Blockade of eosinophil-induced bronchial epithelial-mesenchymal transition with a geranyl acetophenone in a coculture model

ABSTRACT

Epithelial-mesenchymal transition (EMT) is currently recognized as the main cellular event that contributes to airway remodeling. Eosinophils can induce EMT in airway epithelial cells via increased transforming growth factor (TGF)-β production. We assessed the effect of synthetic 2,4,6-trihydroxy-3-geranyl acetophenone (tHGA) upon eosinophil-induced EMT in a cellular model. The human eosinophil cell line EoL-1 was used to induce EMT in BEAS-2B human bronchial epithelial cells. The induction of EMT was dose-dependently suppressed following tHGA treatment in which the epithelial morphology and E-cadherin expression were not altered. Protein and mRNA expression of vimentin, collagen I and fibronectin in eosinophil-induced epithelial cells were also significantly suppressed by tHGA treatment. Following pathway analysis, we showed that tHGA suppressed eosinophil-induced activator protein-1-mediated TGF-β production by targeting c-Jun N-terminal kinase and phosphoinositide 3-kinase signaling pathways. These findings corroborated previous findings on the ability of tHGA to inhibit experimental murine airway remodeling.

Keyword: Geranyl acetophenone; Epithelial-mesenchymal transition; Transforming growth factor beta; Airwayremodeling; Asthma