1. **No.**

   FP01812210

2. **Title**

   Proteomic Analysis of Hippocampus and Cortex in Streptozotocin-induced Diabetic Model Mice Showing Dementia - Preliminary Experiments of 2D-LC-MS/MS and Collaborative Filtering Using Machine Learning

3. **Period**

   2016-2018

4. **Summary**

   To clarify the precise mechanism of diabetes-induced dementia as impairment of CNS, proteomic analysis of the hippocampus and cortex in streptozotocin (STZ)-treated mouse diabetic model showing dementia was performed using two-dimensional gel electrophoresis (2-DE) followed by mass spectrometry. Significant changes in expression of 32 proteins and 7 phosphoproteins were observed in the hippocampus and cortex. It is suggested that these proteins are involved in impaired cognitive function in diabetic model mice prepared by STZ administration.

   To clarify the effect of nicotine on impaired cognitive function in diabetes-induced dementia, object location test (OLT) was performed, and it was found that impaired cognitive function was slightly improved. In order to examine the effects of nicotine at the gene expression level, the gene expression profiles of the hippocampus of STZ-treated mice and normal mice administered with nicotine were compared and analyzed by the data mining methods, and it was revealed that these were weak negatively correlated (Pearson's correlation coefficient is -0.22). Moreover, 91 genes with reverse expression patterns, which are the basis of negative correlation, were identified. Although identification of the proteins by 2D LC-MS / MS was attempted, the conditions could not be optimized. It is necessary to study this condition in the future.