Daniel¹, Jorge Alves², Anne Marie Complanno</i>	28

O15 Pharmaceutical drugs as emerging pollutants in aqueous media of Northeast Portugal

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Emerging pollutants are potentially toxic substances that although found in very small concentrations can produce hazard effects to the environment. Due to their very small concentrations they are not yet included in the water quality monitoring programs neither in national or international environmental control regulations. Pharmaceutical and Personal Care Products (PPCPs) represent an important group of emerging pollutants owing to increased worldwide consumption and to their inherent capacity to induce physiological harmful effects in very low doses, which raises several concerns related with the potential adverse effects on humans, animals and environmental systems.¹

In this work, it will be presented the development and validation of a complete experimental methodology proposed for the monitoring of pharmaceutical drugs. The method is based on solid phase extraction (SPE) followed by analysis with high performance liquid chromatography with a diode array detector (HPLC-DAD)². Experimental results obtained with two different columns will be presented. An analytical Nucleosil 100-5 C18 column, 150 mm x 4.6 mm, obtained from Macherey-Nagel for compounds with lower pKa values and a SiliaChrom XT C18 column, 4.6 mm x 250 mm, obtained from SiliCycle for compounds with higher pKa values. The method is validated by the analysis of real aqueous matrices samples obtained from different water media sources, such as, swimming pools, rivers and wastewater treatment plants. To extend the scope of the analytical method and thus obtain a broader study, several drugs were selected, belonging to five different pharmacological classes: non-steroidal anti-inflammatory (ibuprofen, acetylsalicylic acid, ketoprofen, naproxen and diclofenac), analgesic (paracetamol), antibiotic (sulfamethoxazole), an anticonvulsant (carbamazepine) and a central nervous system stimulator (caffeine). These compounds were selected due to their high level of use and medical prescription and, consequently, leading to a high probability of environmental contamination. Figure 1 shows the overlay chromatograms of individual drugs standards with Nucleosil 100-5 C18 column and a concentration of 100 ppm in the optimum wavelength. Figure 2 represents the chromatograms of a mixture of four selected drugs standards (sulfamethoxazole, paracetamol, caffeine and carbamazepine) with a SiliaChrom XT C18 column and 100 ppm concentration using the optimum wavelength for each compound.

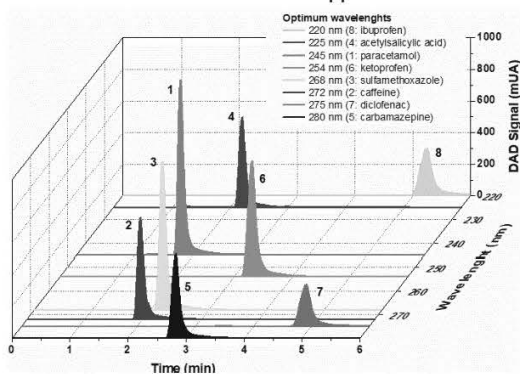


Figure 1. HPLC-DAD chromatograms of eight individual standards of pharmaceutical drugs using a Nucleosil 100-5 C18 column and 60%acetonitrile:40%water:0.01%trifluoroacetic acid (pH=2.5) solvent composition. Numbers represent elution order.

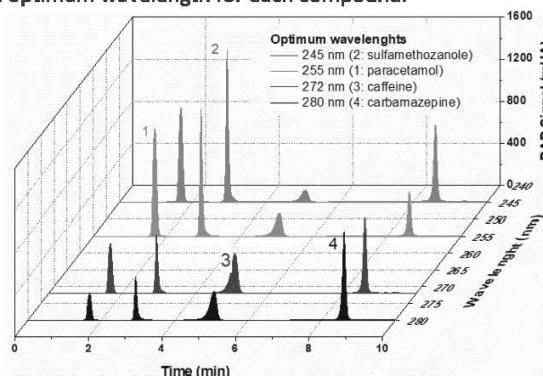


Figure 2. HPLC-DAD chromatograms of a standard mixture of four selected pharmaceutical drugs using a SiliaChrom XT C18 column and methanol:water:0.005%diethylamine (pH=10.6) solvent composition with gradient operation. Numbers represent elution order.

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