[*Gen. Pharmacol.*, **28**, 93-97 (1997)] [Lab. of Pharmacology]

Effect of Prednisolone on IgE-dependent Biphasic Cutaneous Reaction in BALB/c Mice.

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The effect of prednisolone on IgE-dependent, antigen-induced biphasic cutaneous reaction in BALB/c mice was investigated. The biphasic cutaneous reaction with peak responses at 1 h and 24 h after antigen stimulation was suppressed by prednisolone administered 2 h before the challenge. Although antigen challenge increased the expression of IL-1β and TNF-α mRNA in the mouse ear, prednisolone did not affect the increase. Anti-IL-1β antibodies inhibited the later phase of biphasic cutaneous reaction, whereas anti-TNF-α antibodies inhibited both phases of the reaction. Proinflammatory cytokines such as IL-1β and TNF-α participate in the development of the biphasic cutaneous reaction, especially in its later phase in mice, and prednisolone inhibits the reaction by suppressing the action of cytokines, at least in part.

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The Expression of Murine Cutaneous Late Phase Reaction Requires Both IgE Antibodies and CD4 T Cells.

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We have examined the immunological mechanisms required for the expression of cutaneous late phase reaction (LPR) in mice. BALB/c mice were immunized by intraperitoneal injection of ovalbumin (OVA) and alum actively, or by intravenous injection of anti-OVA IgE monoclonal antibody passively. Actively immunized mice developed a biphasic response at the site of OVA injection, while mice passively immunized with IgE anti-OVA mAb displayed a strong early response but no LPR. The LPR was associated with increased levels of IL-4 production and was abolished with anti-IL-4 neutralizing antibody. These data suggest that murine cutaneous LPR against OVA is a type 2 inflammatory response in which both IgE antibodies and CD4 T cells play an obligatory role.

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Effect of TYB-2285 on Antigen-induced Accumulation of Eosinophils into the Peritoneal Cavity of Rats Sensitized with Ascaris Suum Extract.

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The present study was carried out to investigate the effect of TYB-2285 on the accumulation of eosinophils in the peritoneal cavity of Wistar rats sensitized with Ascaris suum extract (Asc). Rats were sensitized with Asc on days 0 and 7. Antigen challenge caused a specific, delayed infiltration of eosinophils into the peritoneal cavity that was inhibited by oral administration of TYB-2285, but not by ketotifen fumarate, in a dose-dependent manner. TYB-2285 inhibited the infiltration of eosinophils when during the induction phase, but not during the effector phase. Transfer of lymphocytes obtained from sensitized rats to intact rats provoked a remarkable infiltration of eosinophils after the antigen challenge. These results demonstrate that TYB-2285 inhibits the accumulation of eosinophils presumably by inhibiting antigen recognition.

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Scratching Behavior in Mice Associated with IgE-mediated Allergic Cutaneous Reaction and Its Pharmacological Characterization.

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Scratching behavior induced after epicutaneous challenge with an antigen 2,4-dinitrofluorobenzene (DNFB) in the ear of BALB/c mice passively sensitized with anti-dinitrophenol (DNP) IgE was observed. Scratching behavior could be elicited in mice in association with an IgE-mediated allergic cutaneous reaction, and the reaction was pharmacologically similar, but not identical, to that caused by compound 48/80. Although histamine is considered to participate in the formation of ear edema, it may not play an important role in the generation of scratching.