CHARACTERISING THE EFFECTS OF THE INTERACTION APOE + ENVIRONMENTAL RISK FACTORS FOR ALZHEIMER'S DISEASE

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Introduction: Sporadic AD is probably caused by several both genetic and environmental factors. The major genetic risk factor is an allelic variant of apolipoprotein E called ApoE4. ApoE4 is associated with a wide variety of neuropathological processes, strongly linked to AD pathology. The combination of life style risk factors, such as high fat and high carbohydrate diets, and ApoE4 has been proposed as a main cause of sporadic AD.

Aims: To investigate the effects of the interaction between apoE genotype and environmental risk factors for AD on behavior and on neurodegenerative processes at molecular level.

Methods: ApoE4, ApoE3 Target Replacement mice, grown in different life style conditions such as a normal diet, high saturated fats and high carbohydrate intake. On these animal models we performed: - Behavioral studies to evaluate effects on cognition and memory. - Brain analysis with focus on APP processing, tau phosphorylation and synaptic integrity.

Results: Our preliminary data show a significant impairment of the spatial memory in apoE4 mice on high carbohydrate diet compared to the rest of the groups.

Conclusion: Data from behavioral experiments suggest an interaction between apoE4 and environmental risk factors for AD. Ongoing experiments will characterize the molecular processes behind. This will allow us to a deep understanding of the molecular mechanisms behind the studied risk factors involvement in neuropathology in relation with apoE genotype.