

Research Project Proposal
Academic year 2017-2018

Project Nº 22
Title: Role of insulin resistance in Alzheimer's disease
Department/ Laboratory of Pharmacology and Toxicology, University of Navarra
Director: Dra. Maite Solas Zubiaurre Contact: msolaszu@unav.es
Codirector: Dra. María Javier Ramírez Gil Contact: mariaja@unav.es
Summary <p>Cognitive deficits has emerged as one of the greatest health threats of old age, with nearly 50% of adults over the age of 85 afflicted with Alzheimer's disease. Developing therapeutic interventions demands a deep knowledge of the processes underlying normal and pathological brain ageing. Insulin is a pleiotropic hormone with numerous effects at the cellular and organismal levels. 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 recent 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 a range of cognitive and neural deficits in clinical, epidemiological and experimental studies. In fact, insulin-resistance is a well-known risk factor for Alzheimer's disease. In this work it is planned to study the biochemical mechanisms that could be responsible for cognitive deficits in situations of insulin resistance. Two experimental models of insulin-resistance will be used: high fat diet fed animals and stress-induced insulin-resistance. In all these models, in addition to check cognitive status and markers of Alzheimer's disease pathology, it will be studied insulin-resistance, insulin-related pathways, biochemical mechanisms and disfunction of the blood-brain barrier that could be involved.</p>