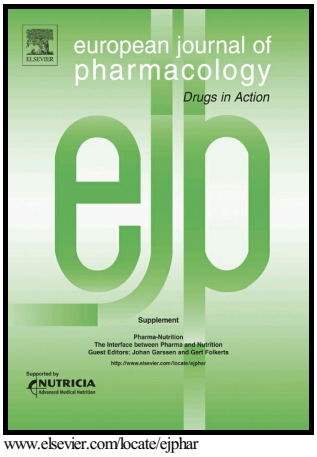

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Conjugated Alpha-Alumina nanoparticle with vasoactive intestinal peptide as a Nano-drug in treatment of allergic asthma in mice

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Abstract

Asthma is a chronic respiratory disease characterized by airway inflammation, bronchoconstriction, airway hyperresponsiveness and recurring attacks of impaired breathing. Vasoactive intestinal peptide (VIP) has been proposed as a novel anti-asthma drug due to its effects on airway smooth muscle relaxation, bronchodilation and vasodilation along with its immunomodulatory and anti-inflammatory properties. In the current study, we investigated the therapeutic effects of VIP when conjugated with α-alumina nanoparticle (α-AN) to prevent enzymatic degradation of VIP in the respiratory tract. VIP was conjugated with α-AN. Balb/c mice were sensitized and challenges with ovalbumin (OVA) or PBS and were divided in four groups; VIP-treated, α-AN-treated, α-AN-VIP-treated and beclomethasone-treated as a positive control group. Specific and total IgE level, airway hyperresponsiveness (AHR), bronchial cytokine expression and lung histology were measured. α-AN-VIP significantly reduced the number of