

ASOCIACIÓN DE
QUÍMICOS DE GALICIA



Colexio Oficial de
Químicos de Galicia



SOCIEDADE
PORTUGUESA
DE QUÍMICA



XXVI ENCONTRO GALEGO PORTUGUÉS DE QUÍMICA
CONGRESO INTERNACIONAL



Abajando a ciencia e a tecnoloxía á sociedade, en la salud, el ambiente e a alimentación



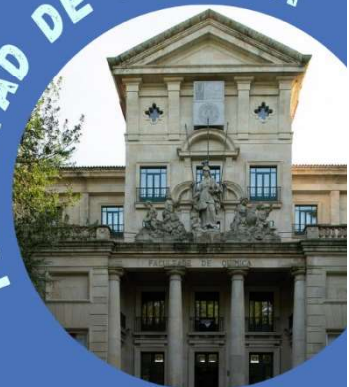
2022

16 17 18 NOVIEMBRE

SANTIAGO DE COMPOSTELA

WWW.ENCONTROGALEGOPTUGUES.ORG

FACULTAD DE QUÍMICA



XXVI ENCONTRO GALEGO-PORTUGUÉS DE QUÍMICA.

Noviembre 2022

Coordinador Editorial

Manuel Rodríguez Méndez

Edita

Colegio Oficial de Químicos de Galicia
Rúa Lisboa, nº 10, Local 31E – Edificio Área Central Fontiñas.
15707 Santiago de Compostela (A Coruña)
www.colquiga.org

Tirada

30 Ejemplares y 450 en formato digital

Imprime

OCERO
Sada (A Coruña)

Depósito Legal

VG699-2017

ISBN

978-84-09-45895-0

Este libro de comunicaciones y conferencias, presentadas en el XXV Encontro Galego-Portugués de Química, Colegio Oficial de Químicos de Galicia

Catalogación recomendada Libro de resúmenes del XXVI Encontro Internacional Galego-Portugués de Química.

Facultade de Química da Universidade de Santiago de Compostela. Santiago de Compostela (España) 2022

© Colegio Oficial de Químicos de Galicia

Derechos reservados. Prohibida la reproducción de este libro por cualquier medio, total o parcialmente, sin permiso expreso del editor.

El coordinador editorial declara que el contenido de los resúmenes científicos es de la entera responsabilidad de los respectivos autores.

EL CONGRESO

PROGRAMA DEL XXVI ENCONTRO INTERNACIONAL GALEGO PORTUGUÉS DE QUÍMICA

SALAS		Planta
A	Aula Magna	P. Baja
B	Química Física	
C	Química Técnica	
D	Química General	2ª

DÍA	HORA	SALAS				
		PLENARIAS	A	B	C	D
		SALA A				
16	10:00 - 12:00	INSCRIPCIÓN Y RECEPCIÓN				
	12:00- 12:30	SESIÓN DE APERTURA. Aula Magna				
	12:30-13:30	CONFERENCIA PLENARIA de APERTURA. Aula Magna				
	13:30-15:00	COMIDA				
	15:00		QS01	AMB01	ALM01	CAT01
	15:15		QS02	AMB02	ALM02	CAT02
	15:30		QS15	AMB03	ALM03	CAT03
	15:45		QS04	AMB04	EDU02	CAT04
	PAUSA: 5 minutos					
	16:05		QS05	AMB05	ALM05	CAT05
	16:20		QS06	AMB06	ALM06	CAT06
	16:35		QS07	AMB07	ALM07	CAT07
	16:50		QS08	AMB08	ALM08	CAT08
	17:05-18:00	COFFEE BREAK + POSTERS				
	18:00-19:00	CP1				
	19:00		QS09	AMB09	ALM09	CAT09
	19:15		QS10	AMB10	ALM10	CAT10
	19:30		QS11	AMB11	ALM11	CAT11
	19:45		QS12	AMB12	ALM12	CAT12
	20:00		QS13	AMB13	ALM13	CAT13
20:15		QS14	AMB14	ALM14	CAT14	

RELACIÓN DE COMUNICACIONES

- AMB08 A Sustainable Methodology for the Preparation of HIV Protease Inhibitors to Tackle Viral Resistance.
- AMB09 Controlled thermal degradation of Polyoxometalate@Zeolitic Imidazolate Framework composites towards novel oxidation catalysts.
- AMB10 Biomass-based materials for estrogens adsorption from water: production methods and their characterization.
- AMB11 Green Chemistry in the Pharmaceutical Industry.
- AMB12 Predicting DDT past and future contamination from a local source with a new gridded dynamic multimedia fate model.
- AMB13 Evaluation of activated carbon obtained from olive stones for the removal of sertraline from waters.
- AMB14 Remediación y recuperación de fósforo con materiales nanoestructurados con potencial reaprovechamiento como fertilizantes.
- AMB15 Geoquímica e biodisponibilidade do Cu em solos de manguezais da Baía de Todos os Santos, Bahia, Brasil.
- AMB16 Valorización de sub-productos de la industria agroalimentaria gallega a través de la Química Verde.
- AMB17 Development of a Sustainable Recovery Process of Indium from Liquid Crystal Displays of Smartphones Waste.
- AMB18 Iron determination in natural waters using a synthesized 3-hydroxy-4-pyridione ligand in a newly developed μ fluidic paper-based device.
- AMB19 Pre-treatment to increase gold recovery from integrated circuits of smartphones wastes.
- AMB20 Valorization of vine shoots to extract lignin – chemical and structural characterization.
- AMB21 Bioacumulação de Cu em tecidos de *Ucides cordatus* em manguezais da Baía de Todos os Santos, Bahia, Brasil.
- AMB22 Geopolímeros desde residuos de tierras diatomeas para el tratamiento de aguas residuales de la industria vitivinícola.
- AMB23 Potential of macroalgae to remove rare earth elements from contaminated Waters.
- AMB24 Glyphosate and Aminomethylphosphonic acid adsorption in soils.
- AMB25 Searching for a new generation of environmentally compatible antifouling agents.
- AMB26 Screening of the main factors affecting the microwave-assisted extraction (MAE) of phenolic compounds from cork industry waste.
- AMB27 Comparison of Advanced Tertiary Treatments for Pharmaceuticals Removal from a Municipal Wastewater.
- AMB28 Low-cost natural biosorbents for the treatment of contaminated waters.

Evaluation of activated carbon obtained from olive stones for the removal of sertraline from waters

M.B. Belgacem^{1,2}, A.E. Ribeiro^{1,2}, A. Queiroz^{1,2}, P. Brito^{1,2}

¹Centro de Investigação de Montanha (CIMO), Instituto Politécnico de Bragança, Campus de Santa Apolónia, 5300-253 Bragança, Portugal

²Laboratório para a Sustentabilidade e Tecnologia em Regiões de Montanha, Instituto Politécnico de Bragança, Campus de Santa Apolónia, 5300-253 Bragança, Portugal
E-mail: mohamedbenbelgacem14@gmail.com

The presence of pharmaceutical drugs, their metabolites and degradation products in the environment requires significant research and monitoring studies to assess the potential risks to human health and to the ecosystem. Due to the extremely low concentrations of these chemicals in the environment in the trace levels of $\mu\text{g/L}$ or even ng/L the removal processes must be optimized in order to make them easier, quicker, less expensive, and more environmentally friendly than traditional techniques [1]. Many of these substances, including hormones, antidepressants, analgesics, antibiotics, and anti-inflammatories, among others, are heavily medical prescribed around the world to treat the most prevalent illnesses associated with modern society. Sertraline belongs to the pharmaceutical class of anti-depressant and is intensively used worldwide to treat severe cases of depression. According to recent studies, several active principles from this family of pharmaceutical drugs, despite being at very low levels of concentration in water, can have a variety of harmful side effects in the environment's flora and fauna in addition to the potential risk of underground water contamination later used for animal or even human consumption [2-4]. This work will present the main experimental results for the removal of sertraline from water by adsorption using activated carbon obtained from olive stones. The activated carbon material was obtained from olive stones, by powdering the granulated olive stones to a diameter of 0.25 mm, chemically activated with a strong acid and then carbonized. The equilibrium adsorption isotherms were obtained using the batch method and then fitted to different adsorption models, such as the Langmuir or Freundlich models for liquid phase adsorption. The most significant adsorption parameters were optimized, such as the solution pH, mass of the adsorbent used, adsorption contact time and adsorption temperature. The kinetics of the sertraline adsorption on the adsorbent was estimated using the pseudo-first and pseudo-second order models. Obtained results in this work clearly show that olive stones, usually a residue from the Portuguese and Mediterranean oliviculture, can be exploited as a promising and low-cost bio-mass source on the production of adsorbent materials with considerable potential to remove micropollutants, such as the antidepressant sertraline, from water.

Acknowledgments

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).

References

- [1] M.J. Fernandes *et al.*, *Chemosphere*, 239 (2020) 124729.
- [2] M. Kuzmanovic *et al.*, *Sci. Total Environ.*, 540, (2016) 324.
- [3] R. A. Mole and B. W. Brooks, *Environm. Pollut.*, 250, (2019) 1019.
- [4] V. Machado, Master Dissertation, Instituto Politécnico de Bragança, (2021).