



Research Project Proposal

Academic year 2019-2020

Project Nº 51 ASIGNADO

Title: EFFECT OF NADPH OXIDASE 5-MEDIATED OXIDATIVE STRESS ON MATRIX METALLOPROTEINASES

Department/ Laboratory: Department OF Biochemistry and Genetics

Director 1: Guillermo Zalba Goñi

Contact: gzalba@unav.es

Summary:

Background: Oxidative stress plays a clear role in the pathophysiological processes that occur in cardiovascular diseases. At the vascular level, an excess production of superoxide anion dependent on the activity of the NADPH oxidase family is associated with endothelial dysfunction, LDL oxidation, cellular senescence, and more recently, dysfunction of metalloproteinases (MMPs), proteolytic enzymes involved in the remodelling of extracellular matrix. Preliminary results from our group has shown a key role of NADPH oxidase 5 (NOX5) in vascular injury progresses.

Hypothesis: We hypothesize that Nox5 may play a key role in the pathophysiology of vascular diseases by regulating the expression and activation of MMPs.

Objectives and methods: In order to prove this, we propose the following objectives: (1) to characterize the effect of Nox5 β overexpression on the MMPs in human aortic endothelial cells, and (2) to evaluate in vivo the relationship of endothelial Nox5 overexpression and MMPs activation in different cardiovascular experimental models.

yes

X

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

no