

### **Abstract:**

Diabet mellitusus is a hetrogenous and chronic metabolic disease which distinguished by high blood sugar, insuline resistance and decreasing insulin secretion, and include three types: type 1 diabet, type 2 diabet and gestational diabet mellitus. The type 1 diabet cause to complications in body (specialy in brain). One of these complications is disorder in memory and learning processes. The hippocampus (HP) and prefrontal cortex (PFC) are the important regions in forming memory and learning. Many genes influence in memory forming in HP and PFC. These genes consist of coding and non-coding protein. In previous researchs, the special lncRNAs were determined in HP and PFC regions. Before of this study, no published experimental research carried out about diabet effect on special lncRNAs in HP and PFC in adult male mice. The fundamental purpose of this research is the study type 1 diabet effect on expression change of lncRNAs in theses regions. These experimental research was used 12 adult male mice C57BL with approximately 6-8 weeks age and average weigth 18-22 gr, consist of two diabetic groups and control group. Then, Stroptozotocin (STZ) was injected as Intra-Protaneal (150m.g/kg). 45 days after STZ injection, the memory and learning were measured by using Morris Water Maze (MWM) test. The diabetic groups were divided to impairment and normal memory groups by MWM test. The HP and PFC regions were separated from mice brain. thereafter, the total RNA extraction and cDNA synthesize were carried out and finally lncRNA expression changes measured in two regions. The results of this research shown that the diabet has meaningfull effect on memory and learning decreasing in male mice ( $p \leq 0.05$ ). Also, the diabet has significant influence on studied lncRNAs in two mentioned regions, so that, caused to raising all of studied lncRNA expressions (except Meg3) in PFC and Rian in HP regions. Also, this problem caused to decreasing Meg3 in PFC and Gas5, Pantr1, Gm15567, Gm20463, Gm20417, 1700020114Rik and 6330403k07Rik in HP regions. This study present that diabet mellitus induction with lncRNA expression changing probably caused to deficient in Synaptic plasticity, Neurogenesis, differentiation and Apoptosis in HP and PFC regions which this impairment in processes lead to deficient in memory and learning.



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## **Study of changes in expression of some lncRNA in Prefrontal Cortex and Hippocampus of diabetic Mice**

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