1. **No.**

   FP01912070

2. **Title**

   Inflammatory Mechanism of Acrolein via TRPA1 Channel

3. **Period**

   2018-2020

4. **Summary**

   In this study, we investigated the role of acrolein (CH2=CHCHO) in cigarette smoke and TRPA1 (transient receptor potential ankyrin 1) ion channel on cell damage and inflammation. Acrolein decreased cell viability and increased the expression of inflammatory cytokines in A549 human lung cancer cells. It was suggested that acrolein causes an inflammatory response in A549 cells. We also found that the expression of TRPA1 was increased at the transcriptional level by acrolein. We identified several transcription factors, e.g. AP-1, NF-κB and HIF-1α that induce the expression of TRPA1 by acrolein. Furthermore, we also found that acrolein toxicity was reduced in TRPA1 overexpressing cells. These results suggest that acrolein in cigarette smoke induces the expression of TRPA1 and that TRPA1 promotes oxidative stress tolerance.