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Potent Inhibitory Effect of Tetrandrine on Experimental Allergic Conjunctivitis in Mice

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We produced an animal model of ocular allergy in SWR/J mice, sensitizing them, through nasal mucosal exposure, to ragweed pollen, and then challenging them in the conjunctival sack with the same allergen. We have previously characterized the clinical and histopathological correlates of this model, which is the first "natural" model of ocular allergy described in animals.

We have also isolated, purified, synthesized, and studied the active ingredient in an ancient Chinese herbal remedy for inflammation, Tetrandrine, and have studied it in the modulation of corneal inflammation secondary to herpes simplex virus infection. We now report the effects of the systemic use of this agent in the control of allergic conjunctivitis.

Mice were sensitized and divided into 4 groups: Group 1, normal controls; Group 2, sensitized, but untreated; Group 3, sensitized, treated with buffered saline; Group 4, sensitized, and treated with Tetrandrine. The last three groups were exposed to ragweed through topical contact on the nasal and conjunctival mucosae followed by challenge with allergen on the conjunctiva. Groups 3 and 4 received doses of buffered saline and Tetrandrine respectively. The allergic conjunctivitis was evaluated by scoring of the clinical signs and histopathology. mRNA gene expression of Interleukin 1 β (IL-1 β) and IL-5 in the conjunctival was analyzed by PCR techniques.

All mice exposed to ragweed pollen developed allergic conjunctivitis clinically and histologically. The conjunctivitis was significantly modulated by intraperitoneal injection of a Tetrandrine. Histopathologic analysis demonstrated that Tetrandrine strikingly reduced the conjunctival eosinophil infiltration and the number of intact and degranulating mast cells. IL-1 β and IL-5 mRNA expression in the conjunctiva of Tetrandrine treated mice was dramatically down regulated compared with untreated and buffered saline treated controls.

These results indicate that Tetrandrine may have potential clinical use in the treatment of allergic conjunctivitis.