

DESCRIPTION FOR THE GENERAL PUBLIC (IN ENGLISH)

Schizophrenia is a serious mental illness that affects young adults, around the age of 16 to 30 years old. It is characterized by the prevalence of a broad range of symptoms that are generally divided into three groups: positive symptoms (hallucinations, delusions), negative symptoms (blunted affect, social withdrawal) and cognitive symptoms (memory and attention impairments). Currently prescribed antipsychotic medication are effective in treating positive symptoms and induce serious, life threatening side effects. Therefore, there is a need to develop more effective and safe therapeutic strategy. The scientists are now focusing on searching for receptors, which modulation would provide therapeutic effects. The muscarinic acetylcholine receptors and serotonergic receptors could be such targets. Among these two groups muscarinic M1, M4, M5 and serotonergic 5-HT1A receptors are of special interest. The aforementioned receptors are found in brain regions that are critical for cognitive functioning, such as the cortex and the hippocampus. Thus, compounds acting on these receptors are thought to reverse cognitive deficits in patients with schizophrenia.

In the proposed project we plan to examine whether chronic administration of compounds acting on aforementioned muscarinic receptors or serotonin receptor will have an influence on cognitive deficits in animal model of schizophrenia. Three behavioral tests, which assess spatial learning and memory, working memory and recognition memory, will be used. These aspects of memory are impaired in patients with schizophrenia, and can be examined with the use of neuropsychological tests. Moreover, we plan to assess whether simultaneous modulation of serotonergic and muscarinic system is beneficial in reversing cognitive impairments in both behavioral tests. This approach could lead to the reduction of side effects due to the use of low doses of tested substances, which in combination provide therapeutic effects.

The results from this project will contribute to better understanding of the mechanisms of cognitive deficits in schizophrenia, and may set a new trend in the search for more effective therapy of this illness.