[S&BE 30]

# Evaluation of the individual phenolic compounds of regional cultivars of pears (*Pyrus communis* L.) by Liquid Chromatography combined with High Resolution Mass Spectrometry

**João David Teixeira[1,2,3], Ana Rita Soares Mateus[1,2,4,5], Claudia Sánchez[6], Pier Parpot[3,7], Carina Almeida[1,8,9], Ana Sanches-Silva[1,2,4,10]**

[1]National Institute for Agrarian and Veterinary Research (INIAV), I.P., Rua dos Lágidos, Lugar da Madalena, Vila do Conde, Portugal,
[2]Center for Study in Animal Science (CECA), ICETA, University of Porto, Porto, Portugal
[3]University of Minho, Department of Chemistry, Braga, Portugal
[4]University of Coimbra, Faculty of Pharmacy, Polo III, Azinhaga de Stª Comba, Coimbra, Portugal
[5]REQUIMTE/LAVQ, R. D. Manuel II, Apartado 55142, 4501-401 Porto, Portugal
[6]National Institute for Agricultural and Veterinary Research (INIAV), I.P., Alcobaça, Portugal
[7]University of Minho, Center of Biological Chemistry, Braga, Portugal
[8]LEPABE – Laboratory for Process Engineering, Environment, Biotechnology and Energy, Faculty of Engineering, University of Porto, Rua Dr.Roberto Frias, 4200-465 Porto, Portugal
[9]AliCE – Associate Laboratory in Chemical Engineering, Faculty of Engineering, University of Porto, Rua Dr.Roberto Frias, 4200-465 Porto, Portugal
[10]Associate Laboratory for Animal and Veterinary Sciences (AI4AnimalS), 1300-477 Lisbon, Portugal

Pear (*Pyrus communis L.*) is a fruit of great interest because their consumption offers nutritional as well as medicinal advantages [1]. The most well-known and studied properties associated with pears are antioxidant and anti-inflammatory properties [2] – these are associated with the presence of phenolic compounds, mainly in the peels but also, in smaller amounts, in its mesocarp (pulp) [3].

In this work, an Ultra-High Performance Liquid Chromatography combined with Time-of-Flight Mass Spectrometry (UHPLC-ToF-MS) method was optimized and validated for the determination of individual phenolics in the pulp and by-products of fruits.

The main phenolic compounds found in the studied regional pear cultivars (6 cultivars from Alcobaça region) were catechin, epicatechin, caffeic acid, chlorogenic acid, and vanillic acid.

The pear by-products (peels and seeds) presented higher phenolic content than mesocarp, mainly peels samples. One example of this is the *Carapinheira Roxa* cultivar, wherein the peels had the highest concentration of chlorogenic acid (26.26 ± 0.65 µg/g) and lower levels were found in the seeds (3.11 ± 0.19 µg/g) and in the pulp (4.27 ± 0.03 µg/g).

Other very well recognized pear phenolics, were quantified in all the pear cultivars, at different levels. For example, in the peels portion, the level of epicatechin varied between 0.19 µg/g in the *Torres Novas* cultivar and 37.30 µg/g in the *Lambe-os-Dedos* cultivar. The studied regional pear cultivars, in particular their by-products, presented high levels of phenolic compounds, showing potential to be valorized.

**Acknowledgments**: This study was carried out in the frame of the clabel+ project: Innovative Natural, Nutritious and Consumer Oriented “Clean Label” Foods with the reference POCI-01-0247-FEDER-046080 financed by the Competitiveness and Internationalization Thematic Operational Programme (POCI), under the COMPETE2020, PORTUGAL2020 Partnership Agreement, through the co-financing of European Regional Development Fund (FEDER). The work was supported by UIDB/00211/2020 with funding from FCT/MCTES through national funds. J. D.T. would like to thank to clabel+ project for his fellowship (28/2021/BI). The authors thank Patricia Vicente for her support in the field work. C. Almeida also acknowledges the financial support by LA/P/0045/2020 (ALiCE), UIDB/00511/2020 and UIDP/00511/2020 (LEPABE), funded by national funds through FCT/MCTES (PIDDAC).

**References:**
[1] J. E. Vélez-Sánchez, H. E. Balaguera-López, and P. Rodríguez-Hernández, Journal of the Saudi Society of Agricultural Sciences, 21 (2022), 460
[2] J. Kolniak-Ostek and J. Oszmiański, International Journal of Mass Spectrometry, 392 (2015) 154
[3] J. Guan, J. He, C. Shen, L. Li, Y. Wang, and Y. Cheng in Processing and Impact on Active Components in Food, Elsevier, 2015, 139.