



# 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.

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## PCF-45

## PRODUCTION AND FERTILIZATION SYSTEM AFFECTS THE NUTRITIONAL, CHEMICAL, AND BIOACTIVE PROPERTIES OF SMALL RED FRUITS

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Small red fruits, such as blueberries (*Vaccinium corymbosum* L.) and currants (*Ribes rubrum* L.), are considered as emerging crops in Portugal, with a high growth potential. Although the consumption of these fruits in Portugal is still not very significant, there has been a reasonable increase, compared to the last century, with the growing interest of consumers in functional foods. In this sense, there is an increasing concern for production in more sustainable ways, such as organic and integrated production, replacing the conventional agriculture. This kind of production can enhance the quality of the fruits, rich in added-value antioxidant compounds, allowing to meet the most demanding consumers' expectations [1]. This study

aimed to analyze and compare the nutritional value (AOAC), the chemical composition (fatty acids (GC FID), free sugars (HPLC-RI), organic acids (UFLC-PDA), tocopherols (HPLC-fluorescence), and phenolic compounds (HPLC-DAD/ESI-MS)), and the antioxidant properties (TBARS and OxHLIA assays) of blueberries and currants subjected to different types of production (conventional and applying a biological fertilizer, *Ecoser*), providing information that allows a more conscious choice.

The method of production was found to influence not only the nutritional parameters, but also the composition of the fruits in free sugars, fatty acids, tocopherols, organic acids, and phenolic compounds. Thus, blueberries grown in a conventional manner revealed higher levels of carbohydrates and energy, fructose and glucose, saturated fatty acids, quinic acid, and phenolic compounds. In turn, blueberries fertilized with *Ecoser* revealed higher concentrations of  $\gamma$ - and  $\delta$ -tocopherol, monounsaturated and polyunsaturated fatty acids, oxalic acid, quinic acid, and malic acid. Regarding currants, higher levels of carbohydrates and energy, sucrose, polyunsaturated fatty acids, and anthocyanins were found in fruits grown in conventional agriculture. On the other hand, the currants cultivated in biological mode showed higher concentrations of lipids, fructose, glucose, ascorbic acid, saturated and monounsaturated fatty acids, phenolic acids, and flavonoids. These variations were also reflected in the bioactivity of the fruits in terms of inhibition of lipid peroxidation, enhanced in the currants produced in biological way and in the blueberries produced in conventional way, and in the inhibition of oxidative hemolysis, improved in the currants and blueberries cultivated in biological way. The results obtained in the present study may serve as a basis for the definition of production parameters that best fit the culture of each fruit.

### References

[1] Z. N. Andrianjaka-Camps et al., Acta Horticulturae, 1117 (2016) 221.

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