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POSTERS

Food composition and Authenticity

Bioactive and nutritional characterization of stinging nettle (*Urtica dioica* L.) harvested in Portugal

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Stinging nettle (*Urtica dioica* L.) is an edible wild plant known since ancient times for its dietary and therapeutic benefits. Despite being frequently perceived as being a weed, its use as human food has a long tradition since it was part of the ancient Greek and Roman cuisines and latter it was used as a traditional food by the native American Indians [1]. In Europe, stinging nettle has been consumed as food mainly in periods of famine and scarcity, such as wars. The leaves of this plant can be used in the confection of soups and other dishes such as omelettes, risottos, puree, tarts and consumed as cooked vegetable [2]. Although in the last decades the use of stinging nettle in gastronomy has fallen into disuse, as happen with other wild edible plants, thus it is still traditionally consumed in several regions of the world, such as the Mediterranean region, as part of a cultural and gastronomic heritage. Therefore, this study aimed to perform the nutritional, chemical and bioactive characterization of the leaves of different samples of stinging nettles harvested in Portugal.

Fresh plant specimens were collected in the wild in the beginning of March 2017, from two different regions of Portugal, Viseu (40° 39′ 39″ N, 7° 54′ 34″ E) and Vila Real (41° 17′ 45″ N, 7° 44′ 46″). Another sample was collected from the same place in the region of Viseu, three months latter, in June 2017. The samples were evaluated regarding their nutritional composition including moisture, fat, proteins and ash, according to AOAC official procedures, and carbohydrates were determined by difference. Fatty acids were determined by gas chromatography coupled to a flame ionization detector (GC-FID) and phenolic compounds by High Performance Liquid Chromatography coupled to a diode-array and mass spectrometry detector using the electrospray ionization interface (HPLC-DAD-ESI/MSn). The antioxidant activity was evaluated by means of three different *in vitro* assays: DPPH (2,2-diphenyl-1-picrylhydrazyl) radical scavenging activity, reducing power and inhibition of β-carotene bleaching. The antimicrobial susceptibility assay was performed using the Kirby-Bauer disc diffusion method against 4 Gram-positive bacteria (*Bacillus cereus*, *Staphylococcus aureus*, *Enterococcus faecalis*, *Bacillus subtilis*) and 4 Gram-negative bacteria (*Escherichia coli*, *Klebsiella pneumoniae*, *Proteus mirabilis*, *Pseudomonas aeruginosa*).

The leaves of stinging nettle samples presented a high percentage of moisture (78.5-83.7 g/100 g fresh leaves) with carbohydrates being the major macronutrient (47.5-50.0 g/100 g, dry basis), while fat was present in very low amounts (3.3-4.0 g/100g, dry basis). A total of 21 fatty acids were identified in the lipid fraction, with α-linolenic acid being the predominant one (41.9-51.3%). The qualitative profile among the 3 samples was identical, although quantitative differences were observed. Regarding phenolic compounds' composition, a total of 16 compounds, including phenolic acids and flavonoids, were identified and quantified, with only 5 being present simultaneously in the 3 analyzed samples (3-*O*-caffeoylquinic acid, 4-*O*-caffeoylquinic acid, caffeic acid, isorhamnetin-3-O-rutinoside and quercetin-3-*O*-rutinoside). Although the sample collected in June in Viseu region was the one with lower content of phenolic compounds, it presented a similar antioxidant activity to the sample from Vila Real, which had the highest content of phenolic compounds. In general, the extracts showed a low activity towards the tested bacteria, with the exception for *Pseudomonas aeruginosa*, against which all three extracts showed a high activity.

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References:

[1] K.M. Phillips, P.R. Pehrsson, W.W. Agnew, et al. J Food Compost Anal, 2014, 34, 136–152.
[2] P.M. Guarrera, V. Savo, J Ethnopharmacol, 2013, 146, 659–680.