[*Pharmacology*, **55**, 32-43 (1997)] [Lab. of Pharmacology]

Interferon-beta Prevents Antigen-induced Bronchial Inflammation and Airway Hyperreactivity in Mice

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The effects of interferon-β (IFN-β) and prednisolone (Pred) on antigen-induced IgE antibody production, airway eosinophilia and airway hyperreactivity (AHR) were studied in ovalbumin-sensitized BALB/c mice. Three inhalations of antigen caused airway eosinophilia and AHR with a significant elevation of serum IgE levels. IFN-β clearly inhibited the antigen-induced airway inflammation and AHR, but did not affect IgE antibody production. Pred inhibited antigen-induced IgE production, airway inflammation and AHR. In addition, IFN-β inhibited T-helper type 2 (Th2) cell clone-induced peritoneal eosinophilia in mice, but did not affect neutrophilia, whereas Pred inhibited Th2-induced peritoneal eosinophilia and neutrophilia. These results suggest that IFN-β inhibits antigen-induced bronchial inflammation and AHR probably due to the inhibition of Th2-induced airway eosinophilia.

[*Gen. Pharmacol.*, **29**, 473-475 (1997)] [Lab. of Pharmacology]

The Effects of TYB-2285 and Its Metabolites on Lymphocyte Responses in Vitro.

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We examined the effects of TYB-2285 and its metabolites on antigen-indued lymphocyte proliferation, allogenic mixed lymphocyte reaction (MLR) and mitogen-induced lymphocyte proliferation. Splenocytes from C57BL/6 strain mice sensitized with human serum albumin were cultured with the antigen in the presence of TYB-2285 or its metabolites. The lymphocyte proliferation enhanced by antigen was inhibited by TYB-2285 and its metabolits. Allogenic MLR was inhibited by TYB-2285 and its metabolites. Splenocytes obtained from C57BL/6 mice were cultured with concanavalin A (Con A) in the presence of TYB-2285 and its metabolites, but TYB-2285 and its metabolites did not affect Con A-induced lymphocyte proliferation.

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Cyclic AMP-elevating Agents Inhibit Mite-antigen-induced IL-4 and IL-13 Release from Basophil-enriched Leukocyte Preparation.

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We investigated the effects of cyclic 3', 5'-adenosine monophosphate (cAMP)-elevating agents on antigen-induced IL-4 and IL-13 release from basophil-enriched leukocyte preparations. We obtained venous blood from 27 atopic asthmatic patients and prepared basophil-enriched leukocyte preparations by double-Percoll gradients. The cell preparations were treated with phosphodiesterase (PDE) inhibitors for 10 min and were challenged with antigen for 6 h. A nonselective PDE inhibitor, theophylline, and a PDE IV-selective inhibitor, rolipram, significantly suppressed the release of IL-4 and IL-13. Forskolin and dibutyryl cAMP also suppressed the release of these cytokines, suggesting that the suppressive effects by PDE inhibitors were accompanied by the elevations in cAMP levels. These data suggest that release of these cytokine from basophils could be regulated by cAMP-modulating agents.

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Inhibitory Mechanisms of β-Adrenoceptor Agonists for Immunoglobulin E-mediated Experimental Allergic Reactions in Rats.

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Inhibitory mechanisms of β-agonists for immunoglobulin-mediated experimental allergic reactions in rats were studied. B-Agonists potently inhibited allergic reactions in rats, although they failed to affect histamine release from rat mast cells. The inhibition of the allergic reaction is partially explained by the inhibition of vascular permeability increases caused by mast cell mediators. Penetration of intravenously administered antigen from blood vessels to peripheral tissues to cause mast cell activation might be also inhibited by β-agonists, and this could play some role on inhibiting intravenous antigen-induced allergic reactions in rats.