Universidad de Navarra
Facultad de Ciencias

MÁSTER EN INVESTIGACIÓN BIOMÉDICA
Research Project Proposal
Academic year 2025-2026

Project Nº 35

Title: Study of the serum metabolipidomic profile of breast cancer patients with normoweight or overweight/obesity

Department/ Laboratory *Laboratory where the project will be carried out indicating Department, Area, Faculty, CUN, CIMA etc.*
Department of Nutrition, Food Science and Physiology, Center for Nutrition Research,
School of Pharmacy and Nutrition, University of Navarra

Director 1: MIGUEL BURGOS LOZANO
Contact: *mburgosloz@unav.es*
Codirector: MARÍA JESÚS MORENO ALIAGA
Contact: *mjmoreno@unav.es*

Summary

The search for novel diagnostic and prognostic biomarkers is of great importance to personalize treatment of diseases. Specially, it is important in high-risk groups as postmenopausal women with obesity, who are more prone to develop breast cancer and other metabolic diseases. In women with obesity, we can observe a chronic low-grade systemic inflammation. Moreover, an inflamed tumor microenvironment is observed in breast cancer diagnosed women with obesity, which worsen the disease. Nevertheless, changes in pro-resolving lipid mediators, which actively participate in the resolution of inflammation in tissues, have not been yet studied in these patients.
This project aims to characterize the metabolic and lipidomic biomarkers in postmenopausal women with breast cancer, and women without the disease (both in normoweight and overweight/obesity condition). The specific objectives are:

1. To evaluate body composition (iDXA), dietary habits (FFQ test) and physical activity (accelerometer) of patients and volunteers of the study.
2. To study the serum/plasma lipid and glucose metabolic profile (cholesterol, triglycerides, free fatty acids, glucose and insulin). Additionally, serum adipocytokines related to inflammation (adiponectin, leptin or TNF-α) will be evaluated by ELISA.
3. To analyze the pro-revolving lipid mediators using targeted lipidomics from the serum/plasma samples (LC-MS/MS-based metabololipidomics).
4. To evaluate the association among the body composition, dietary habits and physical activity, with the metabolic and lipidomic profile of the different groups.

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

yes	
no	X