PTILOSTEMON CASABONAE (L.) GREUTER: CHEMICAL AND BIOMOLECULAR ANALYSES OF A LITTLE-KNOWN MEDITERRANEAN ENDEMISM

Arianna Marengo[a], Andrea Maxia[b], Cinzia Sanna[b], Manuela Mandrone[c], Cinzia M. Bertea[d], Carlo Bicchi[a], Barbara Sgorbini[a], Cecilia Cagliero[a], Patrizia Rubiolo[a]

[a] Dipartimento di Scienza e Tecnologia Del Farmaco, Università di Torino, Via P. Giuria 9, 10125, Torino, Italy. arianna.marengo@unito.it; carlo.bicchi@unito.it; barbara.sgorbini@unito.it; cecilia.cagliero@unito.it; patrizia.rubiolo@unito.it

[b] Dipartimento di Scienze Della Vita e Dell'Ambiente, Sezione di Botanica, Università di Cagliari, Viale Sant'Ignazio da Laconi 13, 09123, Cagliari, Italy. a.maxia@unica.it; cinziasanna@unica.it

[c] Dipartimento di Farmacia e Biotecnologie, Alma Mater Studiorum - Università di Bologna, Via Irnerio 42, 40126, Bologna, Italy. manuela.mandrone2@unibo.it

[d] Dipartimento di Scienze Della Vita e Biologia Dei Sistemi, Unità di Fisiologia Vegetale, Università di Torino, Via Quarello 15/A, 10135, Torino, Italy. cinzia.bertea@unito.it

Ptilsotemon casabonae (L.) Greuter is a Mediterranean endemism localized in Sardinia, Corse and Hyères islands (France) and it is traditionally used for its health-giving properties (1,2). In this study several samples of *P. casabonae* were collected from Sardinia (Gennargentu and Iglesias) and Corse (Bocca di Tana), subjected to hydroalcoholic extraction of the aerial parts and DNA isolation. The extracts were subsequently analyzed with the aim to provide more information concerning the chemical and biomolecular patterns of this little-known species (3). At the same time the potential antioxidant activity of the hydroalcoholic extracts was also evaluated.

The phenolic composition of the extracts, investigated through HPLC-PDA-MS/MS, revealed similar chromatographic patterns of the samples from the three different sites, with flavonoids and caffeoylquinic acid derivatives as the main components. Nevertheless, some quantitative differences among the three extracts were detectable and confirmed by statistical analyses (PCA and ANOVA). The amplification and sequencing of two barcoding genes (*ITS* and *psbA*) and the *5s-rRNA-NTS* region revealed a stability in the nucleotide composition of the sequences belonging to the *P. casabonae* samples from different geographical origins. On the contrary, a Basic Local Alignment in Genbank showed an interspecific variability of *ITS* and *psbA* regions. Finally, the three extracts exhibited a similar antioxidant activity and interesting results compared to the positive controls (trolox).

These findings provide useful information to depict and discriminate this little-known plant. The stability of the phenolic and biomolecular profiles can help in the identification of these species and the search for potential biological activities may support the traditional use of *P. casabonae* for medicinal and food purposes.

(1) Marengo A, Fenu G, Gennai M, Cogoni D, Fois M, Bacchetta G. Informatore Botanico Italiano 2015; 47, 245–289.
(2) Atzei AD. Carlo Delfino editore; 2003.
(3) Marengo A., Maxia A., Sanna C., Mandrone M., Bertea C., Bicchi C., Sgorbini B., Cagliero C., Rubiolo P. Phytochemistry 2019; 161, 21-27