Research Project Proposal
Academic year 2019-2020

Project Nº 44

Title: *EXOSOMES, miRNAs AND LIVER STEATOSIS: DIAGNOSIS AND TARGET GENES*

Department/ Laboratory
CENTRE FOR NUTRITION RESEARCH, FACULTY OF PHARMACY AND NUTRITION

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Summary

Non-alcoholic fatty liver disease (NAFLD) is a process of pathological fat deposition in the liver whose prevalence is 10-35% of the population. It is a multifactorial disease that is influenced by nutritional, lifestyle and genetic factors, and the leading cause of developing insulin resistance and liver fibrosis and cirrhosis. Extracellular miRNAs can be detected in plasma, as naked RNAs or within small vesicles such as exosomes, and it is thought that can target other cell types to those than have generated them. These miRNAomic biomarkers can be very useful for the early detection of the disease, the personalization of the treatment and the knowledge of the physiopathological mechanisms of the disease.
The objective of the present study is to analyse the miRNA pattern of the exosomes secreted from hepatocytes that, in *in vitro* conditions, develop a model of steatosis, and to compare it with normal hepatocytes. And also to compare these patterns with the exosomal miRNA patterns found in plasma of patients with and without diagnosed NAFLD.
One of these miRNAs will be selected to analyse its target genes in cell models (hepatocytes, adipocytes or macrophages) and to study its metabolic implications, by transfecting miRNA mimics or inhibitors in *in vitro* models.
The identification of novel exosomal miRNAs as biomarkers and therapeutic targets would contribute to precision medicine and to design new strategies for the treatment of NAFLD and insulin resistance.

yes	
no	**X**

Does the project include the possibility of supervised animal manipulation to complete the training for animal manipulator?