Universidad de Navarra

Máster en Investigación Biomédica
Facultad de Ciencias

Research Project Proposal
Academic year 2016-2017

Project Nº 19

Title: Gut microbiota composition can influence body weight loss by interacting with diet composition

Department/ Laboratory: Center for Nutrition Research, School of Pharmacy and Nutrition, University of Navarra

Director : Dr. José Ignacio Riezu Boj
Contact: jiriezu@unav.es

Codirector: Dr. Fermín Milagro
Contact: fmilagro@unav.es

Summary
A dramatic increase in obesity and obesity-related comorbidities, mainly type 2 diabetes and cardiovascular diseases, have occurred in the last decades. Emerging data reinforces the implication of gut microbiota dysbiosis in the pathogenesis of metabolic disorders. Scientific evidence has demonstrated the capacity of gut microbiota to extract energy from the diet and to influence host energy metabolism and inflammation. Moreover, obese subjects have been distinguished for presenting an altered gut microbiota composition, although the bacterial profile characterizing the obese phenotype has not been still completely defined. Moreover, it is well known that gut microbiota composition can be influenced by dietary factors in interaction with genetic background and the host metabolic condition. As obesity prevalence keeps on rising despite great efforts in pharmacological, surgical and lifestyle measures, it is necessary to find new approaches to optimize weight loss results. In this sense, it is necessary to identify early biomarkers of response to the diet (i.e., genetic, epigenetic, biochemical, microbiome) that could be helpful to personalize obesity management.
The hypothesis of the current proposal is that gut microbiota composition can influence host metabolic condition and the response to a weight-loss diet. Hence, patients could be customized to individually benefit from a personalized treatment based on their microbiota. The objective of the current project is to identify specific microbiome patterns that could predict the success of different weight-loss dietary strategies.
The project will use faecal samples from obese individuals that have followed different nutritional strategies to lose weight (diets with different proportions of proteins, fat and carbohydrates, and with different composition in polyphenols and other bioactive compounds) and will analyze the percentage of the different bacterial phyla, families and species by applying 16s RNA pyrosequencing.
The results of this study will try to identify microbiome biomarkers that could be helpful in the implementation of precision nutrition for obesity.

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 Mar 9. pii: jn218354.

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POSSIBILITY OF PhD

YES*

* (PhD grant required)