

Research Project Proposal
Academic year 2017-2018

Project Nº 39 ASIGNADO
Title: Search for metagenomic markers in relation to weight loss
Department/ Laboratory Centro de Investigación en Nutrición (Facultad de Farmacia y Nutrición)
Director 1 Dr. Fermín Milagro Yoldi Contact: fmilagro@unav.es
Codirector: Dr. José Ignacio Riezu Boj Contact: jiriezu@unav.es
Summary <p>Obesity is a serious public health problem that is reaching epidemic proportions. It is a key factor in the development of type 2 diabetes, liver steatosis, cardiovascular disease and some types of cancer, so its health and social costs are very high. Its treatment consists basically in the combination of diet and physical exercise but reaches very low levels of success. In addition, the permitted drugs have numerous side effects. Therefore, it is necessary to better personalize the dietary treatment based on the characteristics of each individual: metabolism, genetic sequence, epigenetic and metabolomic patterns, and composition of the gut microbiota.</p> <p>The present project starts from the hypothesis that the metagenomic characteristics make that individuals do not respond equal to the same environmental factors (i.e., diet, exercise). This influences the risk of developing diseases and how to prevent and treat them. According to our preliminary data, there would be an interaction between diet, obesity and gut microbiome that would affect the phenotype through changes in metagenomic and metabolomic parameters.</p> <p>The main objectives of this project are:</p> <ol style="list-style-type: none">1 - Characterization of the microbiota that correspond to a healthy phenotype in relation to the metabolic syndrome, and its associations with the usual diet.2 - Analysis of the changes that undergo the gut metagenome and metaboloma as a consequence of the intake of weight-loss diets with different composition.3 - Identification of metagenomic and metabolomic markers that predict the response to certain weight-loss diets.



References

Future Perspectives of Personalized Weight Loss Interventions Based on Nutrigenetic, Epigenetic, and Metagenomic Data.

Goni L, Cuervo M, Milagro FI, Martínez JA.

J Nutr. 2016; 146: 905S-912S. doi: 10.3945/jn.115.218354

Reshaping faecal gut microbiota composition by the intake of trans-resveratrol and quercetin in high-fat sucrose diet-fed rats.

Etxeberria U, Arias N, Boqué N, Macarulla MT, Portillo MP, Martínez JA, Milagro FI.

J Nutr Biochem. 2015 Jun;26(6):651-60. doi: 10.1016/j.jnutbio.2015.01.002.

Impact of polyphenols and polyphenol-rich dietary sources on gut microbiota composition.

Etxeberria U, Fernández-Quintela A, Milagro FI, Aguirre L, Martínez JA, Portillo MP.

J Agric Food Chem. 2013 Oct 9;61(40):9517-33. doi: 10.1021/jf402506c.