



Preface

Natural bioactive compounds and Nutrigenomics

The search for natural bioactive compounds able to provide medical or health benefits, including the prevention and/or treatment of a disease, is a key topic for many laboratories and industries. Today, pharmaceutical and food domains share a similar interest to obtain and characterize new bioactive compounds from natural sources which can be used as new drugs, functional food ingredients or nutraceuticals. The increasing consumer interest in natural bioactive compounds has brought about a rise in demand for these kinds of compounds and, in parallel, an increasing number of scientific studies have this type of substance as main topic. Many different analytical strategies have been used to detect, separate and/or characterize natural bioactive compounds, including modern Nutrigenomics. Thus, Nutrigenomics is recognized as a multidisciplinary field of research that aims to elucidate how bioactive compounds in the diet can influence human health, by analyzing interactions of bioactive food compounds with genes and their effect on transcription factors, protein expression and metabolic profile. To study these complex interactions, Transcriptomics, Proteomics and Metabolomics approaches are employed together with an adequate integration of the information they provide.

This special issue was prepared with the aim to provide the scientific community with the latest advances in "Natural bioactive compounds and Nutrigenomics". The articles published in this volume illustrate well the different trends that can currently be observed in this active area. Thus, in five different reviews authors show the new tendencies regarding: i) novel and future analytical approaches to investigate the biological activity of natural compounds in Nutrigenomics research; ii) natural bioactive compounds from citrus lemon; iii) advanced analysis of bioactive fatty acids;

iv) determination of gangliosides in biological samples and dairy products and v) analysis of plant proanthocyanidins.

Research articles published in this special issue focus on the study of different natural bioactive compounds, including tannins, isoflavones, resveratrol, alkaloids, phenolic compounds, diterpenoids, carnitine enantiomers, etc, as well as the exhaustive metabolomic profiling of different natural extracts. The existence of these compounds is studied directly in different natural matrices (such as tea, olive oil, burdock, exotic fruits, salvia, algae, microalgae, etc) or detected together with their metabolites in different biological fluids (human urine, rat plasma and tissues, etc) after the consumption of different types of food or bioactive ingredients. To do this, new extraction procedures, as well as new chemical and/or biological methods to characterize the nutraceutical compounds, are presented by using different analytical approaches including e.g., metabolomics and transcriptomics methodologies, pressurized-liquid techniques, fluorescent sensors, HPLC-MSⁿ instruments, capillary electrophoresis (CE), etc.

We believe this issue devoted to *Natural bioactive compounds and Nutrigenomics* can be a good source of reference for many laboratories working on these hot topics.

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