Research Project Proposal
Academic year 2021-2022
Máster en Investigación Biomédica

Project Nº 33

Title: *Metabolic profile improvement associated with bariatric surgery*

Department/ Laboratory *Metabolic Research Laboratory, Department of Endocrinology & Nutrition, Clínica Universidad de Navarra*

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Summary *Background:* Obesity has emerged as a public health problem worldwide associated with substantial morbidity and mortality. The surgical treatment of obesity (bariatric surgery) is the most effective treatment modality of obesity, resulting in a substantial and sustained weight loss.

Objective: To examine the impact on energy balance of two bariatric surgery procedures, namely sleeve gastrectomy (SG) and single anastomosis duodenoileal bypass with SG (SADI-S), comparing the effectiveness of these bariatric procedures on weight loss and metabolic profile.

Material and Methods: Four-week-old male Wistar rats fed a normal diet (ND) or a high-fat diet (HFD) are submitted to surgical [sham surgery, SG and SADI-SG] or dietary interventions [fed *ad libitum* a normal diet (ND) or a high-fat diet (HFD) or pair-fed to the amount of food eaten by SG or SADI-SG groups]. Body weight, food intake, fat pads weight as well as metabolic profile will be analyzed 6 weeks after surgical or dietary interventions.

The following techniques will be used:

Experimental handling of rats.
Biochemical and hormonal (adipokines) determinations.
Molecular techniques for gene expression analysis:
- RNA isolation from adipose tissue and·3T3·-L1 adipocytes.
- Nucleic acid and protein quantification and quality assessment.
- Analysis of gene expression by Real-time PCR.

Molecular techniques for protein expression analysis:
- Protein extraction from adipose tissue.
- Protein quantification: Bradford protein assay.
- Analysis of protein expression by Western-blot.

Immunohistochemical analysis of metabolites, hormones and cytokines.
Cellular isolation from adipose tissue.
Adipocyte 3T3-L1 cell cultures.

yes	**X**
no	

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