



**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
Associação
Laboratório
de Química



Câmara Municipal de Guimarães





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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		Walking Tour		Closing Ceremony
19:00	Welcome Cocktail		Gala Dinner	
21:30	Get-together night			



26th April

9h00-12h00	Registration	<p>Workshop</p> <p>OPEN SCIENCE AND EUROPEAN OPEN ACCESS POLICIES IN H2020</p> <p>What could Open Science mean for Chemistry? - Simon Coles - University of Southampton</p> <p>Open Access to Publications in H2020 - Pedro Príncipe - Universidade do Minho</p> <p>Research Data Management - Joy Davidson - Digital Curation Centre</p>
13h10		<p>Opening Ceremony</p> <p>Dr. Artur Silva - SPQ Vice President Member of the Organizing Committee Member of the Guimarães City Hall Member of the Portuguese Presidency</p>
13h40	<p>Green Chemistry + Chemistry of Natural Products</p> <p>Chair: Dr. Isabel Ferreira Young chair: Emanuel Capela</p>	<p>PL1 - Martyn Poliakoff (50+10) "Towards Greener Photochemistry"</p>
14h40		<p>IL1 - José Esperança (30+5) "Ionic liquids under common and sometimes not-so-common conditions"</p>
15h15		<p>OP1- Catalytic hydrogenolysis of cellobiose into hexitols over Ru/Al-MCM48 Alberto Romero Camacho (10+5)</p>
15h30		<p>OP2- Purification of phenolic compounds from Salicornia ramosissima Cláudia Isabel Rodrigues Martins (10+5)</p>
15h45		<p>OP3- Direct Alkylation of Amines with Alcohols in Water Catalyzed by Organometallic Iridium Complexes Ana Elisabete da Silva Fernandes (10+5)</p>
16h00		<p>OP4- Green and traditional solvents as a medium of synthesis of unsaturated organometalloids Jakub Szyling (10+5)</p>
16h15		<p>Coffee break</p>
16h45		<p>Green Chemistry + Chemistry of Natural Products</p>
17h20		<p>OP5- Magnetic recyclable functionalized magnetite as nanocatalysts for green oxidative reactions</p>



	Chair: Dr. José Esperança Young chair: Cristina Caleja	Nuno Miguel Rodrigues Martins (10+5) OP6- Synthesis of new alkenyl-substituted silsesquioxanes and spherosilicates by hydrosilylation reaction in conventional and non-conventional (scCO ₂ , PEG, IL) solvents Kinga Stefanowska (10+5)
17h35		OP7- Liquid formulation of resveratrol in b-glucans against B. Cinérea Marta Salgado Dfez (10+5)
17h50		OP8- Dietary supplements based on borututu: which is the most suitable choice for bioactive purposes? Carla Susana Correia Pereira (10+5)
18h05		OP9- Looking for new answers based on natural products for solving bacterial resistance problems Diogo Maria Trindade Fonseca Magalhães e Silva (10+5) IL3 - Isabel Ferreira (30+5)
18h20		“Physical and chemical food processing methods: case studies with matrices from Northeast Portugal”
18h35		
19h00		Welcome Cocktail
		Get-together night



OP8 - Dietary supplements based on borututu: which is the most suitable choice for bioactive purposes?

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Borututu (*Cochlospermum angolensis* Welw.) is a widespread tree in Angola used since antiquity by traditional healers for the prevention and treatment of hepatic diseases and for the prophylaxis of malaria [1]. This plant is mostly consumed as infusions but is also available as dietary supplements, such as pills, capsules, and syrups, among others. In the present study, the aim was to evaluate the proximate composition and energetic contribution of borututu as well as its composition in hydrophilic (sugars and organic acids) and lipophilic (fatty acids and tocopherols) compounds, given the fact that this plant is directly introduced in some dietary supplements. Furthermore, the bioactivity (antioxidant, hepatoprotective and antimicrobial activities) of three different formulations of borututu (infusion, pills, and syrup) was assessed and compared, and since plant beneficial properties are often ascribed to phenolic compounds [2], the phenolic profile of the formulations was also analysed. Carbohydrates (88 g/100 g) and fat (2.5 g/100 g) were the major and the minor components of the studied borututu dry barks, respectively, with an energetic contribution of 384 kcal/100 g. Fructose was the most abundant sugar (1.3 g/100 g), followed by sucrose, trehalose and glucose (1.1, 0.98 and 0.79 g/100 g, respectively). Oxalic (0.70 g/100 g), malic (0.63 g/100 g) and citric (0.57 g/100 g) acids were present in higher amounts but shikimic and fumaric acids were also detected. Among the fatty acids found in borututu, a prevalence of saturated fatty acids (SFA; 48.2%) was observed, whereas polyunsaturated (PUFA) and monounsaturated (MUFA) fatty acids were detected in relative percentages of 30.9% and 20.8%, respectively. β -tocopherol was the most abundant of the four isoforms found in the sample, followed by δ -, α - and γ -tocopherol, present in concentrations of 597, 43, 3.7 and 2.0 g/100 g, respectively. Borututu infusion revealed the highest antioxidant activity, with EC₅₀ values ranging from 20 to 600 μ g/mL and was the only formulation inhibiting the growth of an HepG2 cell line, with a GI₅₀ value of 146 μ g/mL. This formulation also revealed the best antimicrobial capacity and proved to be able to inhibit the growth of *Escherichia coli*, *E. coli* ESBL, *Staphylococcus aureus* and *Pseudomonas aeruginosa*, with MIC values of 50, 6.2, 1.6 and 25 mg/mL, respectively. Pills revealed activity against some of the studied bacterial strains and the syrup did not reveal antimicrobial activity at the studied concentration. Ellagic acids, methyl ellagic acids, eucaglobulin/globulisin B and (epi)gallocatechin-*O*-gallate were the compounds present in all the different formulations. The highest concentration of phenolic compounds was found in the infusion extract. Protocatechuic acid was the most abundant phenolic compound in the infusions, the only preparation where it was detected, whereas (epi)gallocatechin-*O*-gallate was the main phenolic in the pills and eucaglobulin/globulisin in the syrup. In a general way, borututu proved to be a good source of phytochemicals such as phenolic compounds, with the infusions revealing the best bioactive properties.

References

[1] Silva, J.R.A. et al., Memórias do Instituto Oswaldo Cruz 2011, 106, 142-158.

[2] Scalbert, A. et al., The American Journal of Clinical Nutrition 2005, 81, 215S-217S.

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