1. **No.**

   FP01803050

2. **Title**

   Evaluation of the Effect of the Nicotine Treatment on Atherosclerosis by PET Imaging

3. **Period**

   2016-2018

4. **Summary**

In this study, to evaluate the influence of nicotine to atherosclerosis, we focused on macrophages that are involved in formation of plaque and examined *in vitro* and *in vivo* experiment with PET imaging reagents. In *in vitro* experiment, we mainly investigated response of polarized macrophages upon addition of nicotine. As a result, for M0, M1 and M2 macrophages, the activity and the expression level of α4β2 and α7 nicotinic receptors were not affected by acute nicotine intakes. On the other hand, the activity of foamy macrophages was increased by acute nicotine intake, suggesting that tobacco smoking would promote atherosclerosis depending on kind of macrophages in plaque of atherosclerotic lesions. In *in vivo* experiment, although infiltration of macrophages in plaque of apoE-/- mice (arteriosclerosis model mice) was increased by nicotine intake, the activity of macrophages was not changed. Further investigation on macrophages in the plaque was needed to elucidate the influence of nicotine to atherosclerosis.