1. **No.**

   FP01802033

2. **Title**

   Discovery of epigenetic drugs for chronic obstructive pulmonary disease

3. **Period**

   2017-2019

4. **Summary**

   The present study has been designed based on the report that prothymosin alpha (ProTa) highly expressed in emphysema patients in the lung may play roles in the upregulation of matrix metalloproteases (MMPs) through an epigenetic mechanism to detach histone deacetylate (HDAC) on H1 histone and cause alveolar damage. The strategy is to search compounds to inhibit the interaction between ProTa and H1. Throughout the present project research, we successfully established the cell free high throughput screening (HTS) method and cell-based confirmation of ProTa-H1 interaction by use of pull-down assay. In addition to them we were successful to evaluate the alveolar enlargement of lung following chronic treatments with cigarette smoking extracts (CSE). However, benserazide we obtained from small size chemical library had no beneficial actions in A549 lung cancer cells and in vivo model in mice treated with CSE, though this compound inhibited the ProTa-H1 interaction in cell-based assay. Thus, we conclude the next approach should be the chemical modification of benserazide and another HTS using big size of chemical library.