



XXII Encontro Luso-Galego
Química

9 a 11 novembro 2016

Instituto Politécnico de Bragança | BRAGANÇA - PORTUGAL



Livro de Resumos

<http://xxiilgq.eventos.chemistry.pt>



SOCIEDADE
PORTUGUESA
DE QUÍMICA



Colegio Oficial de
Químicos de Galicia



9 a 11 novembro 2016

**Instituto Politécnico de Bragança
BRAGANÇA – PORTUGAL**



TÍTULO

Livro de Resumos do XXII Encontro Luso-Galego de Química

EDITORES

Helder T. Gomes, Maria Olga A. S. Ferreira, João Barreira, Joana Amaral

EDIÇÃO

Sociedade Portuguesa de Química
Av. da República, 45 – 3º Esq
1050-187 Lisboa – Portugal

DATA

Novembro de 2016

EXECUÇÃO GRÁFICA

IPB, Soraia Maduro (design)
Sersilito – Maia (impressão)

FOTO DE CAPA

Rami Arafah

CATALOGAÇÃO RECOMENDADA

Livro de Resumos do XXII Encontro Luso-Galego de Química
Instituto Politécnico de Bragança, Bragança, Portugal, 2016, 336 páginas

ISBN

978-989-8124-17-3

TIRAGEM

350 exemplares

@ Sociedade Portuguesa de Química

Direitos reservados. Proibida a reprodução deste livro por qualquer meio, total ou parcialmente, sem autorização expressa da Sociedade Portuguesa de Química.

Os Editores declaram que o conteúdo dos resumos científicos é da inteira responsabilidade dos respetivos autores.

XXII ENCONTRO LUSO-GALEGO DE QUÍMICA

Organizado sob os auspícios de
Sociedade Portuguesa de Química
Colégio Oficial de Químicos de Galicia

COMISSÃO DIRETIVA

Baltazar Romão de Castro (FCUP)
José Luís Costa Lima (FFUP)
José Luís Figueiredo (FEUP)
Pelayo Rubido Muñiz (COLQUIGA)
Juan Mogin del Pozo (COLQUIGA)
Antonio Macho Senra (COLQUIGA)

COMISSÃO CIENTÍFICA

Joaquim Luís Faria (FEUP)
Artur Silva (UA)
Victor Freitas (FCUP)
Mario Ferruzzi (NCSU, USA)
Ignacio Pérez Juste (UVigo)
Moisés Canle López (UdC)
Pilar Bermejo Barrera (USC)

COMISSÃO ORGANIZADORA

Helder Gomes (IPB) - Presidente
Ana Isabel Pereira (IPB)
Ana Vera Machado (UM)
Baltazar Romão de Castro (FCUP)
Filomena Barreiro (IPB)
Isabel Ferreira (IPB)
Joana Amaral (IPB)
João Barreira (IPB)
José Alcides Peres (UTAD)
José Luís Costa Lima (FFUP)
José Luís Figueiredo (FEUP)
Lillian Barros (IPB)
Manuel Coimbra (UA)
Olga Ferreira (IPB)

Profiling minerals and vitamin B₉ in wild plants: retention dynamics in a membrane dialysis process after a simulated-gastrointestinal model

**Maria Inês Dias^{1,2,3}, Patrícia Morales³, João C. M. Barreira^{1,2},
M. Beatriz P. P. Oliveira², M^a Cortes Sánchez-Mata³, Isabel C. F. R. Ferreira^{1,*}**

¹Centro de Investigação de Montanha (CIMO), ESA, Instituto Politécnico de Bragança, Campus de Santa Apolónia, Apartado 1172, 5300-253 Bragança, Portugal

²REQUIMTE/LAQV, Faculdade de Farmácia, Universidade do Porto, Rua Jorge Viterbo Ferreira, nº 228, 4050-313 Porto, Portugal

³Dpto. Nutrición y Bromatología II, Facultad de Farmacia, Universidad Complutense de Madrid (UCM), Plaza Ramón y Cajal, s/n, E-28040 Madrid, Spain

**iferreira@ipb.pt*

Traditionally used wild plants have sparked a growing interest as they are considered a valuable source of natural compounds with recognized health effects on consumer's health. Among these compounds are vitamins and mineral elements with a well-known role in maintaining human health [1]. Vitamin B₉ (folic acid) is an important cofactor of many reactions that occurs on human cells [2], while macro and micro elements play a fundamental role on energy production and maintaining the structural integrity of the cell membrane [3]. Macroelements also function as modulators of metabolism and acid-base equilibrium [4,5]. The analysis of these elements in wild plants and, mainly, in bioavailability related aspects, is still very scarce.

Herein, a membrane dialysis process was performed with the main goal of simulating gastrointestinal conditions to evaluate the bioavailability of the mineral elements present in different formulations (dry plant and infusion) of *Achillea millefolium* L. (yarrow), *Laurus nobilis* L. (laurel) and *Taraxacum* sec. Ruderalia (dandelion). The retention/passage dynamics was evaluated using a cellulose membrane with 34 mm of porosity. The vitamin B₉ contents were also analysed by high-performance liquid chromatography coupled to a fluorescence detector in the different preparations of each sample.

Dandelion showed the highest levels of mineral elements (except for zinc) regardless of the formulation used (dry plant or infusion). On the other hand, yarrow showed the highest content of vitamin B₉. Dry plants, as expected, presented higher quantities of the studied elements, in relation to the corresponding infusions; however, the extraction yield of mineral elements vary considerably, being higher for macroelements; Mg>Ca>K>>Fe>Cu>Zn>Mn. Vitamin B₉ levels were also very low for infusions, possible due to the degradation induced by the boiling water at the time of preparation. Regarding the bioavailability, calcium and potassium showed higher capacity to cross the dialysis membrane.

The studied plant species, especially if used directly in dry form, can be considered for the development of new formulations that act as sources of vitamin B₉ and minerals.

Acknowledgments

To FCT for financial support to CIMO (PEst-OE/AGR/UI0690/2014), REQUIMTE (UID/QUI/50006/2013), ALIMNOVA (UCM-GR35/10A), J.C.M. Barreira (SFRH/BPD/72802/2010) and M.I. Dias (SFRH/BD/84485/2012).

References

- [1] Rihawy, M.S., Bakraji, E.H., Aref, S. & Shaban, R. Nucl. Instr. Meth. Phys. Res. 268 (2010), 2790-2793.
- [2] Scott, J., Rébeillé, F. & Fletcher, J. J. Sci. Food Agr., 80 (2000), 795-824.
- [3] Hänsch, R. & Mendel, R.F. Curr. Opin. Plant Biol., 12 (2009), 259-266.
- [4] Leśniewicz, A., Jaworska, K. & Żymicki, W. Food Chem., 99 (2006), 670-679.
- [5] Özcan, M. Food Chem., 84 (2004), 437-440.