1. No.
   2019G021

2. Title
   The effect of smoking on the development of pituitary adenoma

3. Period
   2019-2021

4. Summary
5. The purpose of this study was to investigate the effects of tobacco-derived chemicals, especially Nicotine, on the proliferation of pituitary adenoma cells. We found that Nicotine reduced the proliferation of mouse ACTH-producing pituitary adenoma cells (Att-20 cells) and rat GH-PRL-producing cells. We showed that part of its action is mediated by nAChR alfa7 subunit. Next, we used RNA next-generation sequencing (RNA-Seq) to comprehensively analyze the effects of Nicotine on pituitary tumor cells. Initially, we focused on DNA mismatch repair genes and cell cycle regulators, but did not find any changes in those genes. The 214 genes that fluctuated in RNA-Seq were analyzed based on the functions known in the published sources, but no gene related to pituitary tumor cell growth could be found. If analysis can be performed using other methods such as gene modification and siRNA, it is possible that an unknown gene function could be found. Finally, since an addition of KIRA8 (ER stress response inhibitor) to Att-20 cells suppresses the growth of pituitary tumor cells, we investigated the effect of nicotine on ER stress. Nicotine partially inhibited the ER stress response in Att-20 cells. It was suggested that some of Nicotine's inhibitory effects on Att-20 cells may be mediated by ER stress.