1. No.
   2019Y007

2. Title
   Elucidation of molecular mechanisms related to smoking and inflammation factors of Acute Respiratory Distress Syndrome (ARDS) and establishment of novel therapeutic methods

3. Period
   2019-2021

4. Summary
   During the grant period of the Smoking Research Foundation, I established ARDS model whose cause has not yet been elucidated in the emergency and intensive care units in an animal model (*in vivo*) and a human airway epithelial basal cell model (*in vitro*) using mice.

   We have identified the factor Coxsackie adenovirus receptor (CXADR) associated with ARDS. Furthermore, regarding the effects on airway epithelial cells due to tobacco smoking that affect ARDS exacerbation, and we can detect increased CXADR expression by tobacco smoking, and the relationship between tobacco smoking and ARDS was identified. By observing the glycocalyx present in the vascular endothelium by an electron microscope for pulmonary vascular endothelial damage due to the pathophysiology of ARDS and tobacco smoking, the detachment of glycocalyx in the smoking model was confirmed, and the vascular endothelial protection function decreased. So, it was possible to confirm the possibility of exacerbation in ARDS and pneumonia due to smoking habits.

   In the future, we will continue to pursue this research, and will continue to conduct research on innovative treatments for ARDS and treatments such as early replacement therapy for glycocalyx exfoliated by tobacco smoking. I appreciate the grant and the Japanese Smoking Research Foundation for my research very much.