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Plant foods oxidative stress *vs.* human oxidative stress after plant foods intake in humans-plant foods processing *vs.* neurodegenerative, vascular and inflammation consequences

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In humans and mammals, oxidative stress has been associated to the pathogenesis of several chronic diseases. High levels of reactive nitrogen and oxygen species (RNOS) overwhelm the antioxidant defenses in the organism and conduct to the oxidative damage of lipids, proteins and nucleic acids. Besides, lipid peroxidation products have been investigated in order to determine their use as biomarkers of oxidative status in the human body. Arachidonic acid (ALA), adrenic acid (AdA) and docosahexanoic acid (DHA) are commonly studied fatty acids which result in isoprostanes (IsoPs) F2-dihomo-isoprostanes (F2-dihomo-IsoPs), and neuroprostanes (NeuroPs), respectively. In our laboratory, nutritional and clinical trials including physical exercise, and the intake of plant foods (i.e. citrus-based functional foods, broccoli sprouts, and wine (D.O. Rioja, Spain)) has delivered positive effects against the generation of these biomarkers of oxidative stress (oxidative stress-based-lipidomics). On the other hand, these types of RNOS are also generated in secondary plants. Particularly, one of the free radical attacks take place against fatty acids. When the oxidative reaction of RNOS is against alpha-linolenic acid (ALA) -the predominant polyunsaturated fatty acid (PUFA) in plants, new compounds named phytoprostanes emerge in plant tissues. These compounds could be used as control quality of the plant foods processing techniques and from a nutritional point of view; the phytoprostanes are absorbed by the human body and show a mimic structure like prostanoids and isoprostanes. Therefore, the intake of plant foods rich in phytoprostanes may have effects on neurodegenerative, vascular and inflammation disorders linked to F2-dihomo-Iso Psand NeuroPs, and IsoPs markers, respectively.

Biography

Angel Gil-Izquierdo has completed his PhD from University of Murcia (Spain) and the Spanish National Research Council (CSIC) and Postdoctoral studies from Institut National de la Recherche Agronomique (INRA-Clermont-Ferrad-Theix, France) under the supervision of Dr. Claudine Manach, Dr. Christine Morand, Dr. Marie-Noëlle Horcajada and Dr. Augustin Scalbert. Now he is the tenured research scientist at CEBAS-CSIC (Spanish National Research Council) working in human and clinical nutrition, food science and technology, oxidative stress, metabolomics and new markers for detection of human pathologies. He has lead projects from national and international organisms, and he has been member of the Experts Committee at the European Food Safety Authority (EFSA). To date, he has published 96 papers in reputed journals of the Science Citation Index (SCI).

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