Universidad de Navarra
Facultad de Ciencias

MÁSTER EN INVESTIGACIÓN BIOMÉDICA
Research Project Proposal
Academic year 2026-2027

Project Nº 36

Title: *Role of adipo-myokines regulating activin receptor-2B in the development of sarcopenic obesity*

Department/ Laboratory Metabolic Research Laboratory, Department of Endocrinology & Nutrition, CUN

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Summary

Sarcopenic obesity, characterized by the coexistence of excess adipose tissue and reduced muscle mass, is associated with increased metabolic and functional vulnerability. The interaction between adipose tissue and skeletal muscle is mediated by adipo-myokines, bioactive proteins such as myostatin, activin A, follistatin, FSTL1, and FSTL3 that regulate inflammation, adipogenesis, myogenesis, and mitochondrial function. These molecules act primarily through the activin receptor type 2B (ACVR2B), whose inhibition has shown beneficial effects in preclinical models of obesity, cachexia, and metabolic disease, although human evidence remains limited.

This project aims to improve understanding of ACVR2B-regulating adipo-myokines in sarcopenic obesity by evaluating their role in the development and progression of this clinical phenotype. Plasma concentrations of adipo-myokines will be measured in a case-control **clinical study** in patients with normal weight and obesity stratified by their glycemic status and sarcopenia by **ELISA**, and gene and protein expression of adipo-myokines and ACVR2B in visceral and subcutaneous adipose tissue will be assessed using **real-time PCR, Western blot, and histological analyses**. An **interventional study** will also examine how weight loss induced by bariatric surgery (sleeve gastrectomy or Roux-en-Y gastric bypass) modifies circulating adipo-myokine levels and their associations with metabolic parameters. In parallel, ***in vitro* experiments** will evaluate **recombinant protein treatment**, **gene silencing**, and **pharmacological inhibition of ACVR2B** using Bimagrumab® to determine effects on inflammation, fibrosis, and mitochondrial dysfunction in adipocytes.

This translational approach seeks to identify novel biomarkers and therapeutic targets to support personalized strategies that improve functional and metabolic health in people living with sarcopenic obesity.

yes	
no	X

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