Universidad de Navarra

Máster en Investigación Biomédica
Facultad de Ciencias

Research Project Proposal
Academic year 2015-2016

Project Nº 34
Title: Health implications of sterols´ oxidation products and factors involved in their formation
Department/ Laboratory Departamento de Ciencias de la Alimentación y Fisiología
Director : Iciar Astiasarán and Diana Ansorena **Contact:** dansorena@unav.es (Ext 806263)
Summary Oxysterols (SOPs: oxidized derivatives of cholesterol and phytosterols) can be generated in the human organism through different oxidation processes, some requiring enzymes. Oxysterols are also present in food due to lipid oxidation reactions caused by heating treatments, contact with oxygen, exposure to sunlight, etc., and they could be absorbed from the diet. Cholesterol oxidation products (COPs) have shown cytotoxicity, apoptotic and pro-inflammatory effects and they have also been linked with chronic diseases including atherosclerotic and neurodegenerative processes. Oxysterols from plant sterols (oxyphytosterols) have also been linked to toxic effects, although at higher doses. The project will evaluate the interaction between sterols and antioxidants on final formation of SOPs under several conditions. Model systems will be applied and potential application on biological samples will be also included. Determination of the SOPs content will be carried out by gas chromatography-mass spectrometry analysis. Wide experience in acquiring skills in the use and handling of this equipment is offered, that can be further applied for the analysis of a great number of compounds • **References** Otaegui-Arrazola, A., Menéndez-Carreño, M., Ansorena, D., Astiasarán, I. Oxysterols: a world to explore. Food and Chemical Toxicology, 48(12), 3289-3303. 2010 • Menéndez-Carreño, M., Varo, N., Mugueta, C., Restituto, P., Ansorena, D., Astiasarán, I. Correlation between serum COPs from autoxidation and CVD risk factors. Nutrición Hospitalaria 26(1), 144 -151. 2011 • Ansorena, D., Barriuso, B., Cardenia, V. Astiasarán, I., Lercker G., Rodriguez-Estrada, M.T. Thermo-oxidation of cholesterol: effect of the unsaturation degree of the lipid matrix. Food Chemistry 141, 2757-2764. 2013

POSSIBILITY OF PhD

YES*

* (PhD grant required)