



BOOK OF ABSTRACTS

XXI EUROFOODCHEM

22-24 November 2021

On-line conference



TITLE

Book of Abstracts of the XXI EuroFoodChem Congress

EDITORS

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EDITION

Sociedade Portuguesa de Química
Av. Da República, 45 – 3º Esq
1050-187 Lisboa – Portugal

DATE

November 2021

ISBN

ISBN 978-989-8124-34-0



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Drying of Halophyte Plants: Effect on the Antioxidant Activity

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Salicornia and Sarcocornia belong to the same family and have similar morphological and organoleptic properties. Because of their composition, they have some compounds with antioxidant activity beneficial for consumers' health [1]. The objective of this work was to evaluate the antioxidant activity extracts obtained from the plants in the fresh state and after being dried. Their extracts may represent a valuable source for developing novel food products (antioxidant-enriched foods), and/or table salt substitutes that satisfy the desires of consumers in terms of health benefits and sensorial acceptance.

The plants (*Salicornia macrostachya* Moric. and *Sarcocornia perennis*) were collected from Portuguese salt pans, in the central region of Portugal and the aerial parts were used as raw material. The drying of plants was performed in a pilot tray drier at 40 °C and air velocity of 1.5 ms⁻¹, for approximately three days. The initial moisture content was 92.30% and 84.24%, respectively, for *Salicornia* and *Sarcocornia*. The drying was carried out until reaching a final moisture content of 5%. The antioxidant activity was measured with DPPH method. Regarding the DPPH method, the results showed that the incubation time of 15 minutes is enough to measure the DPPH scavenging activity in halophyte extracts in the tested range of extract concentrations (Figure 1). However, the time defined to measure the DPPH scavenging activity was fixed at 30 minutes, since this was the common time in different laboratorial protocols.

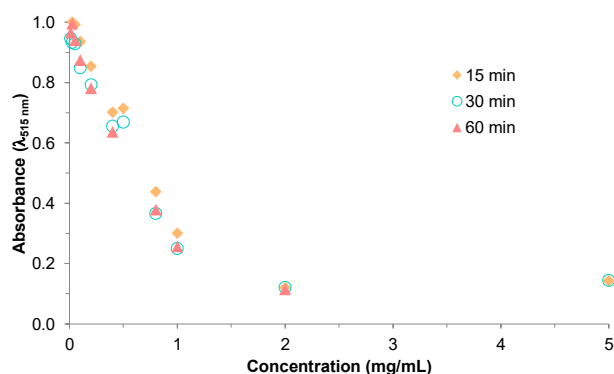


Fig.1. Scavenging of DPPH radical for various concentrations of dried *Sarcocornia perennis* extracts.

For *Salicornia*, the values of inhibition IC₅₀ were 1.09 and 1.12 mg/mL for the fresh and dried samples, respectively. For *Sarcocornia*, the values of IC₅₀ were 1.42 and 1.02 mg/mL for the fresh and dried samples, respectively. The results showed that the convective air-drying process at 40 °C is adequate to improve the shelf life of the two halophyte plants, since the antioxidant activity was maintained or even improved as compared with the fresh samples. This might be due to a response of the plant to the stress induced by the heat and humidity conditions in the drying chamber. In this way, it was concluded that both studied halophyte plants constitute a valuable source of natural antioxidants when they are consumed as foods either in the fresh or dried states. Additionally, their extracts may represent a valuable source for developing novel antioxidant-enriched food products aimed to meet the desires of consumers who seek for health-beneficial foods.

Acknowledgments: Financial support is acknowledged from the Portuguese Foundation for Science and Technology (UID/MULTI/00070/2020 and UIDB/00681/2020), Project ReNATURE—Valorization of the Natural Endogenous Resources of the Centro Region and from the European Regional Development Fund, through Portugal 2020—POCI-01-0145- FEDER-029305, IDEAS4life—Novos IngreDiEntes Alimentares de Plantas Marítimas

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