# Natural products application: Health, Cosmetic and Food

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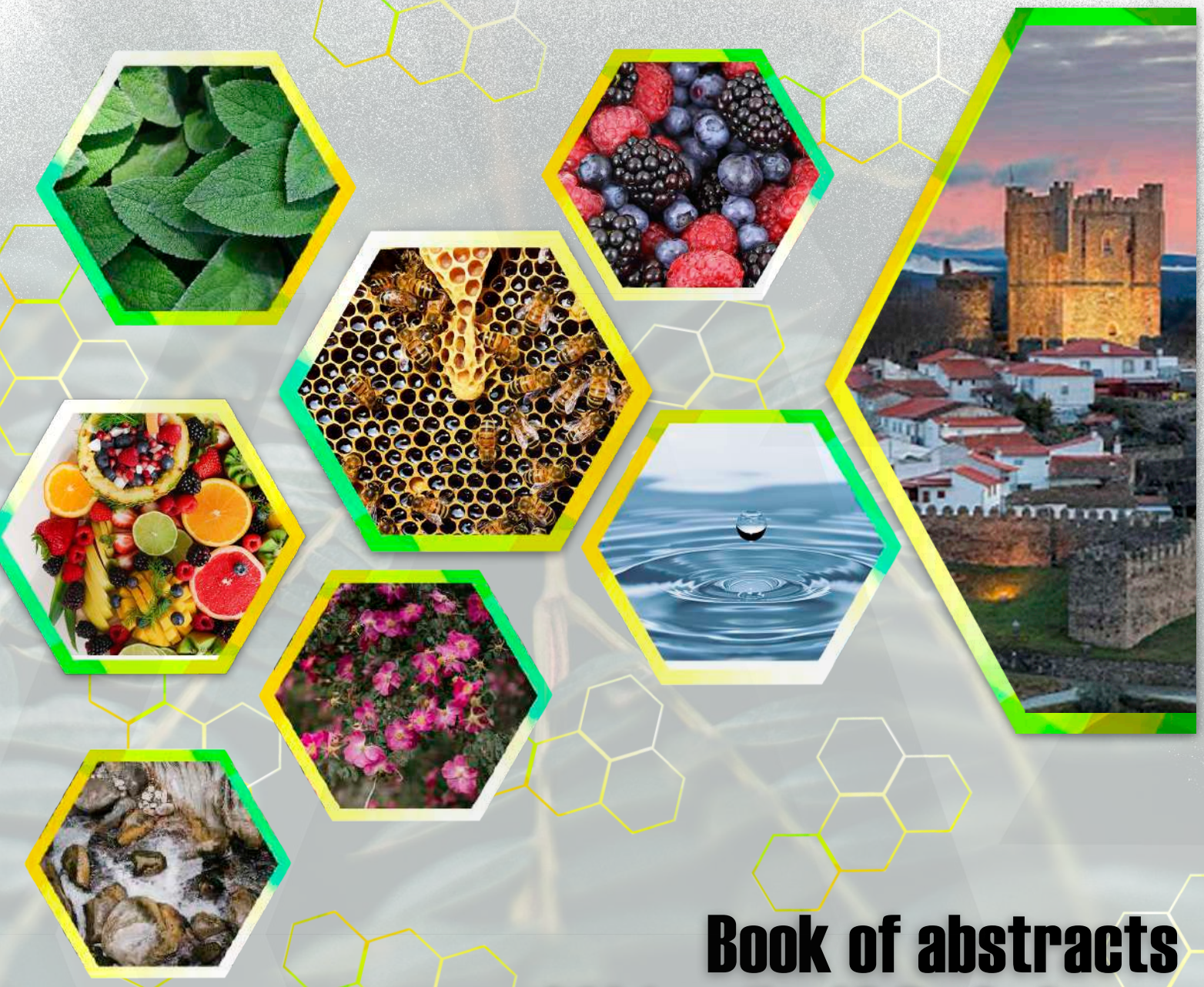

# Book of abstracts

## 1st International Online Conference

## 4th - 5th February 2021

ipb INSTITUTO POLITÉCNICO DE BRAGANÇA

CIMO Centro de Investigação de Montanha

montanhas de investigação

AQUA VALOR

## Title

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


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## Suport

Eletronic

## Format

PDF

## Edition

Instituto Politécnico de Bragança (IPB)

http://www.ipb.pt

5300-253 Bragança, Portugal

Tel. (+351) 273 303 382

## ISBN

978-972-745-286-6

## URL

http://hdl.handle.net/10198/22068


1° Online Congress on Natural products application: Health, Cosmetic and Food

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# Poster presentation

PCH-10

# PHYTOCHEMICAL CHARACTERIZATION AND EVALUATION OF THE BIOACTIVE PROPERTIES OF TISANES PREPARED FROM AROMATIC AND MEDICINAL PLANTS

Beatriz Helena Paschoalinotto[1,2], Maria Inês Dias[1,*], José Pinela[1], Tânia C. S. P. Pires[1], Maria José Alves[1], Andrei Mocan[3], Ricardo C. Calhelha[1], Rafael P. Ineu[2], Isabel C.F.R. Ferreira[1], Lillian Barros[1]

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The antioxidant, antidiabetic and anti-inflammatory properties of different species of Medicinal and Aromatic plants (MAP) have been extensively described, being its most common form of consumption the tisane, or popularly known as herbal teas or infusions [1-3]. The present study aimed to characterize the phenolic compounds by HPLC-DAD/ESI-MS of five tisanes prepared from mixtures of MAP, as also study the bioactive properties, namely antioxidant, antimicrobial, anti-inflammatory, cytotoxic, anti-tyrosinase, and anti-diabetic activities. It was also proposed to characterize its composition in organic acids and tocopherols by HPLC coupled to a DAD and fluorescence detector, respectively. Thus, the tisane composed by lemon thyme, Shrubby St. John's Wort, cloves and cinnamon, was the most promising mixture, presenting the lowest values for the lipid peroxidation inhibition, anti-inflammatory, cytotoxicity against breast adenocarcinoma tumor cell line and anti-diabetic activity. In addition, it showed the highest concentration of tocopherols (γ-isoform), phenolic acids (caffeoylquinic acids derivatives) and flavan-3-ols (catechin derivatives). For the anti-hemolytic, antimicrobial (Gram-negative bacteria), and cytotoxic (cell lines HepG2, NCI H460 and HeLa) activities, the tisanes containing also lemon thyme as the major component, were highlighted as the best mixtures. Rosmarinic acid and its derivatives were the most abundant phenolic compounds in all tisanes, followed by glycosylated flavanols/flavones. These results suggest that tisanes are promising sources of bioactive compounds with high added value that can be applied in several industrial fields, such as the food industry.

**References**

[1] P. Konieczynski, M. Wesolowski, I. Radecka, e P. Rafalski, "Bioavailable inorganic forms of essential elements in medicinal plants from Northern Poland", *Chem. Speciat. Bioavailab.*, vol. 23, nº 2, p. 61–70, 2011.
[2] R. F. Milani, M. A. Morgano, E. S. Saron, F. F. Silva, e S. Cadore, "Evaluation of direct analysis for trace elements in tea and herbal beverages by ICP-MS", *J. Braz. Chem. Soc.*, vol. 26, nº 6, p. 1211–1217, 2015.
[3] S. Nookabkaew, N. Rangkadilok, e J. Satayavivad, "Determination of trace elements in herbal tea products and their infusions consumed in Thailand", *J. Agric. Food Chem.*, vol. 54, nº 18, p. 6939–6944, 2006.

**Acknowledgments**

The authors are grateful 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 and institutional scientific employment program-contract for the J. Pinela (CEECIND/01011/2018), M.I. Dias and L. Barros contracts; to FEDER-Interreg España-Portugal program through the project 0377_Iberphenol_6_E and and TRANSCoLAB 0612_TRANS_CO_LAB_2_P, and also to the Ministry of Education, Science and Technological Development of Republic of Serbia (451-03-68/2020-14/200007).