



**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
Vila Rica, Guimarães



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



P4. Antiangiogenic potential of yoghurts added with extracts rich in apigenin derivatives

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Angiogenesis is a biological process through which there is the formation of new blood vessels from pre-existing ones [1]. However, in pathological cases, the abnormal growth of new blood vessels promotes the development of various diseases including cancer [2] through the production of atypically large amounts of angiogenesis factors, e.g. the vascular endothelial growth factor (VEGF) [3]. The plant secondary metabolites have been the subject of several studies to evaluate their benefits to human health. In particular, the phenolic compounds have high potential for use in the food industry, including the development of functional foods. Among these, apigenin has been associated with chemopreventive effects related to cancer [4]. In fact, chemoprevention is a present-day concept and contemplates the use of medicines, biological compounds or nutrients as an intervention strategy of cancer prevention.

In this work, an *Arenaria montana* L. hydroethanolic extract was prepared and after characterization by HPLC-DAD-ESI/MS showed to be rich in apigenin derivatives. Furthermore, it exhibited ability to inhibit the phosphorylation of VEGFR-2 (vascular endothelium growth factor receptor) through an enzymatic assay. However, for the major protection of bioactive compounds, the extract was microencapsulated by an atomization/coagulation technique with alginate as the matrix material. Posteriorly, the hydroethanolic extract, in free and microencapsulated forms, was incorporated in yogurts in order to develop a novel chemopreventer food in relation to the angiogenesis process.

The functionalized yogurts with *A. montana* extracts (free and microencapsulated) showed a nutritional value similar to the used control (yogurt without extract); however, the samples enriched with extracts revealed added-value regarding the VEGFR-2 phosphorylation inhibition ability. This effect was more effectively preserved over time in the samples functionalized with the protected extract.

Overall, this work contributes to the valorization of plants rich in flavonoids, exploring its antiangiogenic potential with VEGFR-2 as target. Moreover, the atomization/coagulation technique allowed the production of viable microspheres enriched with the plant extract. The microspheres were effectively incorporated into yogurts, protecting the extract thus envisaging the development of novel functional foods with chemopreventive effects.

References

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- [4] He, J.; Ning, C.; Wang, Y.; Ma, T.; Huang, H.; Ge, Y.; Liu, J.; Jiang, Y., *Journal of Functional Foods* 2015, 18, 10–21.

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