1. No.
   2023Y008

2. Title
   Analysis of the effect of nicotine on microglia-derived BDNF and sociability

3. Period
   2023-2023

4. Summary
   [Background] Our group focused on neglect as a form of child maltreatment and investigated its pathogenesis using juvenile social isolation mice. We discovered that the overexpression of BDNF in microglia may be the primary cause of the pathogenesis. However, we were unable to directly observe changes in microglia or neurons using cell culture systems. Additionally, we did not examine the effects of nicotine, which is known to act on microglia. Therefore, the purpose of this study was to investigate these effects.
   [Methods] Primary cultures of neurons were obtained from fetal brains of Iba1-BDNF mice, which overexpress BDNF specifically in microglia. The neurons were co-cultured with microglia and were treated with nicotine, and changes were examined using immunocytochemistry and Western blotting.
   [Results] Excitatory and inhibitory neurons were mixed in a 4:1 ratio, and synapse formation was observed. Synaptic proteins were quantified by Western blotting, and no significant differences were found among the four groups.
   [Conclusions] Further experiments are needed including to determine the appropriate cell density and nicotine concentration to be administered.