

Natural products application: Health,
Cosmetic and Food

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On-line edition

4-5 Feb 2021



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The Polytechnic Institute of Bragança and the Mountain Research Center are pleased to organize the Natural products application: Health, Cosmetic and Food online conference, which will take place on the 4th and 5th of February 2021.

This event intends to privilege the discussion and dissemination of works that involve research within the development and application of natural products in different field, such as health, cosmetics and food.



EXTRACTION OF CHLOROPHYLLS FROM NATURAL SOURCES

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The growing consumers' concern for possible long-term adverse effects of artificial molecules commonly used in food industry has led to an increased interest in natural products. At the same time, there is a demand for a more eco-sustainable use of natural matrices, which justifies the search for byproducts that have no other application to be explored in the development of novel food products [1,2]. In this context, the present study was designed to exploit natural pigments, more specifically chlorophylls, from bioresidues (aerial parts of carrot and tomato) for the development of food colorants. These are the most abundant pigments in plants and present, beyond their great coloring capacity, several bioactive properties, which corroborates the importance of their application in foodstuff. In this work, different extraction methodologies and techniques (maceration, ME, and ultrasound-assisted, USE) were applied to the lyophilized aerial parts of carrot and tomato to maximize the chlorophyll extraction yield. For the extraction, green solvents were prioritized, namely water, ethanol (90%), and hexane. The parameters affecting the pigments recovery were varied for each technique, namely the time, power, and solvent for USE, and the time and solvent for ME. The extractions were performed protecting the samples from light and the results were monitored through the implementation of a new chromatographic method, HPLC coupled to a diode array detector (DAD) and mass spectrometry (MS), to determine the concentration of chlorophylls and the best procedure to be performed. Both aerial parts presented chlorophylls and derivatives in significant concentrations and extraction yields up to 88% for the ethanolic extracts. The applied chromatographic method revealed to be appropriate for the analysis of this class of pigments, allowing a good peak resolution and separation, but also characteristic TIC spectrum for the tentative identification of the compounds. Therefore, the results of the present study can be explored for the development of chlorophyll-based colorants from these bioresidues, but also from similar byproducts.

References

- [1] L.A.V. Manoel et al., HU Revista, 45 (2019) 254.
- [2] N. Streit, et al., Ciencia y Tecnología, 8 (2015) 27.

Acknowledgments

To the Foundation for Science and Technology (FCT, Portugal) for financial support through national funds FCT/MCTES to CIMO (UIDB/00690/2020); National funding by FCT, P.I., through the individual scientific employment program-contract for C. Pereira, M.I. Dias, and L. Barros contracts and A.K. Molina PhD grant (2020.06231.BD). To FEDER-Interreg España-Portugal programme for financial support through the project 0377_Iberphenol_6_E and TRANScoLAB 0612_TRANS_CO_LAB_2_P; to the European Regional Development Fund (ERDF) through the Regional Operational Program North 2020, within the scope of Project Mobilizador Norte-01-0247-FEDER-024479: ValorNatural® and Project GreenHealth - Norte-01-0145-FEDER-000042.