

Visiting Speaker

Prof. Miguel A. Prieto,

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TOPIC

Extraction of bioactive phytochemicals from plants, algae and by-products towards their industrial applications



13 FEB
Tuesday 2024



10h00



Seminar Room 1 & 2, Biological Science Building,
School of Life Sciences (Westville Campus), UKZN



BIOGRAPHY: Miguel A. Prieto holds a multidiscipline graduate record covering disciplines from Agricultural Sciences, Food Science and Technology and Engineering. He completed two Post-Graduate Master courses in Food Science and Technology and Biosystems Engineering, at the University of Vigo (Spain) and the University College Dublin (Ireland). He completed his PhD degree in Food Science Technology at the Institute of Marine Research (IIM-CSIC, Vigo, Spain). Currently, he is a Ramón & Cajal researcher in the University of Vigo, leading his own independent group. His experience in Food Chemistry and Technology is supported by 200 peer-reviewed articles published in journals indexed in Web of Science (Researcher ID G-4516-2011). To date he has achieved a 44 h-index with over 5,400 citations from 2011 to 2024. He has collaborated in 29 research projects (PI in 4 of them) and he holds 5 patents. He has co-authored a total of 306 communications on more than 90 different international and national conferences (see ResearchGate profile). From these 306 contributions 113 are oral presentations and 135 poster communications and he has invited as plenary speaker in 5 occasions. He is member of the editorial board of different international SCI-journals (JCR), including Food Chemistry Advances, Frontiers in Nutrition, Current Pharmaceutical Design, Food Science & Nutrition, Chemosensors, International Journal of Molecular Sciences and Antioxidants. To date, he is collaborating with 28 PhD students, of which is the main supervisor of 13, and co-supervisor of 15 students.

ABSTRACT: The research group of Nutrition Food Group (NuFoG) was established in 2019. It was created as a part of the Nutrition and Bromatology group, belonging to the Department of Analytical Chemistry and Food Science at the University of Vigo, Spain. We are in the Technological City of Vigo (CITEXVI). The research activities of the group seek to cover the most relevant aspects concerning the extraction and identification of compounds of interest and the screening of biological activities based on various sources such as food by-products, algae, plants, and foodstuffs applying optimization and mathematical modeling approaches, thus obtaining the ideal process parameters and, as a result, the maximum yield desired with the best cost-effectiveness conditions. Firstly, our research are focuses on the study of novel extraction techniques, having in mind the adaptability to industrial scale processes. Our study is directed towards the improvement of techniques such as PLE, UAE, or MAE. Secondly, we also work in the identification and quantification of target compounds by using HPLC, LC-MS/MS, and GC-MS, to recognize a wide spectrum of compounds with biological importance, ranging from polyphenols to fatty acids. At last, for the evaluation of the biological properties, we focused on three principal activities: antioxidant assays, *in vitro* antiproliferative assays in tumor and non-tumor cell-lines, and *in vitro* anti-inflammatory assays. All these processes are sustained by two important maxims: sustainability and design of new products regarding the necessities of the current society. Some examples of our work include: 1) obtaining a natural additive based on catechins from *Arbutus unedo* L.; 2) obtaining a natural rosmarinic acid ingredient from *Melissa officinalis* L.; 3) untargeted metabolomics and *in vitro* functional analysis of the intraspecific bioactive potential of *Camellia japonica* flowers; or 4) Phytochemical compounds with promising biological activities from *Ascophyllum nodosum* extracts using microwave assisted extraction.

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