

INFLUENCE OF ROFLUMILAST ON IN VIVO AND IN VITRO AIRWAY REACTIVITY AND APOPTOSIS IN OVALBUMIN-SENSITIZED GUINEA PIGS

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Introduction: Chronic inflammatory diseases, associated with airway obstruction and cough, are usually treated with bronchodilating and anti-inflammatory drugs. Inhibition of phosphodiesterases (PDE) leads to both of these effects and influences apoptosis of immune cells. In chronic obstructive pulmonary disease, roflumilast, selective PDE4 inhibitor, has been recently approved for the pharmacotherapy. The aim of this study was to evaluate the effect of long-term administration of roflumilast in experimentally induced allergic inflammation in guinea pigs. **Material and methods:** Male adult guinea pigs have been used in the study. Control group has been left without sensitization. The latter 4 groups have been sensitized with ovalbumin for 14 days and thereafter treated perorally, inhalatory and intraperitoneally for 7 days with roflumilast or with vehiculum, respectively. **Results and conclusion:** Roflumilast has reduced specific airway resistance (as a marker of *in vivo* airway reactivity) after nebulisation of histamine measured in double chamber whole body plethysmograph. These changes have been confirmed in *in vitro* conditions using organ bath method with significant decrease of tracheal and lungs smooth muscle contractility after cumulative doses of histamine. Furthermore, the suppression of haematological and several immunological markers of inflammation and apoptosis in animals treated with roflumilast have been observed, suggesting beneficial effects of roflumilast in this model of allergic inflammation.

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