1. No.
   2018T004

2. Title
   Regulatory Mechanisms of Neuropathic Pain Mediated by Nicotinic Acetylcholine Receptors in Macrophages

3. Period
   2018-2022

4. Summary
   In this study, we demonstrated that inhibition of inflammatory macrophages accumulated in the damaged sciatic nerve attenuated allodynia in different models of neuropathic pain. As α4β2 nAChR was expressed on accumulated macrophages in the sciatic nerve, perineural or systemic administration of α4β2 nAChR agonist TC-2559 relieved allodynia after nerve injury or under T2DM state. Notably, anti-allodynic effects of TC-2559 were observed in both male and female mice even if it was administered after establishment of neuropathic pain. Among several types of α4β2 nAChR-related compounds, varenicline, a partial agonist of α4β2 nAChR, also relieved nerve injury-induced neuropathic pain. Although varenicline could not exert anti-allodynic effects by systemic administration unlike TC-2559, perineural administration of varenicline significantly attenuated allodynia in both male and female mice. Collectively, inflammatory macrophages are commonly important in different types of neuropathic pain, α4β2 nAChR on macrophages might be a candidate for novel target of pharmacotherapy of neuropathic pain.