1. No.
   2020T009

2. Title
   Effects of Smoking on Frailty and Sarcopenia via Brain-Muscle Loop

3. Period
   2020-2024

4. Summary
   In this study the effects of α7 nicotinic receptor on sarcopenia were examined in sarcopenia-model mice. Fasting induced significantly increase in mRNA expression of muscle degradation factors, such as atrogin-1 and MuRF-1 in the soleus and gastrocnemius muscles, which was significantly suppressed by the subcutaneous administration of α7 nicotinic receptor agonist, PNU282987. On the other hand, the subcutaneous administration of α7 nicotinic receptor antagonist, methyllycaconitine significantly enhanced the increased mRNA expression of atrogin-1 and MuRF-1 in the soleus and gastrocnemius muscles induced by fasting. In addition, in comparison with young mice (3 months old), aged mice (20-21 months old) showed the significant increase in mRNA expression of atrogin-1 and MuRF-1 in the soleus and gastrocnemius muscles, which was also significantly suppressed by α7 nicotinic receptor agonist, PNU282987. Moreover, the motor dysfunction in fasted and aged mice was observed, which was significantly improved by the subcutaneous administration of α7 nicotinic receptor agonist, PNU282987. These findings suggest that the activation of α7 nicotinic receptor may improve muscle degeneration and motor dysfunction in sarcopenia.