# Natural products application: Health, Cosmetic and Food

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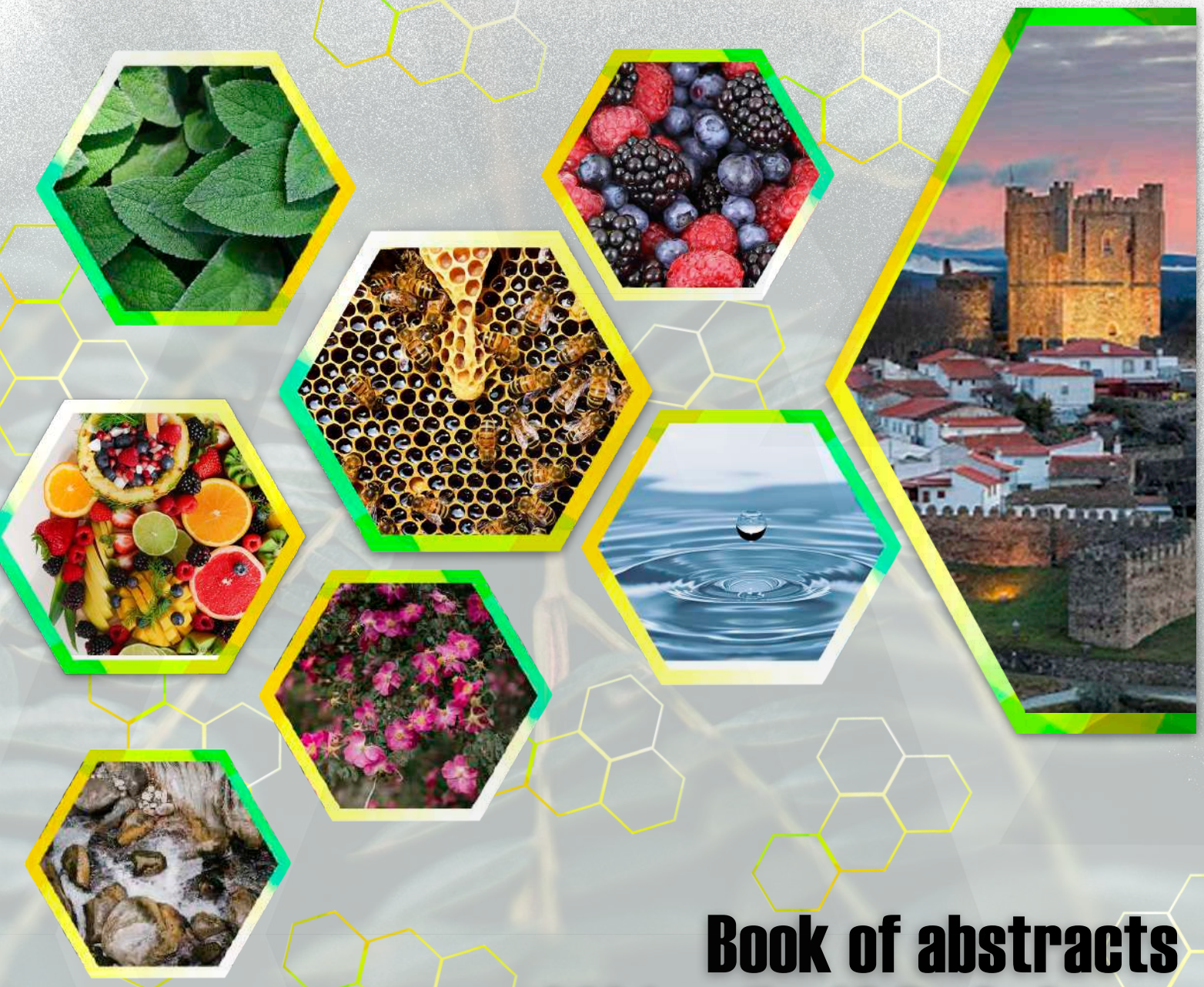

# Book of abstracts

## 1st International Online Conference

## 4th - 5th February 2021

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## Title

1st Natural products application: Health, Cosmetic and Food: book of abstracts


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# Afternoon - 4 February

## Food

## Oral Presentations (15:30 - 16:30)

Antón Soria López
Effect of pressurized liquid extraction (PLE) on the lipid composition of *Fucus vesiculosus*

Filipa Fernandes
Tools to develop dairy ingredients: bioactive and preservative purposes

Filipa Mandim
Phenolic composition and bioactive properties of cardoon bracts: influence of the growth cycle

Ingrida Kraujutienė
A new generation of foods for the prevention of diabetes

Jonata Massao Ueda
Natural food preservatives: application of rosemary, basil, and sage in yogurts, using sustainable, low cost, and efficient processes

Ricardo Miguel Moura Ferreira
The effect of high-pressure processing and thermal pasteurization on the microbial and physical-chemical properties of 3 varieties of *OFI*

## Pitch Presentations (16:40 - 17:00)

Andreia Quaresma
ITS2 metabarcoding: a promising approach for identification of botanical origin of bee-collected pollen

Bianca Rodrigues de Albuquerque
Flavonoid composition and in vitro anti-proliferative activity of the hydroethanolic extract of *Garcinia mangostana l.* pericarp.

Francesco Di Gioia
Tailoring food crops to address specific dietary needs: the case of microgreens

Isabel A.C. Ribeiro
Exploring cranberry extract chitosan films towards the improvement of antimicrobial food packaging

José Virgílio Santulhão Pinela
Table tomato leaves are a sustainable source of rutin and display antioxidant, antihemolytic and antimicrobial activity

Seymanur Ertosun
Nutritional, technological and sensory attributes of bread enriched with bee pollen and bee bread

TCF-05

# TABLE TOMATO LEAVES ARE A SUSTAINABLE SOURCE OF RUTIN AND DISPLAY ANTIOXIDANT, ANTIHEMOLYTIC AND ANTIMICROBIAL ACTIVITY

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Table tomato (*Solanum lycopersicum* L.) is highly consumed worldwide and its annual production generates a considerable amount of plant by-products [1]. Although tomatoes are well-known for their composition in nutrients and bioactive compounds [2,3], little information is available in literature regarding tomato leaves, probably because these by-products have no commercial value. Therefore, considering the enormous production of this biomass and the current trends of circularity and sustainable development [3], this study was carried out to evaluate the polyphenolic composition and bioactive properties of tomato leaves resulting from the regeneration of table tomato landraces conserved *ex-situ* in the Portuguese Genebank (BPGV), in Braga, Portugal. The tomato plant material resulting from pruning performed after the flowering season was lyophilized and ground to a fine powder, used to prepare hydroethanolic extracts [4]. These extracts were characterized for their composition in polyphenols (by HPLC-DAD-ESI/$MS^n$) and used to evaluate the antioxidant (by $DPPH^{\bullet}$ scavenging capacity and reduction power), antihemolytic (using sheep erythrocytes and AAPH as a free radical generator), and antimicrobial (tested against food-borne bacterial and fungal strains by the serial microdilution and *p*-iodonitrotetrazolium violet colorimetric methods) activities [4]. The chromatographic analysis allowed identifying phenolic acids and flavonoids, with prevalence of quercetin-3-*O*-rutinoside (rutin). The leaf extracts showed antioxidant activity, with $EC_{50}$ values lower than those previously reported for the respective tomato fruits, thus translating a higher activity [2]. The extracts were also effective in some extent in protecting the erythrocytes from the oxidative hemolysis caused the thermal decomposition of the free-radical initiator AAPH. Despite their low activity against the tested microfungi, some extracts had ability to inhibit and kill some bacteria (including *Salmonella typhimurium*, *Listeria monocytogenes*, *Bacillus cereus*, and *Enterobacter cloacae*) more effectively than the antibiotic ampicillin. It was concluded that table tomato crop by-products can be used to produce rutin-rich extracts with antioxidant and antibacterial activities for possible use in the agri-food sector as natural preservatives.

**References**

[1] EC, The tomato market in the EU: Vol. 1: Production, areas and yields. FWG - Forecast Working Group for Tomatoes, 2019.
[2] J. Pinela, C. Montoya, A.M. Carvalho, et al., Food Res Int, 125 (2019) 108545.
[3] J. Pinela, M.A. Prieto, M.F. Barreiro, et al., Innov Food Sci Emerg Technol, 41 (2017) 160.
[4] M. Añibarro-Ortega, J. Pinela, A. Ćirić, et al., Food Bioprod Process, 124 (2020) 307.

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