

Anti-Inflammatory Studies on Chungpye-Tang in Asthmatic Human Lung Tissue

Authors : J. H. Bang, H. J. Baek, K. I. Kim, B. J. Lee, H. J. Jung, H. J. Jang, S. K. Jung

Abstract : Asthma is a chronic inflammatory lung disease characterized by airway hyper responsiveness (AHR), airway obstruction and airway wall remodeling responsible for significant morbidity and mortality worldwide. Genetic and environment factors may result in asthma, but there are no the exact causes of asthma. Chungpye-tang (CPT) has been prescribed as a representative aerosol agent for patients with dyspnea, cough and phlegm in the respiratory clinic at Kyung Hee Korean Medicine Hospital. This Korean herbal medicines have the effect of dispelling external pathogen and dampness pattern. CPT is composed of 4 species of herbal medicines. The 4 species of herbal medicines are Ephedrae herba, Pogostemonis(Agatachis) herba, Caryophylli flos and Zingiberis rhizoma crudus. CPT suppresses neutrophil infiltration and the production of pro-inflammatory cytokines in lipopolysaccharide (LPS)-induced acute lung injury (ALI) mouse model. Moreover, the anti-inflammatory effects of CPT on a mouse model of Chronic Obstructive Pulmonary Disease (COPD) was proved. Activation of the NF- κ B has been proven that it plays an important role in inflammation via inducing transcription of pro-inflammatory genes. Over-expression of NF- κ B has been believed be related to many inflammatory diseases such as arthritis, gastritis, asthma and COPD. So we firstly hypothesize whether CPT has an anti-inflammatory effect on asthmatic human airway epithelial tissue via inhibiting NF- κ B pathway. In this study, CPT was extracted with distilled water for 3 hours at 100°C. After process of filtration and evaporation, it was freeze dried. And asthmatic human lung tissues were provided by MatTek Corp. We investigated the precise mechanism of the anti-inflammatory effect of CPT by western blotting analysis. We observed whether the decoction extracts could reduce NF- κ B activation, COX-2 protein expression and NF- κ B-mediated pro-inflammatory cytokines such as TNF- α , eotaxin, IL-4, IL-9 and IL-13 in asthmatic human lung tissue. As results of this study, there was a trend toward decreased NF- κ B expression in asthmatic human airway epithelial tissue. We found that the inhibition effects of CPT on COX-2 expression was not determined. IL-9 and IL-13 secretion was significantly reduced in the asthmatic human lung tissue treated with CPT. Overall, our results indicate that CPT has an anti-inflammatory effect through blocking the signaling pathway of NF- κ B, thereby CPT may be a potential remedial agent for allergic asthma.

Keywords : Chungpye-tang, allergic asthma, asthmatic human airway epithelial tissue, nuclear factor kappa B (NF- κ B) pathway, COX-2

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