Abstracts

FOR

5th International Symposium on

Phytochemicals in Medicine and Food

(5-ISPMF)

AUGUST 25 – SEPTEMBER 01 2021, NANCHANG, CHINA

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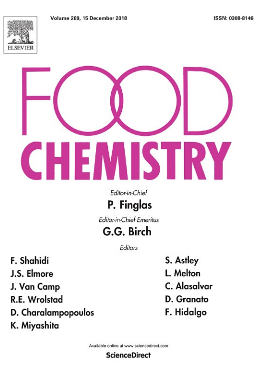

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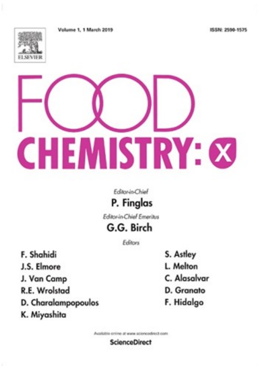

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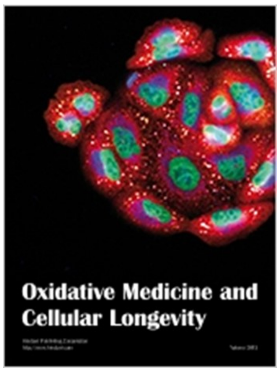

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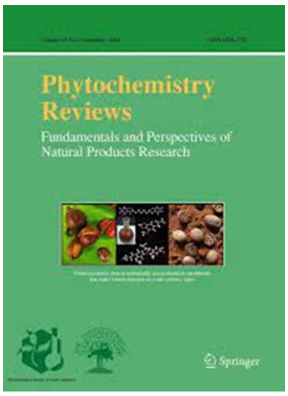

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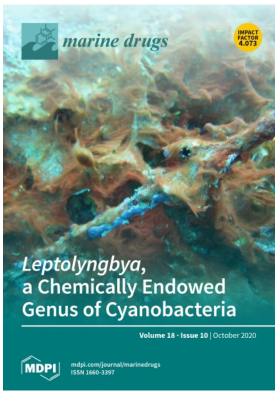

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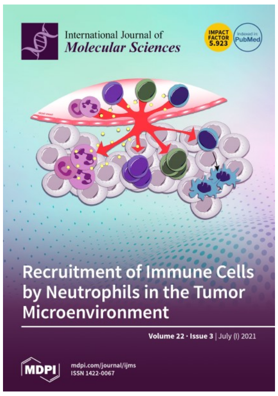

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Welcome Address

It is our great pleasure to welcome you to the 5th International Symposium on Phytochemicals in Medicine and Food (5-ISPMF), which is organized by the International Association of Dietetic Nutrition and Safety (IADNS), Phytochemical Society of Europe (PSE), Physiological Society of Japan, and Phytochemical Society of Asia (PSA). 5-ISPMF is jointly organized by Northwest University and Shaanxi Normal University. Over 800 scientists from 66 counties have registered to attend this conference. More than 400 scienitists 5-ISPMF also has obtained the supports form several international journals including Food Chemistry Marine Drugs, International Journal of Molecular Sciences, Food Chemistry: X, Oxidative Medicine and Cellular Longevity, Phytochemsitry Reviews, and so on. The international organizing committee and scientific committee board of 5-ISPMF assembled an exciting and diverse program, featuring 16 plenary lectures, 82 invited lectures, 142 oral presentation, a graduate student forum consisting of 70 short lecture, and more than 90 posters, which dedicate to creating a stage for exchanging the update research results in the phytochemicals for food and human health.

Prof. Shaoping Nie
Nanchang University, China
Executive Chairman

Jesus Simal-Gandara
University of Vigo, Spain
Co-Chairman

PP95: Effect of plant biostimulants on nutritional and chemical profiles of *Corylus avellana* L. (hazelnut) and potential application in functional foods

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The interest in the functional characteristics of nuts has been increasing due to their high content in bioactive constituents. Hazelnut (*Corylus avellana* L.) is the most important cultivated species in the *Corylus* genus (Betulaceae), and it is widely spread from the Himalayas to the far north of Canada[1]. The inclusion of nuts in the human diet can bring benefits that are partially related to the high percentage of monounsaturated fatty acids (MUFA), particularly oleic acid, and polyunsaturated fatty acids (PUFA), particularly linoleic acid, tocopherols (for example, α-tocopherol), and phytosterols (for instance, β-sitosterol)[2–4]. With the increase in food production, there is an orientation towards more sustainable agriculture, free of pesticides and fertilizers harmful to the environment. Plant biostimulants, a class of bio-based agriculture products designed to improve crop development, represent a feasible alternative to chemical fertilizers or, at least, an effective way of reducing the applied quantities. In the present work, different types of plant biostimulants compatible with organic farming (NPK, Fitoalgas Green® and Sprint Plus®) were tested in one of the most popular nut products worldwide: hazelnut. Furthermore, the samples were tested for nutritional parameters, fatty acids profiles and tocopherols contents.

The nutritional evaluation of hazelnuts showed that this species is mainly composed of fat (around 55% on a fresh weight basis). The highest fat content was detected in the control line (samples grown in soils without any biostimulant), with no significant differences in result of the type of soil supplementation. Protein levels were also high (16.8 g/100 g fw), particularly in hazelnuts treated with NPK (12% higher than the control), but all plant biostimulants (except phytoalgae) induced a positive effect in this macronutrient. Ash and water with the minor components showed minimal variations. The maximal caloric value (675 kcal/100 g fw) was obtained in the control line. Regarding soluble sugars, only sucrose was identified with an average value of 16g /100g fw.

Oleic acid (C18:1n9c) was the predominant fatty acid, and a noticeable decrease was observed in hazelnut, independently of the plant biostimulant, compared with the control (76%). Linoleic acid (C18:2n6c), contrarily to oleic acid, showed a significant increase in hazelnut samples grown in soils treated with plant biostimulants, reaching the maximum value when using NPK (15.1%). Palmitic acid, likewise, was affected in hazelnut samples, reaching the highest percentage with Sprint Plus (9.6%). A very similar result was observed for stearic acid (C18:0). Other fatty acids were detected in trace percentages (total sum less than 2%): myristic acid (C14:0), palmitoleic acid (C16:1), marginal acid (C17:0), α-linolenic (C18:3n3), eicosanoic acid (C20:0) and eicosenoic acid (C20:1).

Overall, the concentration of tocopherols was elevated: average values of 25 mg/100 g fw. The most notorious effects were obtained with NPK+phytoalgae, characterized by an increase of almost 18% in tocopherols levels (23 to 28 mg/100 g fw). In comparison, treatment with NPK alone induced a 15.1% higher percentage of linoleic acid. The obtained values were lower than those reported in different hazelnut varieties[5], which might be related to genetic factors (different cultivars), climatic variation[6,7], soil type[8], or analytical methodology[9].

In general, the tested plant biostimulants induced increased levels of important bioactive compounds, particularly in what concerns linoleic acid (mainly using NPK) and tocopherols levels (with best results using NPK + phytoalgae) in hazelnuts. These results can be important to select the best plant biostimulant to be applied and, thus, enable the increase in the amount of a specific bioactive compound, interesting for a potential application for functional foods.