Peroxisome Proliferator-Activated Receptor γ Negatively Regulates Allergic Rhinitis in Mice

http://www.firstlight.cn 2009-06-11

Background: Peroxisome proliferator-activated receptor γ(PPAR-γ) has been shown to play an important role in the control of inflammatory responses acting on macrophages, mast cells, T cells, and eosinophils. The present study was aimed at investigating the effects of PPAR-γ agonist on nasal symptoms and eosinophil accumulations in nasal mucosa by using a murine allergic rhinitis model. Furthermore, we examined the expression of PPAR-γ in the nasal mucosa in mice.

Methods: BALB/c mice were sensitized and challenged intranasally with ovalbumin. Ciglitazone, a PPAR-γ agonist, was administered orally 6 hours before each nasal challenge.

Results: Administration of PPAR-γ agonist significantly decreased the number of nasal rubs, nasal histamine responsiveness, serum IgE, IL-5 production from the spleen, and eosinophilic infiltration in the nasal mucosa. Furthermore, PPAR-γ was expressed in eosinophils and epithelial cells in the nasal mucosa by immunohistochemistry.

Conclusions: PPAR-γ was expressed in eosinophils and epithelial cells in the nasal mucosa. Also, the oral administration of ciglitazone is effective in upper airway allergic inflammation in mice.

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