OPTIMIZED EXTRACTION OF CHLOROPHYLLS FROM *SOLANUM LYCOPERSICUM* L. VAR. *CERASIFORME* BY-PRODUCTS

Centro de Investigação de Montanha

INSTITUTO POLITÉCNICO DE BRAGANÇA

UNIVERSIDADE DE VIGO

1st Research Meeting on Biochemistry

UEM Universidade Estadual de Maringá

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INTRODUCTION

The increasing worldwide consumption of cherry tomatoes (*Solanum lycopersicum* L. var. *cerasiforme*) is explained by the great acceptability by the consumer, along with the ease in its trade and distribution. Despite being a fruit that provides essential nutrients such as lycopene, vitamin C, and phenolic acids, its consumption is closely related to its sensory characteristics such as taste, color, and appearance. Nevertheless, along the production chain, some by-products are not used and are, therefore, discarded, generating large amounts of bio-residues. The use of such bio-residues, namely the aerial parts, as a source of valuable compounds that can find other applications in food industry as, for example, food colorants, is a growing tendency [1-3]. In this context, the following work aimed to explore the hydroethanolic extracts obtained from the aerial parts of cherry tomato **(Figure 1),** in terms of chlorophylls.

Figure1. Aerial parts of carrot and tomato (bioresidues).

METHODOLOGY

Two extraction methodologies were used, namely ultrasound assisted (USE) extraction for 15 minutes at 400 W and maceration assisted (EM) extraction for 120 minutes, both using 90% ethanol (v/v) as solvent shown by **Figure 2**. The chlorophyll pigments were identified and quantified through the implementation of a chromatographic method, HPLC coupled to a diode array detector (DAD) and mass spectrometry (MS).

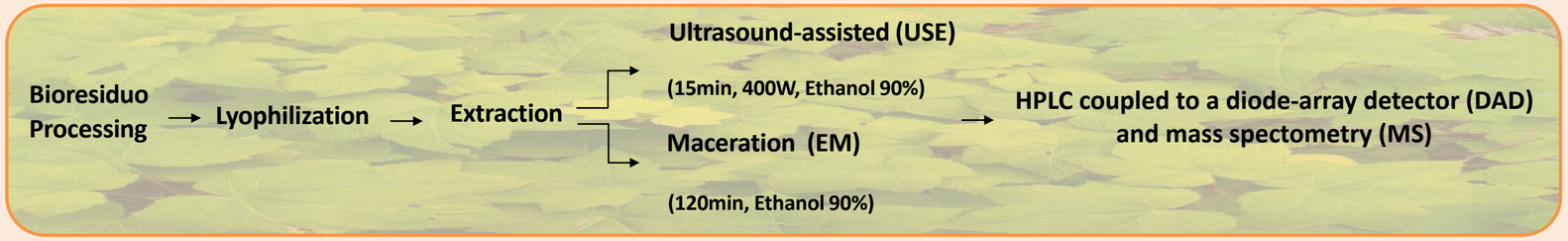

Figure2. Methodology for chlorophyll extraction.

RESULTS and CONCLUSION

Chlorophyll a, b, and their isomers (a' e b') were identified in both extracts, as well as direct derivatives of chlorophyll and phaeophytin a and a', compounds commonly found in fruits of cherry cultivars. Regarding ultrasound assisted extraction, the most expressive compounds found were chlorophyll b and its b' isomer. As for maceration assisted extraction, chlorophylls a and b were the most abundant compounds in the extract. These results demonstrate the great potential of using cherry tomato by-products as sources of natural pigments, presenting a basis for deeper investigations regarding the optimal extraction conditions of chlorophylls and their possible uses within several industrial sectors.

RECOMMENDATIONS

[1] C. Fernandes, J.E. Corá, L.T. Braz. alterações nas propriedades físicas de substratos para cultivo de tomate cereja, em função de sua reutilização; Hostalicias brasileiras, 24 (2006) 94-98.

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[3] S. S. Monteiro, S. S. Monteiro, E. A. da Silva, e L. P. Martins, "maturação fisiológica de tomate cereja", rebagro, vol. 8, nº 3 (2018) 05-09.

ACKNOWLEDGEMENTS

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 TRANSCoLAB 0612_TRANS_CO_LAB_2_P project; to the European Regional Development Fund (ERDF) through the Regional Operational Program North 2020, within the scope of Project Mobilizador Norte-01-0247-FEDER024479: ValorNatural®. To MICINN for the support of the Ramón&Cajal grant for M.A. Prieto (RYC-2017-22891) and to Xunta de Galicia for the the program EXCELENCIA-ED431F 2020/12.