

EVALUATION OF THE EFFECTS OF OBESITY THAT INDUCED HIGH CALORIAL DIETARY ON LEARNING AND COGNITIVE FUNCTIONS

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Obesity is a chronic disease and reported to damage cognitive functions due to damage to the nervous system, especially the central nervous system. Obesity can lead to cerebrovascular pathologies as well as neurodegenerative disorders. It is stated that NMDA receptors, which are known that they have relationship with dementia and AD pathogenesis. This study was designed to investigate whether learning and cognitive functions are reduced in obese rats fed a high fat diet. We aimed to investigate the hypothesis that obesity is a negative effect on learning, cognitive functions and hippocampus in our study.

In our study, rats were fed 40% high calorie diet for experimental application to get the rats obese. For the control group, standard pellet feed was given. Obesity group; male (n=15). Control group; male (n=10). Rats determined to be obese using the Lee index calculation and were subjected to tests in a Morris water tank to assess spatial learning. In the control and obese experimental group rats, the total time spent to find the platform was statistically compared in the groups and inter-groups and the effect of obesity on spatial learning for finding platform was assessed. A statistically significant difference was found between the groups in terms of the time to find the target quadrants compared in the Morris water maze. At the end of the experiment, the rats were decapitated and the NMDA receptor levels were measured by western blot method from the brain tissues to the hippocampus tissue. There was no significant difference between control group and obese application in NR2A homogenates. In NR2B homogenates, there is a significant difference between experiment and control group.

According to our findings, it was observed that obesity developed in rats fed with high calorie diet had a negative effect on learning and cognitive functions.

Biography

MSc. Ferhat Şirinyıldız has been graduated from Ege University in 2012 as Biologist and then got Master Degree at Medical Physiology at Adnan Menderes University in 2015 and ongoing PhD student on project phase. Working and studying on different subjects especially experimental animal models like ischemia and reperfusion, colitis, epilepsy, obesity, diabetes etc. Applied many international and national congresses and present the results of scientific studies. Had academic papers that published at international and national academic journals. Presently he has been working at the Adnan Menderes University since 2012.

Key words: Obesity, Learning, Cognitive Functions, Hippocampus NMDA

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