[Life Sciences, **52**, PL 147-151 (1993)] [Lab. of Pharmacology]

Priming with Murine Recombinant Interleukin-5 Resulted in the Augmentation of PAF-Induced Airway Hyperresponsiveness to Histamine in Guinea Pigs.

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The effects of pretreatment with murine recombinant interleukin-5 (IL-5) on platelet activating factor (PAF)-induced bronchoconstriction and airway hyperreactivity were investigated in guinea pigs. The intratracheal administration of IL-5 (2.5-10 μg) augmented PAF (50 ng/kg)-induced bronchoconstriction. When IL-5 (2.5 μg) was injected intratracheally, PAF (25 ng/kg)-induced bronchoconstriction was not affected, but PAF-induced airway hyperresponsiveness to histamine was exacerbated. IL-5-induced augmentation of airway hyperreactivity by PAF was clearly inhibited by the phosphodiesterase-type III inhibitors, SDZ-MKS-492 and AH21-132.

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Development of Human Mast Cells from Umbilical Cord Blood Cells by Recombinant Human and Murine c-Kit Ligand.

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Both human and mouse c-kit ligand induced differentiation of human mast cells in a long-term culture of the mononuclear cells of umbilical cord blood. Electron microscopic analysis indicated that human mast cells developed by c-kit ligand were similar to human mast cells in the lung and gut mucosa. Although mast cells developed by c-kit ligand were immature even after culture for 14 weeks, these cells expressed FcεRI, and could be sensitized with human IgE for anti-IgE-induced release of histamine, prostaglandin D_2, and leukotriene C_4.

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Effects of NZ-107 on Airway Inflammation and Cell Activation in Guinea-Pigs.

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The effects of NZ-107 on some airway inflammation models and the generation of superoxide anion were studied in guinea-pigs. NZ-107 reduced IL-5- and PAF-induced eosinophilia. The agent also suppressed LTB_4-induced eosinophilia and neutrophilia in BALF. NZ-107 reduced IL-5- and PAF-induced increase in the number of airway epithelial cells in BALF. NZ-107 attenuated PAF- and FMLP-induced superoxide anion production from macrophages and reduced PAF-induced superoxide anion generation by eosinophils. These results indicate that NZ-107 prevents the increased number of pulmonary eosinophils and airway epithelial cells and the activation of macrophages and eosinophils, suggesting that NZ-107 may be useful as a remedy for airway inflammatory diseases.