OMICS Group Conferences
Accelerating Scientific Discovery

2nd International Conference on
Alzheimer's Disease and Dementia
September 23-25, 2014 Valencia Convention Centre, Spain

The influence of enriched environment and new generation of neuroleptics on memory in prenatally stressed rats

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Cognitive function deficits (detention) caused by impaired neurogenesis of the brain structures are considered an important pathogenic factor in many neurological and mental diseases like schizophrenia. Enriched environment (EE) is known for promoting structural changes in the brain and to improve cognitive deficits following variety of brain injuries. EE intensifies exploration of the new area behaviour which may have a positive impact on spatial memory in rats, particularly the prenatal stress (PS), which is animal model of schizophrenia, inducing memory deficits. The aim of the study was to determine the effect of EE on cognitive functions of animals affected by PS. It was also important to determine the effect of the new generation neuroleptics (aripiprazole ARI 1.5 mg/kg and olanzapine OLA 0.5mg/kg) and of EE on memory processes in prenatally stressed group (PSG), and non-stressed control group (NSCG), and whether these factors mediate behavioural response to the applied drugs. The effect of PS and drugs used were studied in Morris Water Maze. EE induced improvement of spatial memory in PS animals. ARI improved spatial memory in both NSCG (1-14 days) and PSG (7 days), while OLA caused memory improvement only in PSG group (after 21 days). Obtained results confirmed that EE improves spatial memory of animals, removes symptoms of stress and new neuroleptics like ARI or OLA modulate these functions. EE may be one of the most effective therapeutic tools in the treatment of many neurodegenerative diseases, like schizophrenia with detention and may be of great importance for patients with detention.

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