**PROJECT CO-FUNDED BY EUROPEAN REGIONAL DEVELOPMENT FUNDS (ERDF)**

**Lead Researcher:** Mr. Carlos Bocos de Prada

**Reference:** SAF2017-89537-R

**Title**: ‘Maternal fructose intake predetermines the appearance of the metabolic syndrome in offspring: mechanisms involved, transgenerational effect and response to Western diet’ (La ingesta materna de fructosa predetermina la aparición del síndrome metabólico en al descendencia: mecanismos implicados, efecto transgeneracional y respuesta a Western diet)

**Financing Entity**: Spanish Ministry of Economy, Industry and Competitivity (Ministerio de Industria, Economía y Competitividad)

**Total amount:** 72.600 €

**Start date:** 01/01/2018

**End date:** 31/12/2020

**Summary:**

PURPOSES

Purpose 1: to show that exposure to fructose during pregnancy causes epigenetic, ER stress and autophagy changes in foetuses.

Purpose 2: to show that the changes caused by fructose in foetuses modify the response in offspring, once they are adults, to situations that favour the appearance of the metabolic syndrome such as: the ingestion of liquid fructose with or without a fatty diet (Western diet).

Purpose 3: To show the transmission from generation to generation of the metabolic and epigenetic changes induced by fructose during pregnancy.

RESULTS

*Scientific articles*

* Rodrigo S, Panadero MI, Fauste E, Rodríguez L, Roglans N, Álvarez-Millán JJ, Otero P, Laguna JC and Bocos C. *Effects of maternal fructose intake on perinatal ER-stress: a defective XBP1s nuclear translocation affects the ER-stress resolution*. Nutrients 2019, 11(8), 1935, 2019. DOI: 10.3390/nu11081935.
* Fauste E, Rodrigo S, Rodríguez L, Donis C, García A, Barbas C, Álvarez-Millán JJ, Panadero MI, Otero P, and Bocos C. *FGF21-protection against fructose-induced lipid accretion and oxidative stress is influenced by maternal nutrition in male progeny*. J Funct Foods 64:103676, 2020. DOI: 10.1016/j.jff.2019.103676.

*International congresses*

* E. Fauste, R. Aguirre, S. Rodrigo, L. Rodriguez, J.J. Álvarez-Millán, M.I. Panadero, P. Otero and C. Bocos. F*ructose intake in pregnancy affects one-carbon metabolism of female progeny*. 87th Annual Congress of European Atherosclerosis Society (EAS), Maastricht (Holanda), 26-29 mayo 2019 [Comunicación oral]. Publicado en: Atherosclerosis 287:e32, 2019.
* S. Rodrigo, M.I. Panadero, E. Fauste, L. Rodríguez, N. Roglans, J.J. Álvarez-Millán, P. Otero, J.C. Laguna and C. Bocos. *Maternal fructose produces a defect in XBP1s nuclear translocation affecting the ER-stress resolution*. 1st Nutrients 2019: Nutritional Advances in the Prevention and Management of Chronic Disease. Barcelona 25-27 septiembre 2019 [Póster].

*Research projects*

* C. Donis. *La ingesta materna de carbohidratos modula la ruta del poliol y su respuesta al consumo de fructosa en la descendencia hembra adulta.* Trabajo Fin de Grado de Biotecnología. Facultad de Farmacia. Universidad San Pablo CEU. Curso 2018-2019. Dirigido por MI Panadero y C Bocos.
* M. Mena. *Efectos de la ingesta materna de carbohidratos en la ruta del poliol y la tonicidad celular*. Trabajo Fin de Grado de Farmacia. Facultad de Farmacia. Universidad San Pablo CEU. Curso 2018-2019. Directed by P Otero y C Bocos.
* S. McGowan. Trabajo de Investigación defendido en la Universidad de Cardiff. Estancia Erasmus durante el curso 2018-2019. Dirigido por P Otero y C Bocos.