

12º ENCONTRO NACIONAL

# CROMA- TOGRAFIA

6 › 8 dez'22

Aveiro | Portugal

*PROVISORAL*



universidade  
de aveiro



SOCIEDADE PORTUGUESA DE QUÍMICA

XIV **WARPA**  
Workshop em Avanços Recentes  
no Programa de Análises

**TÍTULO:**

Livro de Resumos do 12º Encontro Nacional de Cromatografia & XIV WARPA

**AUTOR:**

Sílvia M. Rocha

**CO-AUTOR(ES):**

Alexandre Fonseca

Cátia Martins

Manuel António Coimbra

Maria Eugénia Queiroz

Samuel Patinha

Sónia Ribeiro

**EDITOR:** Sociedade Portuguesa de Química (SPQ)

**SUPORTE:** Eletrónico

**FORMATO:** PDF / PDF/A

ISBN 978-989-8124-37-1



9 789898 124371

## FC7 Phenolic profile and bioactive potential of cardoon (*Cynara cardunculus* L.) inflorescences: selection of the best genotype for food application

Mandim F,<sup>1,2,3</sup> Pinela J,<sup>1,2</sup> Dias MI,<sup>1,2</sup> Barracosa P,<sup>4</sup> Santos-Buelga C,<sup>3</sup> Ferreira ICFR,<sup>1,2</sup> Barros L<sup>1,2</sup>

<sup>1</sup> Centro de Investigação de Montanha (CIMO), Instituto Politécnico de Bragança, Campus de Santa Apolónia, 5300-253 Bragança, Portugal

<sup>2</sup> Laboratório Associado para a Sustentabilidade e Tecnologia em Regiões de Montanha (SusTEC), Instituto Politécnico de Bragança, Campus de Santa Apolónia, 5300-253 Bragança, Portugal

<sup>3</sup> Grupo de Investigación em Polifenoles (GIP\_USAL), Facultad de Farmacia, Universidad de Salamanca, Campus Miguel de Unamuno, 37007 Salamanca, Spain

<sup>4</sup> CERNAS, Centro de Investigação do Instituto Politécnico de Viseu (ESAV), Quinta da Lagoa, 3500-606 Viseu, Portugal

Email: filipamandim@ipb.pt

*Cynara cardunculus* L. (syn. cardoon) belongs to the Asteraceae family and is native to the Mediterranean basin. This species is widely used for milk coagulation of PDO cheeses and consumed due to its rich nutritional value and related medicinal properties (e.g. choleric, cardiogenic, antidiabetic, liver disease treatment). In the last decade, the interest in this crop increases due to its multifaceted industrial applications. It has been explored for animal feed and lightwood panels, biodiesel, paper pulp, and food oil production. Their production countries estimate a generation of approximately 15 to 30 t/ha of dry biomass. The adequate exploitation and characterization of the species are essential for circular economic stimulation and environmental impact reduction. The hydroethanolic extracts of four cardoon genotypes and their vegetable tissues (stigma, corolla, bracts, pappus, receptacle) were studied. The polyphenolic profile was analyzed by HPLC-DAD-ESI/MS. The antioxidant activity was evaluated TBARS and OxHLIA cell-based assays. The anti-inflammatory activity was assessed through the extracts' capacity to inhibit the pro-inflammatory mediator nitric oxide. Finally, the cytotoxic potential was evaluated against four tumor and a non-tumor cell line (PLP2) using the sulforhodamine B assay. Fourteen phenolic compounds were tentatively identified. The corolla presented the higher variety and bracts the higher content of phenolic compounds. In terms of bioactivity, none of the tested extracts exhibit anti-inflammatory potential. Genotype F1-1-1 exhibits a higher cytotoxic potential. All the four genotypes and vegetable tissues tested exhibited antioxidant capacity, especially corolla of F4-1-4 genotype for TBARS assay ( $IC_{50} = 38 \mu\text{g/mL}$ ) and its receptacle for OxHLIA ( $IC_{50} = 71 \mu\text{g/mL}$ ). In conclusion, this study showed that the phenolic composition and biological activities of cardoon are influenced by both genotype and plant tissue. Further studies are needed to determine the genetic information for obtaining the highest bioactivity.

**Acknowledgements:** To the Foundation for Science and Technology (FCT, Portugal) for financial support to CIMO (UIDB/00690/2020 and UIDP/00690/2020) and SusTEC (LA/P/0007/2021); PhD grant of Filipa Mandim (SFRH/146614/2019) and J. Pinela (CEECIND/01011/2018), M.I. Dias and L. Barros contracts.

### References

1. P. Barracosa, J. Oliveira, M. Barros, E. Pires, Genet. Resourc. 65 (2018) 17-28.