GLUPOR 12

12.ª Reunião do Grupo de Glúcidos

Carboidratos em Portugal
e potencial de diferenciação internacional

Programa e livro de resumos

Universidade de Aveiro, Portugal
11 - 13 setembro 2017

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Aveiro, 11-13 setembro 2017

SOCIEDADE PORTUGUESA DE QUÍMICA

universidade de aveiro

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18h00	**18h30**	PL12 - Nuno Xavier (FCUL) *New D-glucuronamide-based N-glycosyl compounds displaying anticancer potential*
18h30	**19h00**	**Assembleia Geral do Grupo de Glúcidos da SPQ**
20h00		**Jantar – Restaurante Olaria-EFTA, Cais da Fonte Nova, Aveiro**

Quarta-feira, 13 de setembro de 2017		
09h30	**10h30**	**Chairperson: Victor Freitas** Anfiteatro 30A.1.14
09h30	**10h00**	PL13 – Paula Pinto (RAIZ) *New applications of wood polysacchandes from a pulp-and-paper based biorefinery*
10h00	**10h30**	PL14 - Lisete Machado e Silva (Imperial College UK) *Glycan microarrays in biological and medical research*
10h30	**11h30**	**Café + Pósteres**
		Sessões Paralelas
11h30	**12h20**	**Carbohydrates for the Future** **Chaiperson: Ana Maria Gomes** Anfiteatro 30A.1.14
11h30	11h50	K13 - Miguel Cerqueira (INL) *Edible films and coatings: opportunities and challenges*
11h50	12h05	O31 - Carolina Pandeirada (UA) *Structural characterization of polysaccharides from Nannochloropsis oculata and their use in microarrays*
12h05	12h20	O32 - Cristina Caleja (IPB) *Incorporation of an extract rich in rosmarinic acid into cupcakes: Influence on the sugars and total carbohydrates composition*
11h30	**12h20**	**Structure of Carbohydrates** **Chairperson: Fernando Nunes** Anfiteatro 30A.2.05
11h30	11h50	K14 - Carlos Fontes (FMVUL) *Role of Cellulosomes in the deconstruction of complex carbohydrates*
11h50	12h05	O33 - Ana Catarina Diniz (UNL) *Protein-Glycan driven quinary interactions under macromolecular crowding unveiled by NMR Spectroscopy*
12h05	12h20	O34 - Ana Moreira (UA) *Non-enzymatic transglycosylation reactions and Maillard reaction: a competition with relevance for coffee melanoidins formation*
11h30	**12h20**	**Immune Active Carbohydrates** **Chairperson: Letícia Estevinho** sala 30B.2.18
11h30	11h50	K15 - Vitor Martins (IPB) *Immunostimulatory polysaccharides from the hot water extracts of prickled broom (P. tridentatum (L.) Willk) dried inflorescences*
11h50	12h05	O35 - Cláudia Passos (UA) *Which arabinogalactans structural features can contribute to in vitro immunostimulatory activity of coffee?*
12h05	12h20	O36 - João Barros (UL) *Chemical synthesis of GalNAc mimetics aimming macrophage galactose C-type lectin and block viral infections*
12h20	**13h00**	**Sessão de Encerramento** Anfiteatro 30A.1.14
13h00		**Almoço**

O32 - Incorporation of an extract rich in rosmarinic acid into cupcakes: Influence on the sugars and total carbohydrates composition

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Currently, the food industry is focused on replacing synthetic additives with natural ingredients. Natural extracts obtained from plants have emerged as possible alternatives to synthetic preservatives, namely antioxidants [1]. Some dairy, meat and bakery products have been developed incorporating extracts of aromatic plants, spices or fruits, which have antioxidant properties [2-4].

In this work, we intend to prove the efficacy of an extract rich in rosmarinic acid as a natural preservative in cupcakes and compare these results to a synthetic additive (potassium sorbate, E202), which is normally used in pastry products. The extract of *Melissa officinalis* L. (lemon balm) was obtained by performing an ultrasound-assisted extraction with ethanol. After evaluation of its antioxidant (free radical scavenging activity, EC_{50} = 79 ± 2 µg / mL; reducing power EC_{50} = 49 ± 1 µg / mL) and antimicrobial (against 8 bacteria and 8 fungi contaminants) properties, and confirmation of toxicity absence (in a non-tumor cell line), the extract enriched in rosmarinic acid was incorporated into the cupcakes. Its effect was compared to E202 and to a control sample (cupcakes without additives) immediately after incorporation and in the 3rd and 5th day of storage, protected from light at room temperature.

The results showed that both natural (extract enriched in rosmarinic acid) and synthetic (E202) additives, did not cause significant changes in the nutritional composition of cupcakes (fat, protein and carbohydrate contents), when compared with the control sample. Free sugars were also determined by high performance liquid chromatography coupled to a refractive index detector (HPLC-RI), which indicated sucrose and glucose as the most abundant sugars in all samples. These molecules did not undergo any changes with the addition of the additives as compared to the control sample.

The results obtained demonstrate that the presence of rosmarinic acid does not influence sugars and total carbohydrates content of cupcakes and may be used in the development of new pastry and bakery products, replacing synthetic preservatives and improving the functional properties of the food.

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References

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2. C. Caleja et. al., J func food, **2015**, *16*, 114-124;
3. C. Caleja et. al., Food chem, **2017**, *216*, 342-346;
4. M.A. Shah et al., Meat sci, **2014**, 98, 32-33.