5th Portuguese Young Chemists Meeting

(5th PYCheM)

&

1st European Young Chemists Meeting

(1st EYCheM)

Centro Cultural Vila Flor

Guimarães, Portugal

26th – 29th of April

ICVS/3B's

Câmara Municipal de Guimarães

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General Programme

	26 April	27 April	28 April	29 April
9:00-13:20	Registration and Workshop of Open Science and European Open Access Policies in H2020	Organic Chemistry and Medicinal Chemistry	Inorganic, Physical, Analytical and Electrochemistry	Materials Chemistry and Nanomaterials and Surface Chemistry
13:30	Opening Ceremony	Lunch	Lunch	Lunch
14:00 - 18:00	Green Chemistry + Chemistry of Natural Products	Biochemistry and Medicinal Chemistry	CHEM2NATURE Symposium: Chemical strategies for modification of natural origin materials Assembleia GQJ (17h)	Materials Chemistry and Nanomaterials and Surface Chemistry
18:00		Walking Tour		Closing Ceremony
19:00	Welcome Cocktail		Gala Dinner	
21:30	Get-together night			

P65. Optimization of Microwave-assisted Extraction of Phenolic Compounds from Tomato by a Full Factorial Design Coupled with Response Surface Methodology

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Tomato (*Lycopersicon esculentum* Mill.), apart from being a functional food rich in carotenoids, vitamins and minerals, is also an important source of phenolic compounds [1,2]. As antioxidants, these functional molecules play an important role in the prevention of human pathologies and have many applications in nutraceutical, pharmaceutical and cosmeceutical industries. Therefore, the recovery of added-value phenolic compounds from natural sources, such as tomato surplus or industrial by-products, is highly desirable. Herein, the microwave-assisted extraction of the main phenolic acids and flavonoids from tomato was optimized. A 5-level full factorial Box-Behnken design was implemented and response surface methodology used for analysis. The extraction time (0-20 min), temperature (60-180 °C), ethanol percentage (0-100%), solid/liquid ratio (5–45 g/L) and microwave power (0-400 W) were studied as independent variables. The phenolic profile of the studied tomato variety was initially characterized by HPLC-DAD-ESI/MS [2]. Then, the effect of the different extraction conditions, as defined by the used experimental design, on the target compounds was monitored by HPLC-DAD, using their UV spectra and retention time for identification and a series of calibrations based on external standards for quantification. The proposed model was successfully implemented and statistically validated. The microwave power had no effect on the extraction process. Comparing with the optimal extraction conditions for flavonoids, which demanded a short processing time (2 min), a low temperature (60 °C) and solid/liquid ratio (5 g/L), and pure ethanol, phenolic acids required a longer processing time (4.38 min), a higher temperature (145.6 °C) and solid/liquid ratio (45 g/L), and water as extraction solvent. Additionally, the studied tomato variety was highlighted as a source of added-value phenolic acids and flavonoids.

References

[1] Pinela, J.; Barros, L.; Carvalho, A.M.; Ferreira, I.C.F.R., Food Chem Toxicol 2012, 50, 829-834
[2] Barros, L.; Dueñas, M.; Pinela, J.; Carvalho, A.M.; Santos Buelga, C.; Ferreira, I.C.F.R., Plant Food Hum Nutr 2012, 67, 229-234

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