

Stems: A Sweet Cherry By-Product with High Potential [†]

Sílvia Afonso ¹, Ivo Vaz Oliveira ¹, Anne S. Meyer ², Alfredo Aires ¹, Maria José Saavedra ¹ and Berta Gonçalves ^{1,*}

¹ Centre for the Research and Technology of Agro-Environmental and Biological Sciences- CITAB, University of Trás-os-Montes e Alto Douro, UTAD, Quinta de Prados, 5000-801 Vila Real, Portugal; e-mail@e-mail.com

² Department of Biotechnology and Biomedicine, Technical University of Denmark, DTU Building 221, DK-2800 Kgs. Lyngby, Denmark; e-mail@e-mail.com

* Correspondence: e-mail@e-mail.com

[†] Presented at the title, place, and date.

Abstract: Sweet cherry is one of the most appreciated fruit by consumers in the temperate areas of Europe, due to its organoleptic characteristics, but also by the consumers' awareness of their health benefits. Worldwide sweet cherry production has been increasing in the last years (2010–2019, latest FAO available data) from 2 to 2.60 million tons, with Turkey, USA, Chile as the main producers accounting for about 50% of the total world production, and Chile, China and USA the main exporters. Portugal is also well-known producer of sweet cherries, with latest data referring 19563 tons of cherries annually, providing some of the first cherries of Europe. During sweet cherry processing, large amounts of by-products, are generated. There is no substantial use of this waste, which increase environmental and managements costs each year to deal with the excess of such residues. Although sweet cherry stems are widely recognized by traditional medicine, with several properties, namely as sedative, diuretic and anti-inflammatory, detailed and feasible information about their bioactive composition or biological value is still scarce. These by-products only recently received attention and this new interest is focused in finding ways to achieve their valorization. Thus, we conducted a study in which chemical composition, phenolic profile, antioxidant activity of stems of four sweet cherry cultivars (Early Bigi (grown under net cover (C) and without net cover (NC)), Burlat, Lapins, and Van) and antibacterial activities against important Gram negative and Gram positive bacterial human isolates, were examined. Extracts from stems of cv. Lapins presented high levels of total phenolics, flavonoids, ortho-diphenols and saponins. Regarding DPPH and FRAP methods, higher overall results were also recorded for cv. Lapins, while for β -carotene method, results were higher for cv. Van. Apart from cv. Early Bigi NC, major phenolic compound identified in stems were sakuranetin. In cv. Early Bigi NC the most abundant compound were ellagic acid. In all extracts, antioxidant activities showed a positive correlation with the increments in phenolic compounds. Antimicrobial activity assays showed that stem's extracts were capable of inhibiting the growth of Gram positive isolates. This new data is intended to provide new possibilities of valorization of these by-products and their valuable properties.

Citation: Afonso, S.; Oliveira, I.V.; Meyer, A.S.; Aires, A.; Saavedra, M.J.; Gonçalves, B. Stems: A Sweet Cherry By-Product with High Potential. *Proceedings* **2021**, *68*, x. <https://doi.org/10.3390/xxxxx>

Published: date

Publisher's Note: MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Keywords: *Prunus avium*; by-products; phenolic profile; antioxidant; antimicrobial



Copyright: © 2021 by the authors. Submitted for possible open access publication under the terms and conditions of the Creative Commons Attribution (CC BY) license (<http://creativecommons.org/licenses/by/4.0/>).