1. **No.**

   FP01802035

2. **Title**

   Role of nicotinic acetylcholine receptors in modulating extarapyramidal motor disorders

3. **Period**

   2017-2019

4. **Summary**

A series of our studies on tremor, an extrapyramidal movement disorder, revealed that α7 nACh receptor-mediated excitation of the inferior olive neurons is deeply involved in generation of kinetic tremor. Activation of the inferior olive-cerebellum network by α7 nACh receptor stimulation mimics the onset mechanism of human essential tremor, indicating that α7 nACh receptors play an important role in the pathogenesis and treatment of essential tremor (Fig. 5). In addition, α7 nACh receptors are also involved in generation of tremor by nicotine intake with smoking and by various cholinergic agents (e.g., smoking cessation aids, anti-Alzheimer's disease drugs, anti-myasthenia gravis drugs, organic phosphate insecticides). Thus, α7 nACh receptors seem to control the expression of adverse effects with these agents (Fig. 5). Furthermore, through this grant study, we found several agents expected to be useful for the treatment of essential tremor, which include α7 nACh receptor antagonists, voltage-dependent Na+ channel blockers, T-type Ca2+ channel blockers, 5-HT1A receptor antagonists. The results of our studies facilitate a future drug discovery research focusing on α7 nACh receptors as a drug target.