



5th Portuguese Young Chemists Meeting

(5th PYChem)

&

1st European Young Chemists Meeting

(1st EYChem)

Centro Cultural Vila Flor

Guimarães, Portugal

26th – 29th of April



ICVS/3B's
CONVÊNIO
Lusófona



Câmara Municipal de Guimarães





COMMITTEES

ORGANIZING COMMITTEE

Catarina Custódio (3B's Research Group)
Luísa Rodrigues (3B's Research Group)
João Borges (3B's Research Group)
Ana Rita Araújo (3B's Research Group)
Sara Amorim (3B's Research Group)
Ivo Aroso (3B's Research Group)
Raquel Teixeira (3B's Research Group)
Ramon Novoa-Carballal (3B's Research Group)
Ana Soares (Chemistry Department of University of Minho)
Cristina Sousa (Chemistry Department of University of Minho)
Tiago Silva (3B's Research Group)
Lara Reys (3B's Research Group)
Sandra Silva (3B's Research Group)
Leonardo Mendes (SPQ)

SCIENTIFIC COMMITTEE

João F. Mano (Univ. do Minho, Portugal)
Iva Pashkuleva (Univ. do Minho, Portugal)
Fernanda Proença (Univ. do Minho, Portugal)
Artur Silva (Univ. de Aveiro, Portugal)
António Fernando Silva (Univ. do Porto, Portugal)
Maria João Moreno (Univ. de Coimbra, Portugal)
Verónica Bermudez (Univ. de Trás os Montes e Alto Douro, Portugal)
Matilde Marques (Inst. Superior Técnico, Portugal)
Isabel Ferreira (Inst. Politécnico de Bragança, Portugal)
Armando Silvestre (Univ. de Aveiro, Portugal)
José Esperança (ITQB, Portugal)
António Varandas (Univ. de Coimbra, Portugal)
Fátima Bento (Univ. do Minho, Portugal)
Aránzazu del Campo (MPIP Mainz, Germany)
Radim Hrdina (Univ. of Pardubice, Czech Republic)
Edward Matthijs (KU Leuven, Belgium)

SPQ SECRETARIAT

Leonardo Mendes
Cristina Campos



General Programme

	26 April	27 April	28 April	29 April
9:00-13:20	Registration and Workshop of Open Science and European Open Access Policies in H2020	Organic Chemistry and Medicinal Chemistry	Inorganic, Physical, Analytical and Electrochemistry	Materials Chemistry and Nanomaterials and Surface Chemistry
13:30	Opening Ceremony	Lunch	Lunch	Lunch
14:00 - 18:00	Green Chemistry + Chemistry of Natural Products	Biochemistry and Medicinal Chemistry	CHEM2NATURE Symposium. Chemical strategies for modification of natural origin materials Assembleia GQJ (17h)	Materials Chemistry and Nanomaterials and Surface Chemistry
18:00				Closing Ceremony
19:00	Welcome Cocktail	Walking Tour		
21:30	Get-together night		Gala Dinner	



P17. Ethanolic extracts from three commercial edible mushrooms: determination of ergosterol content and evaluation of bioactive properties

Oludemi Taofiq ^{1,2}, Sandrina Heleno ¹, Ricardo C. Calhelha ^{1,3}, Lillian Barros ^{1,2}, Isabel C.F.R. Ferreira ^{1,*}

iferreira@ipb.pt

¹Mountain Research Centre (CIMO), ESA, Polytechnic Institute of Bragança, Portugal

²GIP-USAL, Faculty of Pharmacy, University of Salamanca, Spain

³Centre of Chemistry, University of Minho, Braga, Portugal

Mushrooms are rich in several bioactive metabolites among them are phenolic compounds, terpenoids, polysaccharides, lectins, and steroids including mycosterols, namely ergosterol [1]. Ethanolic extracts prepared by maceration of several mushroom species have been recently described as having anti-inflammatory properties [2]. In the present work, ethanolic extracts of *Agaricus bisporus* L., *Lentinus edodes* (Berk.) Pegler and *Pleurotus ostreatus* (Jacq. ex Fr.) P.Kumm., purchased from a local supermarket in the Northeast of Portugal, were obtained by Soxhlet and chemically characterized in terms of ergosterol content by HPLC-UV. The antioxidant properties of these extracts were evaluated through DPPH (2,2-diphenyl-1-picrylhydrazyl) radical scavenging activity (RSA), reducing power (RP), β -carotene bleaching inhibition (CBI) and lipid peroxidation inhibition in TBARS (thiobarbituric acid reactive substances) assay (LPI); the antioxidant activity of ergosterol was also evaluated by the DPPH assay. The anti-inflammatory activity of the same extracts and ergosterol was evaluated in LPS (lipopolysaccharide) stimulated RAW 264.7 macrophages, through the inhibition of NO production. *A. bisporus* revealed the highest content in ergosterol (44.8 ± 0.4 mg/ g extract) followed by *P. ostreatus* (34 ± 3 mg/ g extract) and finally *L. edodes* (8.9 ± 0.1 mg/ g extract). *A. bisporus* showed the highest RSA, RP and CBI (EC_{50} values = 7.0 ± 0.8 , 2.3 ± 0.1 and 1.4 ± 0.1 mg/mL, respectively), while *L. edodes* presented the highest LPI (2.5 ± 0.1 mg/mL); ergosterol revealed higher RSA (0.46 ± 0.01 mg/mL) than the extracts. Concerning the anti-inflammatory potential, the most efficient species was *L. edodes* (IC_{50} value = 164 ± 16 μ g/mL), followed by *A. bisporus* (185 ± 16 μ g/mL) and finally *P. ostreatus* (290 ± 10 μ g/mL). However, ergosterol presented lower activity (338 ± 23 μ g/mL) due to its low solubility in the culture medium. The higher antioxidant properties displayed by *A. bisporus* can be related with its higher ergosterol content, while in the anti-inflammatory activity this relation cannot be established also due to the low solubility of ergosterol in the cells culture medium, decreasing the ergosterol availability. More studies are being conducted regarding the ergosterol solubility. Several compounds have been implicated in the bioactivity of mushrooms and in this study we have found that ergosterol can give an important contribution.

References

- [1] Kalač, P. Journal of the Science of Food and Agriculture, 2013, 93, 209-218.
- [2] Taofiq, O.; Calhelha, R.C.; Heleno, S.A.; Barros, L.; Martins, A.; Abreu, R.M.V.; Santos-Buelga, C.; Queiroz, M.J.R.P.; Ferreira, I.C.F.R. Food Research International, 2015, 76, 821–827.

Acknowledgments

The authors are grateful to (FCT, Portugal), FEDER-COMPETE/QREN/EU for financial support through the research project PEst-OE/AGR/UI0690/2014. S.A. Heleno (SFRH/BPD/101413/2014), R.C. Calhelha (BPD/68344/2010) and L. Barros (BPD/107855/2015) also thank FCT, POPH-QREN and FSE.