

Asthma, respiratory allergy and cough

Influence of olprinone, PDE3 inhibitor, on airway reactivity in ovalbumin-sensitized guinea pigs

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Phosphodiesterase inhibitors (PDEIs) are a class of drugs that are widely used because of their various pharmacological properties including smooth muscle relaxant, bronchodilator, anti-inflammatory, cardiotoxic, and vasodilator effect. The activity of PDE3 in the respiratory system is exerted predominantly in alveolar macrophages, endothelial cells, platelets, and airway smooth muscle cells. This study evaluates the ability of the PDE3 inhibitor, olprinone, to reduce the airway reactivity in experimental model of ovalbumin-induced allergic inflammation in guinea pigs. Healthy adult male guinea pigs were divided into groups as follows: the first group was considered as a healthy control group (without sensitization and therapy), animals in the second group were sensitized with ovalbumin, but left without further treatment, and the animals in the others 4 group were sensitized with ovalbumin and treated with olprinone intraperitoneally for 7 consecutive days or once with a dose of 0.5 mg/kg, and 1 mg/kg, respectively. *In vivo* airway reactivity was evaluated using double-chamber whole body plethysmograph and measuring the specific airway resistance after nebulization of histamine aerosol. *In vitro* experiments were performed with tissue strips of trachea and lungs in organ bath, where their contractile responses to cumulative doses of acetylcholine and histamine were registered. Guinea pigs with olprinone treatment showed significant suppression of *in vivo* and *in vitro* airway reactivity. Olprinone has demonstrated the therapeutic potential in the model of ovalbumin induced eosinophilic inflammation typically present in patients with bronchial asthma. However, further studies focusing on anti-inflammatory and immunomodulatory effects of olprinone are necessary.

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