



P&J Live, Aberdeen - 3 and 4 November 2022

Poster Abstracts

Ana Rita Silva; University of Salamanca

Metabolomic approach to assess the effect of the foraging year on the anti-elastase activity of *Cytinus hypocistis* (L.) L.

Ana Rita Silva^{1,2,3,4}, Manuel Ayuso^{1,2}, Pablo A. García³, Lillian Barros^{1,2}, RuAngelie Edrada-Ebel⁴

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

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

³Departamento de Ciencias Farmacéuticas. Facultad de Farmacia, CIETUS-IBSAL, Universidad de Salamanca, 37007 Salamanca, España

⁴Strathclyde Institute of Pharmacy and Biomedical Sciences, University of Strathclyde, The John Arbuthnott Building, 161 Cathedral Street, Glasgow G4 0RE, UK

Cytinus hypocistis (L.) L. is a wild edible parasitic plant on numerous members of the Cistaceae family. Although its bioactive properties were potentially attributed to its hydrolysable tannin content, its chemical composition is largely unknown, and the bioactive substances have not yet been identified [1,2]. Thus, this work aimed to investigate its potential to inhibit human elastase, an important anti-ageing mechanism. The plant material was collected in Castro Daire, Portugal, from the host species *Halimium lasianthum* (Lam.) Greuter on the same calendar date in June for three consecutive years (2018, 2019, and 2020). Metabolomic- based analytical techniques were applied to disclose the discriminating features of the anti-elastase activity of nine hydroethanolic extracts (three per year). The discriminating features among samples were identified using a multivariate PLS-DA of the LC-HRMS data. Dereplication of the discriminating metabolites obtained from the loadings plot revealed that year-one had the best inhibitory activity with IC_{50s} of 13 to 22 µg/mL and were comprised of high molecular weight compounds ranging between 500 and 950 Da. However, the second-year collection exhibited a significant decrease in the biological activity of 120 to 128 µg/mL indicating the occurrence of low molecular weight compounds between 150 and 300 Da. Year three gave IC_{50s} of 74 to 109 µg/mL. This study offers an evidential hypothesis on the effect of annual environmental changes on the chemical profile of a parasitic plant. Albeit, the relative abundance of the discriminating features was minimal, it was significant enough to affect the anti-elastase bioactivity of the extracts.

Acknowledgements: A. R. Silva is grateful to FCT and FSE for her Doctoral Grant (SFRH/BD/145834/2019). [1] P. Zucca, M. Pintus, G. Manzo, M. Nieddu, D. Steri and A. C. Rinaldi, BMC Res. Notes, 2015, 8, 562. [2] G. Maisetta, G. Batoni, P. Caboni, S. Esin, A. C. Rinaldi and P. Zucca, BMC Complement. Altern. Med., 2019, 19, 82.