12º ENCONTRO NACIONAL

CROMA-TOGRAFIA

6 › 8 dez'22

Aveiro | Portugal

PROVISIORAL

universidade de aveiro

Sociedade Portuguesa de Química

XIV WARPA

TÍTULO:

Livro de Resumos do 12º Encontro Nacional de Cromatografia & XIV WARPA

AUTOR:

Sílvia M. Rocha

CO-AUTOR(ES):

Alexandre Fonseca

Cátia Martins

Manuel António Coimbra

Maria Eugénia Queiroz

Samuel Patinha

Sónia Ribeiro

EDITOR: Sociedade Portuguesa de Química (SPQ)

SUPORTE: Eletrónico

FORMATO: PDF / PDF/A

ISBN 978-989-8124-37-1

December 6th

Rectorate Building
(Building 25 - UA campus map)

8h00	**Registration** Hall of the Rectorate Building	
	Auditório Renato Araújo	
9h00	**Opening session**	
9h15	PL1	
10h00	KN1	
	Auditório Renato Araújo	**Sala do Senado**
10h30	OC1	OC6
10h45	OC2	OC7
	11h00 – 11h30: Coffee break & Poster session Hall of the Rectorate Building	
11h30	OC3	OC8
11h45	OC4	OC9
12h00	OC5	OC10
12h15	Sponsor 1	
	12h45 – 14h15: Lunch break Hall of the Rectorate Building	
	Auditório Renato Araújo	
14h15	PL2	
15h00	KN2	
	Auditório Renato Araújo	**Sala do Senado**
15h30	OC11	OC14
15h45	OC12	OC15
16h00	OC13	OC16
16h15	Sponsor 2	Sponsor 3
	16h45 – 17h15: Coffee break & Poster session Hall of the Rectorate Building	
17h15	**Round table:** Chromatography: do the current developments respond to future challenges?	
18h30	**Welcome Reception: Port Wine and Ovos Moles de Aveiro degustation under a particular musical moment** Hall of the Rectorate Building	

December 7th

Department of Environment and Planning
(Building 7 - UA campus map)

8h00	**Registration** Entrance of the Department of Environment and Planning (Building 7 - UA campus map)
	Auditório Carlos Borrego
9h00	PL3
9h45	KN3
10h15	OC17
10h30	OC18
10h45	OC19
	11h00 – 11h45: Coffee break & Poster session Hall of the Rectorate Building
11h45	OC20
12h00	OC21
12h30	Sponsor 4
	12h45 – 14h15: Lunch break Hall of the Rectorate Building
	Auditório Carlos Borrego
	XIV WARPA *Recent advances on sample preparation*
14h15	Opening session and announcement of the award Janusz Pawliszyn medal
14h30	KN4
15h00	KN5
15h30	KN6
	16h00 – 16h30: Coffee break & Poster session Hall of the Rectorate Building
16h30	KN7
17h00	KN8
17h30	OC22
17h45	OC23
18h00	**Closing session of XIV WARPA**
18h00	**Meeting of the Chromatography Group members – SPQ** Auditório Carlos Borrego
20h30	**Gala Dinner with a special entertainment moment** Meliá Ria Hotel & Spa

December 8th

Rectorate Building
(Building 25 - UA campus map)

8h00	**Registration** Hall of the Rectorate Building	
	Auditório Renato Araújo	
9h00	PL4	
9h45	KN9	
	Auditório Renato Araújo	**Sala de Atos**
10h15	OC24	OC27
10h30	OC25	OC28
10h45	OC26	OC29
	11h00 – 11h30: Coffee break & Poster session Hall of the Rectorate Building	
11h30	FC01	FC06
11h35	FC02	FC07
11h40	FC03	FC08
11h45	FC04	FC09
11h50	FC05	FC10
11h55	Discussion on Flash Communications	Discussion on Flash Communications
12h10	Sponsor 5	Sponsor 6
	12h45 – 14h15: Lunch break Hall of the Rectorate Building	
	Auditório Renato Araújo	
14h15	PL5	
15h00	Sponsor 7	
	Auditório Renato Araújo	**Sala de Atos**
15h30	OC30	OC34
15h45	OC31	OC35
16h00	OC32	OC36
16h15	OC33	OC37
16h30	**Closing session and announcement of the award communications and the next 13ENC**	

15h45	**OC12 - Chromatographic-mass spectrometry methods for risk evaluation of anthropogenic and natural contaminants in raw milk** Marta Sofia Carvalho Ferreira Malheiro Leite *Faculty of Pharmacy, University of Coimbra & INIAV & REQUIMTE/LAQV, Portugal*
16h00	**OC13 - Treatment of wastewater effluents using nanofiltration and low pressure UV treatment to produce high quality water that can be reused for irrigation for food production** Vanessa Jorge Pereira *iBET, Instituto de Biologia Experimental e Tecnológica, Portugal*
16h15	***Sponsor 2* - Low Adsorption UPLC Systems and Columns to solve challenges in HPLC separations of metal-sensitive analytes** Sandra Cachopo *Waters Technologies LCMS Portugal*

Sala do Senado (25 Rectorate Building)

Session 6: Chair Ofélia Anjos	
15h30	**OC14 - Development of a solid phase extraction methodology for pharmaceuticals quantification by HPLC using waste-based sorbents** Alexandr Stratulat *Department of Chemistry, University of Aveiro, Portugal*
15h45	**OC15 - Removal of estrogens from water using activated carbon from olive stone** Eduardo Candido Milani *Centro de Investigação de Montanha (CIMO), Instituto Politécnico de Bragança, Portugal*
16h00	**OC16 - Bioaccessibility determination of omega-3 and conjugated linolenic acid using an *in vitro* standardized digestion model (INFOGEST) by GC-FID** Ana Sofia Salsinha *Universidade Católica Portuguesa, CBQF - Centro de Biotecnologia e Química Fina – Laboratório Associado, Escola Superior de Biotecnologia, Portugal*
16h15	***Sponsor 3* - Analysis of flavour compounds in milk flavourings by SPME-GC-MS** João Maria Lopes da Cunha Cappelle Teixeira *Specanalítica*

16h30 – 17h00: Coffee break & Poster session

Auditório Renato Araújo (25 Rectorate Building)

17h15	**Roundtable: *Chromatography: do the current developments respond to future challenges?*** **André Lobo Castro**, Forensic Chemistry and Toxicology Service, National Institute of Legal Medicine and Forensic Sciences - North Delegation **Cristina Fernandes**, Sogrape Vinhos, S.A. **Hugo Rocha**, Newborn Screening, Metabolism and Genetics Unit Human Genetics Department, National Institute of Health Doutor Ricardo Jorge **Regina Duarte,** CESAM & Departament of Chemistry, University of Aveiro **Vítor Vale Cardoso,** Organic Chemistry Area of the EPAL Water Analysis Laboratory **Moderator:** Journalist Elsa Silva Santos, University of Aveiro

18h30 - Welcome Reception: Port Wine and Ovos Moles de Aveiro degustation under a particular musical moment

OC15 Removal of estrogens from water using activated carbon from olive stone

Milani EC, [1,2,3] Menezes ML,[3] Tuesta JLD,[1,2,4] Ribeiro AE,[1,2] Brito P,[1,2] Queiroz A[1,2]

[1]*Centro de Investigação de Montanha (CIMO), Instituto Politécnico de Bragança, Campus de Santa Apolónia, 5300-253 Bragança, Portugal*
[2]*Laboratório para a Sustentabilidade e Tecnologia em Regiões de Montanha, Instituto Politécnico de Bragança, Campus de Santa Apolónia, 5300-253 Bragança, Portugal*
[3]*Universidade Tecnológica Federal do Paraná (UTFPR-AP), 86812-460 Apucarana, PR, Brasil*
[4]*Department of Chemical and Environmental Technology, ESCET, Rey Juan Carlos University, Tulipán s/n, 28933 Móstoles, Spain*

Email: eduriqueerick@gmail.com

Micropollutants are substances that are continuously released to environments and can present adverse effects to the environment, even when present at very low concentrations (trace levels). Among these compounds are the estrogens pharmaceutical drugs, since traditional sewage and drinking water treatment plants are not able to remove or degrade them[1,2]. Thus, new and more efficient treatments are required, such advanced oxidation processes or adsorption.
Activated carbons (ACs) are known as low-cost carbonaceous materials used for removal of pollutants using adsorption processes[3,4]. This work aims to produce ACs from olive stone and to evaluate the simultaneous removal of four different estrogens by adsorption with the produced materials.
From the olive stone by product generated in the olive oil extraction, five different materials were produced, namely (i) powdered olive stone, (ii) physical activated at 800°C (iii) carbonized at 500°C, (iv) chemical activated using phosphoric acid and (v) chemical activated with sodium hydroxide. The carbonization yield was calculated and the pH at point of zero charge (pH_{PZC}) of the carbonaceous materials determined. The simultaneous quantification of estriol, estrone, 17β-estradiol and 17α-ethinylestradiol in aqueous solution was performed by high performance liquid chromatography with diode array detector (HPLC-DAD). The highest carbonization yield (57.5%) was observed using acid activation. The adsorbents production method also influences the pH_{PZC} of the adsorbents, being more expressive by the acid activation with the lowest pH_{PZC} (3.84). The olive stone raw-material shows an important potential to be used on the production of activated carbons with high carbonization yields.

Acknowledgements: The authors are grateful to the Foundation for Science and Technology (FCT, Portugal) for financial support through national funds FCT/MCTES (PIDDAC) to CIMO (UIDB/00690/2020, UIDP/00690/2020 and EXPL2021CIMO_05-REMPHARM) and SusTEC (LA/P/0007/2021). J.L. Diaz De Tuesta acknowledges the financial support of "Comunidad de Madrid" (Spain) for the individual research grant 2020-T2/AMB-19836.

References

1. P. Bhatt, G. Bhandari, M. Bilal, J Environ. Chem. Eng. 10 (**2022**) 107598.
2. M. Gavrilescu, K. Demnerova, J. Aamand, F. Fava, New Biotechnol. 32 (**2015**) 147-156.
3. F. Fadzail, Z. Mokhtar, N. Ibrahim, Materils Today: Proceedings. 57 (**2022**) 1108-1115.
4. M. A. Al-Ghouti, A. O. Sweleh, Environ. Tech. Innov. 16 (**2019**) 100488.