BIO-SUSTENTABILIDADE E BIO-SEGURANÇA ALIMENTAR, INOVAÇÃO E QUALIDADE ALIMENTAR

23-26 de outubro de 2022

Castelo Branco

https://xvieqa.events.chemistry.pt/

SOCIEDADE PORTUGUESA DE QUÍMICA

Instituto Politécnico de Castelo Branco

Instituto Politécnico de Castelo Branco
Escola Superior Agrária

Câmara Municipal CASTELO BRANCO

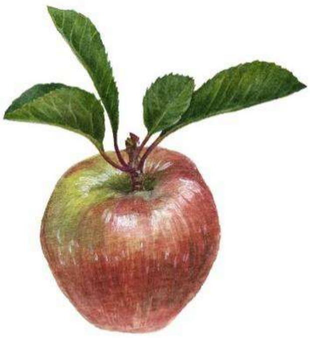
EuChemS
European Chemical Society
Division of Food Chemistry

Histórico do "Encontro de Química dos Alimentos (EQA)"

I	1993	Santarém 19-22 de dezembro	Encontro de Química dos Alimentos	Jorge Justino – Instituto Politécnico de Santarém
II	1995	Aveiro 19 a 21 de julho	Encontro de Química dos Alimentos	Ivonne Delgadillo – Universidade de Aveiro
III	1997	Algarve 24-26 de março	Alimentação Mediterrânica	Nídia Braz - Escola Superior Tecnologia do Algarve
IV	1999	Coimbra 1-4 de junho	Qualidade e Inocuidade dos alimentos, segurança alimentar	Maria Irene Silveira - Universidade de Coimbra
V	2001	Porto 8-11 de maio	Qualidade, Segurança e Inovação	Alcina M. M. B. Morais – Universidade Católica
VI	2003	Lisboa 21 a 24 de junho	Novas perspetivas sobre Conservação, Processamento e qualidade de alimentos	Maria Leonor Nunes e Narcisa Maria Bandarra – IPIMAR
VII	2005	Viseu 12 a 15 de abril	Alimentos: tradição e inovação, saúde e segurança	Dulcineia Ferreira – Instituto Politécnico de Viseu
VIII	2007	Beja 4 a7 de março	Alimentos tradicionais, alimentos saudáveis e rastreabilidade	Silvina Ferro Palma – instituto Politécnico de Beja
IX	2009	Angra do Heroísmo 29 abril a 2 maio	Qualidade e a segurança alimentar	Célia C. G. Silva – Universidade dos Açores
X	2011	Braga 3 a 6 de julho	Cem Anos de Química em Portugal	João Paulo André – Universidade do Minho
XI	2012	Bragança 16 a 19 setembro	Qualidade dos alimentos: novos desafios	Joana Amaral – Instituto Politécnico de Bragança
XII	2014	Lisboa 10 a 12 de setembro	Composição Química, Estrutura e Funcionalidade: a ponte entre alimentos novos e tradicionais.	Isabel Sousa e Anabela Raymundo - ISA/ULisboa
XIII	2016	Porto 14 a 16 de setembro	Disponibilidade, valorização e inovação: uma abordagem multidimensional dos alimentos	Beatriz Oliveira, Victor Freitas e Ada Rocha – FFUP e FCNAUP
XIV	2018	Viana do Castelo 6 a 9 de novembro	Indústria, Ciência, Formação e Inovação	M. Rui Alves e Manuela Vaz Velho – Instituto Politécnico de Viana do Castelo
XV	2021	Madeira, Funchal 5 a 8 de setembro	Estratégias para a Excelência, Autenticidade, Segurança e Sustentabilidade Alimentar	José Câmara – Universidade da Madeira
XVI	2022	Castelo Branco 23 a 26 de outubro	Bio-sustentabilidade e Bio-segurança alimentar, Inovação e qualidade alimentar	Ofélia Anjos – Instituto Politécnico de Castelo Branco

Livro de Resumos

XV Encontro de Química dos Alimentos



Ficha Técnica

Título

Livro de Resumos do XVI Encontro de Química dos Alimentos - Bio-Sustentabilidade e Bio-Segurança Alimentar, Inovação e Qualidade Alimentar

Autores

Ofélia Anjos, Soraia I. Pedro, Carlos Antunes

Edição

Ofélia Anjos, Soraia I. Pedro, Natália Martins Roque, Carlos Antunes

Outros colaboradores:

Fátima Peres

Cecília Gouveia

Cláudia Adriana Fernandes Vitória

Ilustrações

Luísa Ferreira Nunes

Editor

Sociedade Portuguesa de Química

Esta publicação reúne os trabalhos apresentados no XVI Encontro de Química dos Alimentos: Bio-sustentabilidade e Bio-segurança alimentar, Inovação e qualidade alimentar, Castelo Branco 2022, e inclui ainda o programa científico do encontro.

As doutrinas expressas em cada um dos resumos são da inteira responsabilidade dos autores.

ISBN

978-989-8124-36-4

Data

Outubro de 2022

Evaluating phenolic compounds in ethanolic extracts of cherry pit

Yuliya Dulyanska[1], Maria João Lima[1], Paula M. R. Correia[1], Manuela Ferreira[3], Anabela Fragata[2], Ana Paula Cardoso[2], Maria João Barroca[4,5], Aida Moreira da Silva[4,5], Luísa Cruz-Lopes[1], Bruno Esteves[1], José Vicente Ferreira[1], Idalina Domingos[1], Raquel P. F. Guiné[1]

[1] *CERNAS-IPV, Instituto Politécnico de Viseu; ydulyanska@esav.ipv.pt; mjoaolima@esav.ipv.pt; paulacorreia@esav.ipv.pt; lvalente@estv.ipv.pt; bruno@estgv.ipv.pt; jvf@estgv.ipv.pt; ijd@estgv.ipv.pt; raquelguine@esav.ipv.pt;*
[2] *CI&DEI, Instituto Politécnico de Viseu; amcunha@sc.ipv.pt; afragata@estgl.ipv.pt; a.p.cardoso@esev.ipv.pt*
[3] *UICISA:E, Instituto Politécnico de Viseu; mmcferreira@gmail.com*
[4] *Centro de Química-Física Molecular, Universidade de Coimbra; mjbarroca@esac.pt*
[5] *ESAC, Instituto Politécnico de Coimbra; aidams@esac.pt*

The climatic conditions in Portugal favoured the adaptation of the cherry tree allowing its cultivation in several regions of the country. Studies made by the Portuguese Bureau of Statistics – INE [1], showed that the Portuguese sweet cherry production has an implemented area of 6,387 ha, producing 9,241 tons of this fruit. Its production extends mainly to two regions: the North (area of 3,099 ha and production of 6,586 tons) and the Centre (3,177 ha and 2,510 tons), while the rest of the country and islands accounts for only 1.6% of the cherry production. There are several varieties of cherry in Portugal, and the most important traditionally cultivated are: "Saco da Cova da Beira", "Saco do Douro", "Lisboeta", "São Julião", Big Burlat, Maring, Napoleon-big-foot and Big Windsor, being the first four varieties native from Portugal. Cova da Beira is the most important cherry production area in Portugal, either in terms of production volume, or also in area. Additionally, the evolution of technological indicators associated with culture reveals a high degree of specialization of the "new" farms, almost always associated with other fruit crops, which coexist in a very significant number of smaller farms, of a family type, that constitute the historical legacy of cherry production on the hillside north of the Serra da Gardunha. Sweet cherry seeds result from processing sweet cherry for sweets, juices and jams' production. Generally, seeds are considered a production waste, which gains a strong interest due to the environmental aspects related to waste disposal [2]. Additionally, it is well documented that production waste, such as peels, seeds, and pomace, contain high-value bioactive compounds [3]. Hence, the present work investigated the extraction of some bioactive compounds from cherry pits that originate from food manufacturing industries.

The waste management company Nutrofertil, located in Portugal, namely in the district of Viseu (Tondela), provided the Seeds of Sweet Cherry (SSC) for this study. The seeds were milled and dried for stability and then used for extraction with ethanolic solutions at different percentages (from 50 to 100% water v/v). Variable temperatures were also tested and the extracts were used for quantification of phenolic compounds through spectrophotometric techniques. The material was analysed to verify that it was exempt of hydrocyanic acid. Statistical techniques were used to treat the data: (a) Hierarchical cluster analysis using squared Euclidean distance and average linkage between groups method; (b) Principal component factor analysis with Varimax rotation.

The results indicated that extraction at 40 ºC with magnetic stirring and using aqueous solutions of ethanol (water:ethanol ratio = 80:20, % v/v) constitute a separate cluster. Also, extracts obtained with similar conditions but for the temperature of 35 ºC constitute another isolated cluster. Factor analysis revealed a grouping structure with four clearly distinct clusters (Figure 1). Group G1 accounts for the samples with water:ethanol 80:20 (% v/v) and a temperature of 35 ºC, corresponding to the extraction of higher amounts of anthocyanins. Group G3 includes the extractions with 100% water at 70 ºC (G3), with lowest contents of anthocyanins and flavonols. The remaining groups are divergent according to the values of total phenolic compounds. In group G4 are included samples in which were quantified high values for total phenolic compounds, flavonoids, proanthocyanidins, ortho-diphenols and phenolic acids, while G2 corresponds to samples with smaller amounts of those compounds. In conclusion, investigating the extraction potential of different conditions it was allowed to optimize the experimental conditions more favourable to maximize the recovery of certain bioactive compounds, which can have multiple applications as antioxidant substances after rigorous quality control regarding possible concentrations of hydrocyanic acid.

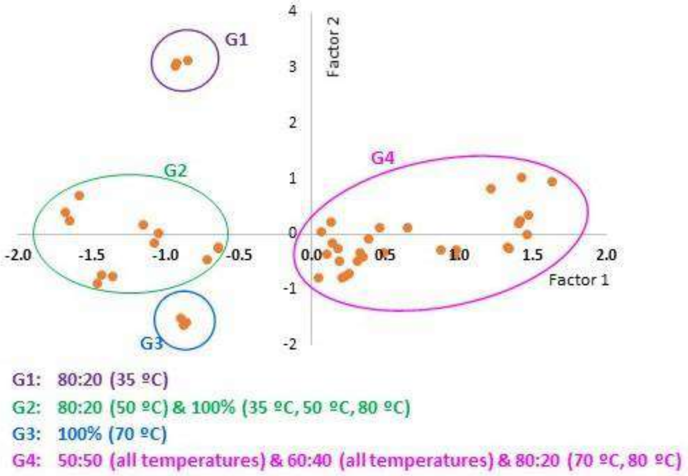


Figure 1: Results of factor analysis to the phenolic compounds extracted from cherry pits.

Acknowledgements: This research was developed in the ambit of project VALCER, with reference PROJ/IPV/ID&I/021.
Funding: This work was supported by the FCT—Foundation for Science and Technology, I.P. Furthermore, we would like to thank the CERNAS (UIDB/00681/2020), CI&DEI (UIDB/05507/2020) and UCISA:E (UIDB/00742/2020) Research Centres and the Polytechnic Institute of Viseu for their support.

References:

1. INE. *Estatísticas Agrícolas - 2020*. Instituto Nacional de Estatística - Statistics Portugal; 2021:27-28.

2. Tomsone L, Galoburda R, Kruma Z, Cinkmanis I. Characterization of dried horseradish leaves pomace: phenolic compounds profile and antioxidant capacity, content of organic acids, pigments and volatile compounds. *Eur Food Res Technol*. 2020;246(8):1647-1660. doi:10.1007/s00217-020-03521-z.

3. Dulyanska Y, Cruz-Lopes LP, Esteves B, et al. Extraction of Phenolic Compounds from Cherry Seeds: A Preliminary Study. *Agronomy*. 2022;12(5):1227. doi:10.3390/agronomy12051227.