



Research Project Proposal

Academic year 2016-2017

Project Nº 18
Title: Oral administration of encapsulated insulin: Possible treatment for Alzheimer's disease?
Department/ Laboratory Pharmacology and Toxicology, School of Pharmacy, and Nutrition University of Navarra
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Summary Classically, the brain was considered an insensitive organ to the effect of insulin. However, new evidences demonstrate the presence of insulin and its receptors in the brain, particularly in the hippocampus, suggesting the important role of insulin in memory formation. Many studies indicate that insulin regulates neuronal survival, acts as a growth factor, and regulates brain circuitry. This supports the notion that insulin signaling in the brain plays a central role in brain function and reduced insulin levels could contribute to neuropathological processes such as Alzheimer's disease (AD). Therefore it is believed that restoring normal insulin levels in the brain may provide a therapeutic benefit in AD. Intranasal insulin administration increases insulin levels in the CNS and is able to improve the cognition in AD. However, the low absorption surface and the reduced bioavailability obtained intranasally, require pursuing another administration route for the chronic treatment with insulin. As alternative, this project proposes the oral administration. A novel formulation of insulin encapsulated in nanoparticles will be used, to prevent degradation in the gastrointestinal tract and allow the distribution of insulin into the CNS. Thus, the main objective of this study is to validate the oral administration of insulin in nanoparticles as a new therapeutic option for the treatment of AD. To this end, cognitive impairment and AD pathological markers will be studied in AD animal models with oral insulin administration. This project is focused, therefore, in the search of a novel treatment that could improve the lives of those suffering AD.



POSSIBILITY OF PhD

Indicate if the project could be continued with a PhD (doctoral thesis)

YES*

NO

* (PhD grant required)