SELECTIVE PDE4 AND PDE5 INHIBITION SUPPRESSES IMMUNOLOGICAL MARKERS OF OVALBUMIN-INDUCED INFLAMMATION IN GUINEA PIGS

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Phosphodiesterase (PDE) 4 is involved in inflammatory responses in bronchial asthma and chronic obstructive pulmonary disease (COPD). There are several selective PDE4 inhibitor either used or tested for bronchodilating and anti-inflammatory action. However, an expression of PDE5 was confirmed in several immune cells, suggesting its potential role in allergic inflammation. The aim of this study was to evaluate effects of both selective PDE4 inhibitor roflumilast and selective PDE5 inhibitor tadalafil. on immunological markers and markers of oxidation stress in experimentally induced allergic inflammation in guinea pigs.

Sensitization with ovalbumin in male guinea pigs has led to significant increase in *in vivo* and *in vitro* airway reactivity. 7 days of intraperitoneal administration of tadalafil and roflumilast (both at the daily dose of 1.0 mg/kg) have reduced significantly the levels of immunological markers (IL4, IL5, TNF-α, LTB4, PAF, ECF) and markers of oxidation stress (3NT, TBARS, TAS) in lung homogenizate, with tendency to suppression of these markers also in plasma levels. These changes have been associated with suppression of both specific airway resistance, and *in vitro* airway reactivity to cumulative doses of acetylcholine in tracheal and lung tissue strips.

Suppression of several immunological markers and markers of oxidation by inhibition of PDE4 and PDE5 suggests their role in allergic airway inflammation and a potential benefit of the use of their selective inhibitors in bronchial asthma.

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