



**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
Instituto de Química
e Engenharia de
Vila Rica



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			



P6. Comparative study of the bioactive potential of *Foeniculum vulgare* Mill. and *Matricaria recutita* L. phenolic rich extracts to functionalize cottage cheese

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Synthetic additives used in a wide variety of food products have been associated to some toxic effects. This conducted to an increasing interest of consumers for natural additives, including food preservers [1]. Many aromatic herbs have been used to prepare bioactive extracts with benefits to the consumer's health. *Foeniculum vulgare* Mill. (fennel) and *Matricaria recutita* L. (chamomile) are examples of popular herbs rich in phenolic compounds with documented antioxidant and antimicrobial properties [2,3].

The present work confirms the antioxidant (DPPH scavenging activity, reducing power and lipid peroxidation inhibition) and antimicrobial (against bacteria such as *Bacillus cereus* and *Salmonella Typhimurium* and fungi such as *Aspergillus niger*, *A. versicolor* and *Penicillium funiculosum*) activities of fennel and chamomile extracts, obtained by decoction. The chemical characterization of the extracts, performed by HPLC-DAD-ESI/MS, revealed the presence of five flavonoids (mainly quercetin-3-O-glucoside) and twelve phenolic acids (mainly 5-O-caffeoylquinic acid) for fennel extract and the presence of nine flavonoids (mainly luteolin-O-glucuronide) and ten phenolic acids (mainly di-caffeoyl-2,7-anhydro-3-deoxy-2-oxotulopyranosonic acid) for chamomile extract. Due to their high antioxidant and antimicrobial activities, both extracts were then incorporated (at DPPH scavenging activity EC₂₅ value: 0.35 mg/mL and 0.165 mg/mL for fennel and chamomile, respectively) in cottage cheeses (prepared by Queijos Casa Matias Lda) as natural additives with two objectives: to increase the shelf-life of the cottage cheeses and to provide bioactive properties to the final products. The results showed that the use of these natural extracts did not alter significantly the nutritional characteristics of the cottage cheese in comparison with control samples (cottage cheese without extracts), but improved its antioxidant potential (more evident in the samples with chamomile extract). After 14 days of storage, only the control samples showed signs of degradation. Overall, the present study highlights the preservation potential of fennel and chamomile extracts in cottage cheeses, improving also their bioactivity.

References

- [1] Carocho, C., Barreiro, M.F., Morales, P. Ferreira, I.C.F.R., Comprehensive Reviews in Food Science and Food Safety, 2014, 13, 377-399.
- [2] Caleja, C. Barros, L., Antonio, A. L., Ciric, A., Soković, M., Oliveira, M.B.P.P., Santos-Buelga, C., Ferreira, I.C.F.R., Journal of Functional Foods, 2015, 12, 428-438.
- [3] Caleja, C., Barros, L., Antonio, A.L., Ciric, A., Barreira, J.C.M., Soković, M., Oliveira, M.B.P.P. Santos-Buelga, C., Ferreira, I.C.F.R. Journal of Functional Foods, 2015, 16, 114–124.

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