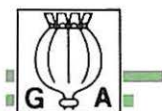
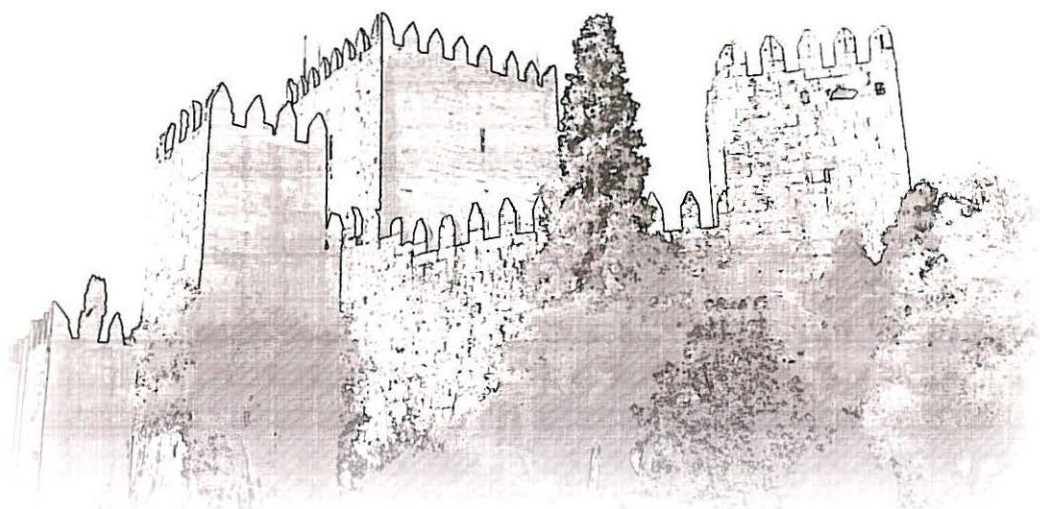


# 62<sup>nd</sup> International Congress and Annual Meeting of the Society for Medicinal Plant and Natural Product Research - GA2014



Universidade do Minho  
Escola de Ciências

## Programme



31<sup>st</sup> August - 4<sup>th</sup> September 2014

University of Minho, Campus of Azurém  
Guimarães, Portugal

<http://ga2014.bio.uminho.pt/>

## Short Lecture 9

Wednesday, 3<sup>rd</sup> of September, 11:30–12:30, Main Lecture Hall

- 11:30 SL44 Following dietary polyphenols' fate after oral administration: A map of distribution of pterostilbene and one of its prodrugs in major organs of rat  
*Azzolini, M., La Spina, M., Mattarei, A., Paradisi, C., Zoratti, M., Biasutto, L.*
- 11:45 SL45 Relevance of telomerase inhibition by 4-methylthiobutyl isothiocyanate in tumor cells of the liver  
*Herz, C., Hertrampf, A., Stetter, N., Schüler, J., Mersch-Sundermann, V., Lamy, E.*
- 12:00 SL46 The 'Lotus Leave Diet' - A life-threatening experience? hERG channel blocking aporphine alkaloids from *Nelumbo nucifera* Gaertn.  
*Grienke, U., Mair, C., Saxena, P., Kratz, J., Baburin, I., Schuster, D., Herling, S., Rollinger, J.*
- 12:15 SL47 The effects of bioavailable red clover isoflavones for menopausal symptoms and associated diseases  
*Lambert, M., Jeppesen, P. B.*

## Short Lecture 10

Wednesday, 3<sup>rd</sup> of September, 11:30–12:30, Lecture Hall A

- 11:30 SL48 Identify chemical and herbal components of an unknown natural product capsule using LC/MS coupled with a novel informatics platform  
*Yu, K., Qiao, L., Cabaleiro, D., Patel, D., Huang, J., Diehl, D., Boiteux, H.*

- 11:45 SL49 Borututu, artichoke and milk thistle: Chemical profiles, antioxidant properties, anti-hepatocellular carcinoma activity and hepatotoxicity  
*Pereira, C., Barros, L., Ferreira, I.*
- 12:00 SL50 Herbosomes enhances *in vivo* antioxidant activity of *Punica granatum* extracts  
*Vora, A., Londhe, V., Pandita, N.*
- 12:15 SL51 Microbial production of the cancer-preventive glucosinolate Glucoraphanin - *Nicotiana benthamiana* as tool to alleviate bottle necks in metabolic engineering  
*Crocoll, C., Mirza, N., Reichelt, M., Halkier, B.*

## Short Lecture 11

Wednesday, 3<sup>rd</sup> of September, 11:30–12:30, Lecture Hall B

- 11:30 SL52 Attenuation of oxidative stress in hepatic and pancreatic tissues of STZ-induced diabetic rats treated with aqueous extract of *Vochysia rufa*  
*De Gouveia, N., Moraes, I., Sousa, R., Neto, M., Mundim, A., Oliveira, A., Lago, J., Espindola, F.*
- 11:45 SL53 ERG channel inhibiting activity of *Rauvolfia nukuhiensis* alkaloid content  
*Martin, N., Alonzo L., Lecellier, G., Nicolas, M., Paetz, C., Thomas, O., Botana, L., Raharivelomanana, P.*
- 12:00 SL54 *Apocynum venetum* L. leaf extract attenuates acetaminophen overdose-induced liver injury in mice  
*Xie, W.-Y., Deng, B.-W., Melzig, M., Zhang, X.-Y.*
- 12:15 SL55 YRW – Short Lecture 2

informatics platform from the instrument vendor). Structures of the matched components are automatic verified by an in silico tool (also imbedded within this informatics platform) using each component's corresponding fragment ions. Results are displayed automatically with pre-set workflow templates. All steps were carried automatically once the user sets up the processing method. Initial non-targeted screening identified 86 major compounds from 473 detected components. Through multi-step approach, we proposed that this unknown sample is the product commercially named XinKeShu, which contains Dan Shen (*Salvia miltiorrhiza*), San Qi (*Panax notoginseng*), Ge Gen (*Lobed kudzu vine root*), Shan Cha (*Crataegus pinnatifida* Bunge) and Mu Xiang (*Saussurea costus*). Among the 229 compounds listed within the Traditional Medicine Scientific Library that are associated with the XinKeShu recipe, 183 were identified and confirmed.

**Keywords:** *Workflow for compound and herbal plant ingredient profiling, Traditional Medicine Library, UPLC/TOF MS, informatics*

## SL49 **Borututu, artichoke and milk thistle: Chemical profiles, antioxidant properties, anti-hepatocellular carcinoma activity and hepatotoxicity**

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

Artichoke, borututu and milk thistle are medicinal plants widely consumed as infusions or included in dietary supplements for the treatment/prevention of liver diseases. In the present work, their nutritional value was assessed and analytical tools (gas and liquid chromatography coupled to different detectors) were used to distinguish the chemical profiles namely in hydrophilic (sugars and organic acids) and lipophilic (fatty acids and tocopherols) compounds [1]. Furthermore, antioxidant properties (radicals scavenging activity, reducing power, and lipid peroxidation inhibition), anti-hepatocellular carcinoma activity (HepG2 tumor cell line) and toxicity (non-tumor liver cells primary culture) of their infusions and dietary supplements (pills and syrups) were evaluated and compared [2,3]. Borututu gave the highest energetic value with the highest content of carbohydrates and fat, sucrose and total sugars, shikimic and citric acids,  $\alpha$ -,  $\beta$ -,  $\delta$ - and total tocopherols. Artichoke had the highest ash and protein contents, oxalic acid, SFA (mainly palmitic acid), and  $\gamma$ -tocopherol, as also the best n6/n3 ratio. Milk thistle showed the highest levels of fructose and glucose, quinic acid and total organic acids, PUFA, mainly linoleic acid, and the best PUFA/SFA ratio. All the samples revealed antioxidant properties with  $EC_{50}$  values lower than the daily recommended dose, but infusions showed higher activity than dietary supplements, with the exception of milk thistle syrup, that gave similar  $EC_{50}$  values to the borututu infusion. Among all the samples, the pills revealed the lowest antioxidant activity. The syrup of milk thistle and the infusions of borututu and artichoke revealed anti-hepatocellular carcinoma activity, but the latest also showed toxicity for normal cells at a higher concentration. None of the pills showed cytotoxicity. Thereby, for the mentioned purposes, it seems unnecessary to acquire expensive supplements instead of infusions.

**Keywords:** *Antioxidant activity, hepatotoxicity, nutritional value, chemical profiles*

### References:

[1] Pereira, C. et al. (2014) Food Anal. Methods DOI 10.1007/s12161-014-9795-9.