European Respiratory Society
Annual Congress 2013

Abstract Number: 3781

Publication Number: P528

Abstract Group: 3.1. Molecular Pathology and Functional Genomics

Keyword 1: COPD - mechanism **Keyword 2:** Molecular pathology **Keyword 3:** Inflammation

Title: cPLA2α plays a role in neutrophilic inflammatory response in mice induced by tobacco smoke exposure

Dr. Hiroo 23217 Wada wadagh@ks.kyorin-u.ac.jp MD [1], Dr. Masuo 23218 Nakamura physician2007@hotmail.com MD [1], Dr. Manabu 23219 Higaki higakim@ks.kyorin-u.ac.jp MD [1], Dr. Naonori 23220 Uozumi nuozumi@saitama-med.ac.jp MD [2], Dr. Yoshihiro 23221 Kita kita@m.u-tokyo.ac.jp [3], Dr. Motonao 23224 Nakamura moto-nakamura@umin.net [3], Prof. Dr Takao 23226 Shimizu tshimizu@m.u-tokyo.ac.jp MD [3], Prof. Dr Hajime 23230 Takizawa htakizawa.alg@gmail.com MD [1] and Prof. Dr Hajime 23231 Goto h510@ks.kyorin-u.ac.jp MD [1]. [1] Respiratory Mediciine, Kyorin University School of Medicine, Tokyo, Japan ; [2] Biochemistry, Saitama Medical University, Saitama, Japan and [3] Biochemistry, The University of Tokyo, Tokyo, Japan .

Body: INTRODUCTION Lipid mediators possess a strong chemotactic activity, and it is thus hypothesized that they also play a pathogenic role in neutrophilic inflammatory responses induced by cigarette smoke (CS) exposure. To address this, cPLA2α deficient mice were exposed to CS and then analyzed. METHODS cPLA2 deficient mice and litter-mate wild type mice were both exposed to CS for 9 days. Brocho-alveolar lavage (BAL) was performed and the fluid was collected. Cell counts, as well as their differentials, were determined. Furthermore, the protein levels of MMP-9 and keratinocyte-derived chemokine (KC), a murine homologue of human IL-8/CXCL-8, were measured in BAL fluid, using enzyme-linked immunosorbent assay (ELISA). RESULTS Although the total cell counts in cPLA2α deficient mice and those in wild type mice were mostly same in number, neutrophil counts were significantly lower in cPLA2α deficient mice than in wild type by 69.7% reduction ($p < 0.05$). The KC protein levels in BAL fluid were 6.9+/-3.3 pg/mL in cPLA2α deficient mice, significantly lower than those in wild type mice, 11.0+/-3.8pg/mL ($p < 0.05$). MMP-9 levels in BAL fluid were 0.2+/-0.2ng/mL in in cPLA2 deficient mice, significantly lower than those in wild type mice, 0.6+/-0.2 ($p < 0.05$). DISCUSSION Our result demonstrated that reduction in KC production was in part dependent on lack of lipid mediators associated with cPLA2α, and that both attenuated regulation of KC and lipid mediators further lead to reduction in neutrophil recruitment and MMP-9 production in the lung. It is thus implicated that induction of cPLA2α in the lung plays a role in neutrophilic inflammation as well as remodeling process, induced by CS exposure.