1. **No.**

   FP01912030

2. **Title**

   The Elucidation of the Mechanism by which the Smoking Influences the Diseases via the Regulation of the Tissue Adult Stem Cells

3. **Period**

   2018-2020

4. **Summary**

Addition of nicotine significantly increased the number of organoids formed from intestinal crypt and LgR5 positive stem cells after 5 days in culture. In addition, the number of organoids formed after culture of intestinal crypt isolated from mice treated with nicotine (200 μg/ml) was significantly increased. On the other hand, based on the results of co-culture of stem cells and paneth cells, there is no contribution of paneth cells to the increase in stem cell proliferative function by nicotine administration. In addition, nicotine (200μg/ml) increased the number of LgR5 stem cells, and prolonged nicotine treatment for 6 months also caused morphological changes such as enlargement of the intestinal crypt and shortening of the intestinal villi. Gene expression analysis of LgR5-positive stem cells isolated from mice treated with nicotine (200 g/ml) suggested that nicotine may activate notch signaling via nicotinic receptors. Nicotine may exacerbate colon carcinogenesis by causing abnormal proliferation of stem cells through activation of notch signaling.