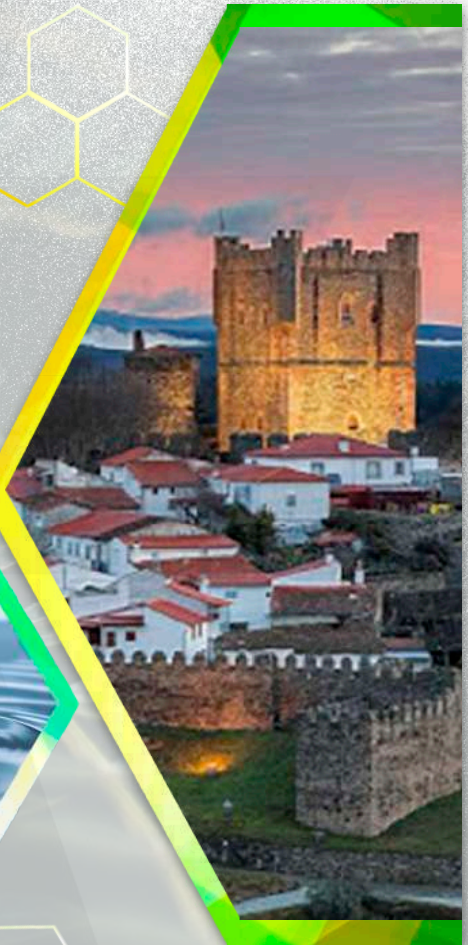




Natural products application: Health, Cosmetic and Food

Provided by nature, adapted scientifically for industry



Book of abstracts
1st International Online Conference
4th - 5th February 2021

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

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

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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 interdisciplinary 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 Online 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.

OCF-03

PHENOLIC COMPOSITION AND BIOACTIVE PROPERTIES OF CARDOON BRACTS: INFLUENCE OF THE GROWTH CYCLE

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Cynara cardunculus L. (cardoon) is a typical Mediterranean species that comprises the ancestor wild cardoon (var. *sylvestris*), the cultivated leafy cardoon (var. *altilis*) and globe artichoke (var. *scolymus*). It can be found worldwide due to its high adaptability to diverse climate conditions (e.g., resistance to extreme temperatures, water stress, and soils with variable pH) [1,2]. It is also considered a multipurpose crop due to its nutritional, pharmacological and industrial applications [2]. Due to the increase of its commercial and economic value, this study aimed to evaluate the polyphenolic composition and bioactive potential of cardoon bracts in relation to plant growth cycle. Cardoon bracts were collected in central Greece at eight different maturation stages (samples C1 – lower maturity to C8 – higher maturity). The phenolic profile was determined by HPLC-DAD-ESI/MS. The antioxidant activity was measured through two cell-based assays: TBARS (thiobarbituric acid reactive substances formation inhibition) and OxHLIA (oxidative hemolysis inhibition). Cytotoxic effects were screened against four human tumor cell lines and hepatotoxicity against a non-tumor cell line (PLP2) by the sulforhodamine B assay. The anti-inflammatory potential was tested through the inhibition of NO production by a murine macrophage cell line (RAW 264.7). Finally, the antibacterial and antifungal activities were evaluated by the broth microdilution method. Twelve phenolic compounds were tentatively identified in the cardoon bract extracts and quantified in higher amounts in immature samples. Immature bracts (C1) also revealed the highest cytotoxic (GI_{50} of 30 – 79 $\mu\text{g/mL}$) and anti-inflammatory (IC_{50} = 72 $\mu\text{g/mL}$) activities, while they presented the highest capacity to efficiently inhibit the formation of TBARS (IC_{50} = 26.8 $\mu\text{g/mL}$). In contrast, the extract with the higher maturity grade (C7) revealed superior efficacy against oxidative hemolysis (IC_{50} of 38 and 75 $\mu\text{g/mL}$ at $\Delta t=60$ min and 120 min, respectively). The highest antibacterial and antifungal activities were attributed to samples C1 and C6 and samples C2 and C4, respectively. The results obtained in this work could be helpful to choose the best harvesting time of cardoon bracts, allowing obtaining a greater variety of phenolic compounds, and consequently, a higher bioactive potential, and ultimately the most appropriate use of their constituents. Nevertheless, further studies are needed to better understand the compounds responsible for the observed activities, as well as to reveal the mechanisms involved in these activities.

References

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