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Phytochemical and biomolecular analyses of wild edible Sardinian thistles and evaluation of their potential anti-inflammatory activity

Arianna Marengo[1], Cinzia Sanna[2], Andrea Maxia[2], Cinzia Bertea[3], Marco Fumagalli[4], Enrico Sangiovanni[4], Mario Dell'Agli[4], Carlo Bicchi[1], Cecilia Cagliero[1], Patrizia Rubiolo[1]

[1]Department of Drug Science and Technology, University of Torino, Via Pietro Giuria 9, Torino, Italy,

[2]Department of Life and Environment Sciences, University of Cagliari, Via Sant'Ignazio da Laconi 13, 09123 Cagliari, Italy;

[3]Department of Life Sciences and Systems Biology, University of Torino, Via Quarello 15/A, 10135 Torino, Italy

[4]Department of Pharmacological and Biomolecular Sciences; Università degli Studi di Milano, Via Balzaretti, 9, 20133 Milano, Italy

Species from *Cardueae* tribe (Compositae), also known as thistles, are traditionally consumed for their taste and biological effects [1]. This work is focused on eight wild edible *Cardueae* species belonging to *Carduus*, *Ptilostemon*, *Silybum* and *Onopordum* genera, which are widespread in Sardinia where they are part of the traditional culinary culture [1,2]. Several individuals for each species were collected in different sites in Sardinia.The aim of this study is the valorization of the studied species, to obtain more information on poorly known herbs and to discriminate between closely related species. A combined approach was adopted, the *Cardueae* hydroalcoholic extracts were analyzed and characterized by HPLC-PDA-MS/MS, at the same time, the Internal Transcribed Spacer (ITS) barcoding gene was amplified and sequences to find a useful molecular marker for the considered species. In agreement with literature data on other thistles, flavonoids and caffeoylquinic acid derivatives were the predominant classes of secondary metabolites characterizing the extracts [3]. A nucleotide variation in the ITS region, among the different species, was also observed. Statistical analysis both on chemical and biomolecular results were carried out, revealing that individuals clustered according to taxonomic classification. Since the analyzed species were rich in interesting compounds, the potential inflammatory inhibition of the extracts, in human gastric epithelial cells (AGS), was evaluated. The two *Onopordum* species were the only able to reduce the TNFα-induced IL-8 release, in AGS cells. A targeted analysis on the main compounds present in the *Onopordum* extracts, revealed that caffeoylquinic acid derivatives contributed to the inhibition of the IL-8 release exerted by the extracts. This multidisciplinary approach gives chemical and biomolecular tools to discriminate between closely related species and useful information of their potential anti-inflammatory activity. These findings may support the traditional uses of these species. This could be an incentive in food consumption of these wild edible herbs and/or for the development of food supplements, functional foods or herbal medicinal products.

References:

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