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# Bradykinin in asthma: modulation of airway inflammation and remodelling

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## ABSTRACT

Bradykinin, a pro-inflammatory molecule, and its related peptides have been studied for their effects on acute reactions in upper and lower airways, where they can be synthesised and metabolized after exposure to different stimuli including allergens and viral infection. Bradykinin B<sub>1</sub> and B<sub>2</sub> receptors are constitutively expressed in the airways on several residential and/or immune cells. Their expression can also be induced by inflammatory mediators, usually associated with eosinophil and neutrophil recruitment, such as IL-4, IL-13, TNF- $\alpha$ , IL-6 and IL-8, via intracellular MAPK and NF- $\kappa$ B signalling. In turn, the latter up-regulate both bradykinin receptors. Bradykinin activates epithelial/endothelial and immune cells, neurons and mesenchymal cells (such as fibroblasts, myofibroblasts and smooth muscle cells), which are implicated in the development of

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