KEYNOTE LECTURE 1 [K01]

Title: “Foodomics: Last Advances in the Binomial Food & Health”

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Abstract: One of the main topics in our lab during the last year [1-16] has been the search of new food compounds with anti-cancer activity following a Foodomics approach. To carry out this work, advanced omics platforms such as transcriptomics, proteomics and/or metabolomics have been employed. This work has included: a) the development of new green extraction processes to obtain bioactive compounds from different natural sources (algae, microalgae, food by-products, plants, etc) [1-4]; b) the determination of the antiproliferative effect of the new extracts against different in vitro and in vivo models of colon cancer [5-8]; c) the development of advanced analytical approaches including metabolomics profiling based on comprehensive LCxLC-MS/MS for the chemical characterization of the bioactive extracts [9,10]; d) the identification of genes, proteins and metabolites differentially expressed in cancer cells using whole-transcriptome microarrays followed by RT-PCR confirmation, nano-LC-MS for proteomics and/or non-targeted whole-metabolome approaches based on LC-MS and CE-MS [11-14] and; e) the development of different algorithms for the comprehensive analysis of these MS-based datasets [15,16]. These strategies represent a good example of the important challenges that still have to be addressed by Foodomics in order to solve the binomial Food & Health and will allow us to discuss in this work some of the current and future challenges inthis area of research.

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