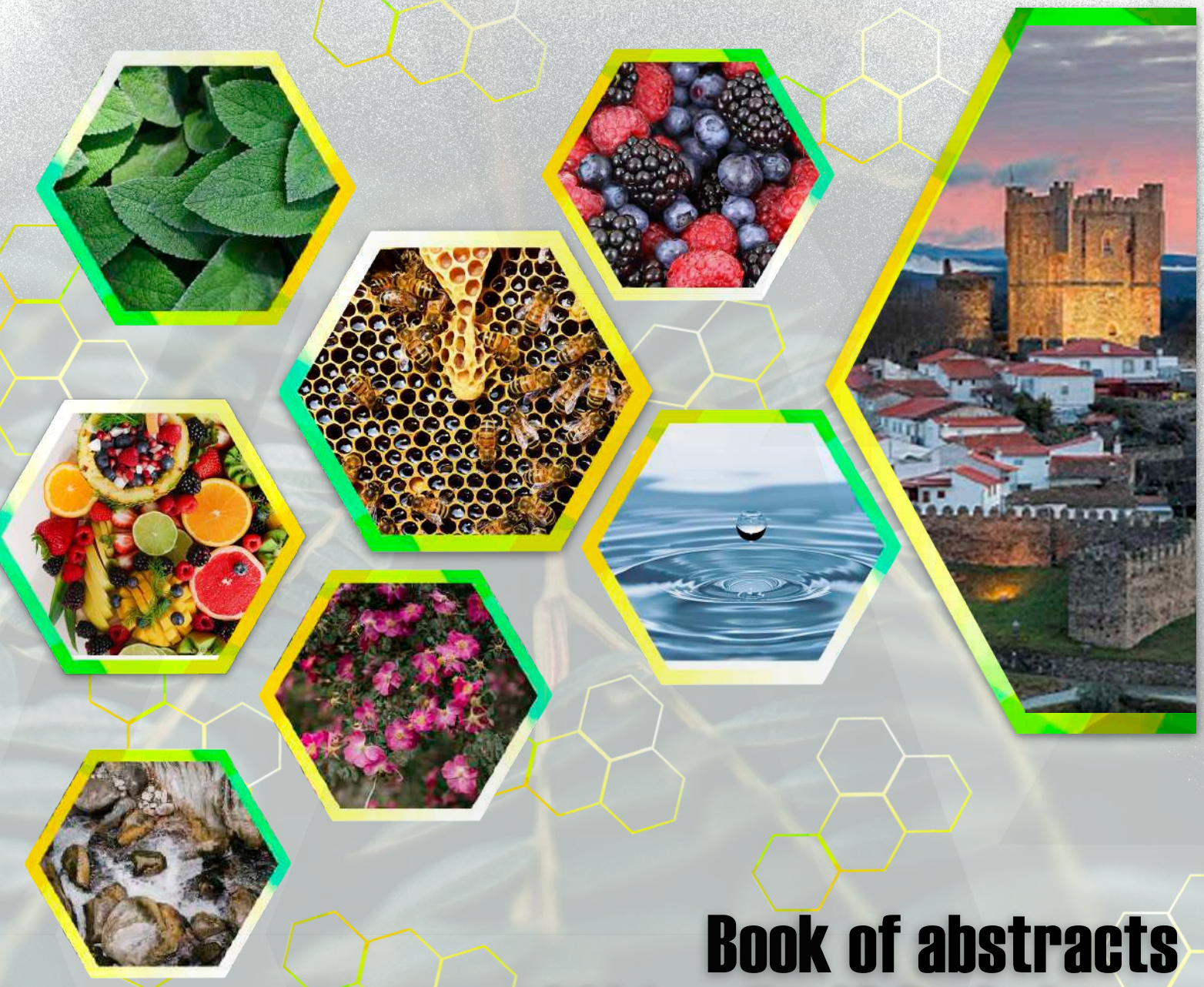
Natural products application: Health, Cosmetic and Food

Provided by nature, adapted scientifically for industry



Book of abstracts

1st International Online Conference

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CIMO Centro de Investigação de Montanha

montanhas de investigação

AQUA VALOR

Title

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

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About

The Mountain Research Center is one of the 5 research centers within the Polytechnic Institute of Bragança and is an RD unit of excellence. CIMO conducts research on the Mediterranean mountain systems following an inter-disciplinary strategy that goes from Nature to Products.

In all these years, we have had the commitment of disseminating science around the world, creating solid and robust bonds and partnerships with both, academia and industry, and we are always looking for more challenging collaborations.

In this sense, the mountain research center gathers different ways to keep evolving in our main mission of science dissemination, especially now during this difficult pandemic situation, in which science dissemination has been extremely affected.

Therefore, one of our responses was the creation of the first edition of the Natural Product Applications On-line Congress, which consists in the dissemination of research using natural products applied in 3 different areas: cosmetic, food, and health.

Thanks to all of you in less than a month the congress reached more than 483 registration from universities and important companies from different parts of the world, such as Algeria, Argentina, Brazil, Colombia, France, Greece, Italy, Mexico, Netherlands, Poland, Russia, Serbia, Slovenia, Spain, Ukraine, and USA.

The NPA congress received and processed more than 211 communications, from which the scientific committee has selected the most appropriate for each type of communication, considering the limited time we have for this conference.

All the submitted works were divided into three main categories, Oral, Pitch, and Poster communications, which will join 9 Keynote lectures and one invited oral communication, to which, we would also like to thank for their availability and for accepting this invitation.

We could not thank you more for your participation, and we hope to see you next year on the second edition of the Natural Product Applications Congress.

NPA Team.

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ANTIOXIDANT ACTIVITY AND GC-MS CHARACTERIZATION OF *JUNIPERUS COMMUNIS* L. AND *CISTUS LADANIFER* L. ESSENTIAL OILS

Virginie Xavier,[1,2] Sandrina Heleno,[1] Miguel A. Prieto[2], Joana Amaral[1], Irene Mediavilla Ruiz[3], Luis Saul Esteban Pascual[3], Isabel C.F.R. Ferreira[1], Lillian Barros,[1*]

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Juniperus communis L. and *Cistus ladanifer* L. are two abundant shrubs in the mountain areas of the Mediterranean basin, particularly in the Iberian Peninsula. Both species are known for their valuable essential oil that can be used in cosmetic, food and pharmaceutical industries for their bioactive properties [1]. Within the scope of the European Project "BeonNat", that aims at developing innovative and bio-based products using the biomass of trees and shrubs growing on marginal and underutilised lands as feedstock for the bio-based industry, these two species were selected for evaluation. In this work, the biomass of the two species (branches milled to <20mm particle size) grown in Spain was submitted to steam distillation. The extracted essential oils (EO) were characterized regarding their chemical composition by gas chromatography coupled with mass spectrometry (GC-MS) and their antioxidant activity by the ferric reducing power assay.

An extraction yield of 0.50% and 0.08% (dry basis) was obtained for *J. communis* and *C. ladanifer* biomasses, respectively. The GC-MS analysis enabled the identification of 98.1% of compounds in *J. communis* EO, corresponding to a total of 63 identified compounds, with α-pinene being the major compound (32.3%), followed by limonene (15.8%), sabinene (7.6%), germacrene B (4.9%), cis-thujopsene (4.6%), β-myrcene (3.7%) and β-caryophyllene (3.6%). In general, the chemical composition was in good agreement with that of juniper berries essential oil defined in the European Pharmacopoeia and the ISO 8897 standard, with the exception of limonene (15.8%) that was slightly higher than the defined range (Eur. Ph from 2-12% and ISO standard from 2-8%). For *C. ladanifer* essential oil, a total of 61 compounds were identified corresponding to 92.8% of total compounds, with viridiflorol being the major compound (20.7%), followed by α-pinene (19.8%), ledol (8.1%), camphene (7.2%) and bornyl acetate (5.6%). This result is in good agreement with previous works that also report the sesquiterpene alcohol viridiflorol as the major compound in the EO obtained from *C. ladanifer* leaves and small branches [2]. Regarding the antioxidant activity, both oils showed promising results in the reducing power assay, presenting an EC_{50} value of 1.35 ± 0.19 mg/mL and 1.30 ± 0.07 mg/mL for *J. communis* and *C. ladanifer*, respectively.

References

[1] Saha, A., & Basak, B. B. (2020). Scope of value addition and utilization of residual biomass from medicinal and aromatic plants. Industrial Crops and Products, 145, 11197.
[2] Gomes, P.B., Mata, V.G., & Rodrigues, A.E. (2004). Characterization of the Portuguese-grown *Cistus ladanifer* essential oil. Journal of Essential Oil Research, 17, 160.

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