



Research Project Proposal
Academic year 2020-2021

Máster en Investigación Biomédica

Project Nº 33	
Title: <i>Effects of a hypothermic mimetic on brain insulin pathways</i>	
Department/ Laboratory <i>Department of Pharmacology and Toxicology, School of Pharmacy and Nutrition</i>	
Director 1 <i>Maria Javier Ramírez</i> Contact: <i>mariaja@unav.es</i> Codirector: <i>Maite Solas</i> Contact: <i>msolaszu@unav.es</i>	
Summary <p>Hypothermia has been proved to have a beneficial effect on several pathologies including stroke, neurodegeneration or traumatismos. Recent investigations have been trying to unravel the molecular mechanisms underlying the beneficial effects of hypothermia. CIRBP is one of the so termed cold-shock proteins involved in this process. Increasing levels of CIRBP may have broad clinical applications. It has been shown that CIRBP binds to specific mRNAs involved in cell survival and anti-apoptotic cascades, being an important mediator in the beneficial effects of therapeutic hypothermia. In recent years, a small molecule has been developed that binds CIRBP and, by doing so, increase CIRBP protein expression. This molecule can be identified as hypothermia mimetic</p> <p>The present study aims to investigate the biochemical effects of administering this small molecule hypothermia mimetic. Specifically, it is aimed to study the effects of this compound on insulin resistance and brain insulin pathways. The role of insulin in the brain has gradually expanded, from initial conceptions of the brain as insulin-insensitive through identification of a role in regulation of feeding, to demonstration of insulin as a key component of hippocampal memory processes. Conversely, systemic insulin resistance such as that seen in type 2 diabetes is associated with cognitive and neural deficits. In fact, insulin-resistance is a well-known risk factor for Alzheimer's disease.</p> <p>In this project, the hypothermic mimetic will be chronically administered to high fat diet fed rats. In brain and blood samples, it will be studied insulin-resistance, insulin-related pathways, neuroinflammation and dysfunction of the blood-brain barrier.</p>	
Yes	<input type="checkbox"/>
no	<input checked="" type="checkbox"/>
Does the project include the possibility of supervised animal manipulation to complete the training for animal manipulator?	