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Mechanisims of asthma and allergic disease – 1069. Down regulation of IL-13 secretion in mononuclear cells by a beta-adrenergic blocker

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Background

Beta-adrenergic blockers such as propranolol have been commonly used for treatment of several cardiovascular complications such as arterial hypertension and arrhythmias. Anti-inflammatory effects of propranolol have also been reported. Interleukin-13 (IL-13) (a Th2-type cytokine) is a mediator of airway inflammation and increases in immediate-type allergy. In this study the effect of propranolol on IL-13 secretion in human peripheral blood mononuclear cells (hPBMCs) have been investigated in vitro.

Methods

HPBMCs were used in this study. The cells were cultured in complete RPMI medium and then incubated with different concentrations of propranolol (4×10^{-7} - 4×10^{-4} M) for 24 hours. The level of IL-13 secreted in the cell culture supernatants was measured with the enzyme-linked immunosorbent assay (ELISA) kits (R&D systems).

Results

Propranolol significantly and dose-dependently reduced IL-13 production in hPBMCs, compared to untreated control cells.

Conclusions

According to the results of this study, propranolol considerably decreased the IL-13 expression in hPBMCs. Propranolol with its inhibitory effect on IL-13 production may be useful in alleviating the IL-13- induced respiratory inflammation in related diseases such as chronic obstructive pulmonary disease (COPD) and asthma. Therefore propranolol along with its chronic long-term usage in cardiac problems, might have potential implication in inflammatory disorders.

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