1. No.
   2017G032

2. Title
   The effect of cigarette smoke extract on the platelet function

3. Period
   2017-2021

4. Summary
   The purpose of this study was to identify the constituent(s) that affect platelet aggregation in Cigarette Smoke Extract (CSE) from which nicotine and tar have been removed. Using mouse platelets, we examined the effects of CSE on platelet function, and found the presence of constituent(s) that inhibit platelet aggregation. We also found that CSE promotes the activity of TX synthase, which is involved in the synthesis of TXA_2, but inhibits the activity of cyclooxygenase (COX), which is further upstream in the synthetic pathway, resulting in the inhibition of platelet aggregation.
   To determine the constituent(s) of CSE showing the inhibitory effect on platelet aggregation, we used C-18 column chromatography. CSE was subjected to C-18 column and eluted with 50% MeOH. The eluted fraction inhibited the activity of COX-1 and COX-2 in a concentration-dependent manner. In order to further narrow down the target factors, CSE constituents adsorbed on C-18 column were eluted with increasing concentrations of methanol stepwise, and the inhibition of platelet aggregation in each fraction was analyzed. The 30% methanol and 40% methanol eluted fractions of the CSE constituents adsorbed on the C-18 column showed the inhibitory effects on platelet aggregation. Gas chromatography-mass spectrometry analysis of these fractions was performed, but were unable to identify CSE constituents involved in the inhibition on platelet aggregation.