

Research Project Proposal
Academic year 2016-2017

Project Nº 38
Title: Study of the crosstalk of adipokines and myokines in the onset of obesity and its associated comorbidities
Department/ Laboratory Metabolic Research Laboratory, Clínica Universidad de Navarra.
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<p>Summary.</p> <p>Regular physical activity induces profound changes in the adipose tissue, such as the transdifferentiation of white adipocytes into beige adipocytes with the ability to dissipate energy in form of heat, in a process called fat browning. These changes are mediated, in part, via the myokines (factors expressed and secreted by the skeletal muscle with autocrine, paracrine and endocrine actions). Human studies are scarce and whether physical activity per se induces fat browning remains controversial. The aim of the present study is to analyze the circulating concentrations of myokines and adipokines in the context of obesity and study the impact of weight loss through caloric restriction or bariatric surgery in lean and obese patients classified according to their insulin resistance (normoglycemia, impaired glucose tolerance and type 2 diabetes) and physical activity (active and sedentary) as well as in an experimental model of obesity. The study of the interaction of adipose tissue and skeletal muscle is of great interest, since alterations in adipokines and myokines due to a sedentary lifestyle and/or insulin resistance might contribute to the development of obesity and its associated comorbidities, such as type 2 diabetes and non-alcoholic fatty liver.</p> <p>References References could be added (no more than three)</p> <ol style="list-style-type: none"> 1. Rodríguez A et al. Cross-talk between adipokines and myokines in fat browning. <i>Acta Physiol</i> 2016; doi: 10.1111/apha.12686. 2. Rodríguez A et al. Leptin administration activates irisin-induced myogenesis via nitric oxide-dependent mechanisms, but reduces its effect on subcutaneous fat browning in mice. <i>Int J Obes</i> 2015; 39(3):397-407.



3. Rodríguez A et al. Revisiting the adipocyte: a model for integration of cytokine signaling in the regulation of energy metabolism. *Am J Physiol Endocrinol Metab* 2015; 309(8):E691-714.

POSSIBILITY OF PhD

YES*

* (PhD grant required)