2nd Symposium on Medicinal Chemistry of University of Minho

8 May 2015

SCHOOL OF SCIENCE, CHEMISTRY DEPARTMENT

Campus de Gualtar

P02

Perennial Spotted Rockrose as a Source of Ellagitannins with Therapeutic Interest: Influence of Drying and Extraction Conditions

J. Pinela[ab], J.C.M. Barreira[abc], L. Barros[ac], M.B.P.P. Oliveira[b], A.M. Carvalho[a], C. Santos-Buelga[c], I.C.F.R. Ferreira[a]

[a] *Centro de Investigação de Montanha (CIMO), ESA, Instituto Politécnico de Bragança, Apartado 1172, 5301-855 Bragança, Portugal; iferreira@ipb.pt*
[b] *REQUIMTE/LAQV, Faculdade de Farmácia, Universidade do Porto, Rua Jorge Viterbo Ferreira, nº 228, 4050-313 Porto, Portugal*
[c] *GIP-USAL, Facultad de Farmacia, Universidad de Salamanca, Campus Miguel de Unamuno, 37007 Salamanca, Spain*

The ellagitannins are a diverse class of hydrolysable tannins, a type of polyphenols present in some fruits, medicinal plants, nuts and seeds. They are complex derivatives of ellagic acid characterized by one or more hexahydroxydiphenoyl moieties esterified to a sugar, usually glucose [1]. These compounds play an important role in human nutrition and are endowed with numerous biological properties, including antioxidant, anti-inflammatory, anticancer, anti-atherosclerotic, antihepatotoxic, antibacterial and anti-HIV replication activities [1-3], being therefore interesting molecules for medical and therapeutic applications. A previous work of our research team highlighted the perennial spotted rockrose (*Tuberaria lignosa* (Sweet) Samp.) as a rich source of ellagitannins, namely punicalagin [2]. In this study, the influence of drying and extraction conditions on the ellagitannins content from perennial spotted rockrose flowering aerial parts was evaluated. Wild specimens were gathered in the Northeast region of Portugal and then freeze-dried immediately after gathering or shade-dried in a dark and dry place at room temperature for 30 days. Subsequently, dried samples were extracted adding them to boiling water and left to stand at room temperature for 5 min, or boiling them for 5 min plus 5 min at room temperature. The ellagitannins analysis was performed by HPLC-DAD-ESI/MS. The effects of drying and extraction conditions were evaluated by analysis of variance (ANOVA) using the General Linear Model procedure. The most abundant ellagitannins were punicalagin isomers and punicalagin gallate isomers, being the highest levels detected in freeze-dried samples. Additionally, higher amounts of these compounds were achieved with longer extraction time (5 min + 5 min), in both shade- and freeze-dried samples. Thus, from the obtained results, it might be concluded that freeze-drying and longer extraction time are the preferable conditions to obtain high levels of ellagitannins with therapeutic interest from perennial spotted rockrose samples.

Acknowledgments:
The author acknowledge to PRODER research project nº 53514, AROMAP, for financial support of the work and to FCT for financial support to CIMO (PEst-OE/AGR/UI0690/2014), REQUIMTE (PEst-C/EQB/LA0006/2014), J. Pinela (SFRH/BD/92994/2013), J.C.M. Barreira (SFRH/BPD/72802/2010) and L. Barros (research contract).

References:
[1] J. M. Landete, *Food Res. Int.*, **2011**, *44*, 1150.
[2] J. Pinela *et al.*, *Food Chem.*, **2012**, *135*, 1028.
[3] J. Pinela *et al.*, *RSC Adv.*, **2015**, *5*, 14756.