

DUAL-ACTION TOPICAL MEDICATIONS FOR OCULAR ALLERGIES AVAILABLE OVER THE COUNTER



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Ocular allergy is a common immunological inflammatory process on the anterior surface of the eye and can be triggered by many pollutants, including ragweed, pollen, grass, and animal dander. Ocular exposure to these allergens can induce symptoms of itch and clinical signs of conjunctival redness, chemosis, swollen eyelids, and corneal staining. An estimated 40% of the United States population has had ocular allergy symptoms.¹ Only approximately 10% of patients with ocular allergies seek medical attention for their symptoms, while the remainder self-diagnose and may also self-medicate.² It is estimated that over-the-counter (OTC) ocular allergy medication sales are 10 times higher than the combined ocular allergy prescriptions generated by primary care physicians (30%), eye care specialists (41%), and allergists (9%).³

ALLERGY CASCADE

Ocular allergies are primarily mediated by the immunoglobulin E (IgE)-mast cell system, triggered by repeated allergenic exposure (Figure 1).⁴ The early phase reaction, which lasts about 30 minutes, involves the interaction of the allergens with IgE on the mast cell membrane.⁴ Allergens cross-link the IgEs, leading to mast cell degranulation and release of histamine along with pro-inflammatory mediators such as prostaglandins, leukotrienes, and cytokines.⁴ The late phase reaction of mast cell degranulation in the conjunctival beds includes binding of histamine receptors (H_1 , H_2 , H_3 , and H_4) on vascular endothelial cells, neuronal fibers, goblet cells, immune cells, and conjunctival epithelial cells, leading to expression of cellular mediators and activation of inflammatory cells (T lymphocytes, eosinophils, and neutrophils).⁴

COMMON THERAPEUTIC OPTIONS

Antihistamine drugs block histamine receptors on nerves and blood vessels and are designed to reduce itch and vasodilation.⁴

Mast cell stabilizers inhibit mast cell degranulation and histamine release, reduce the recruitment of inflammatory cells, and reduce the allergic reaction cascade, but their activation can take

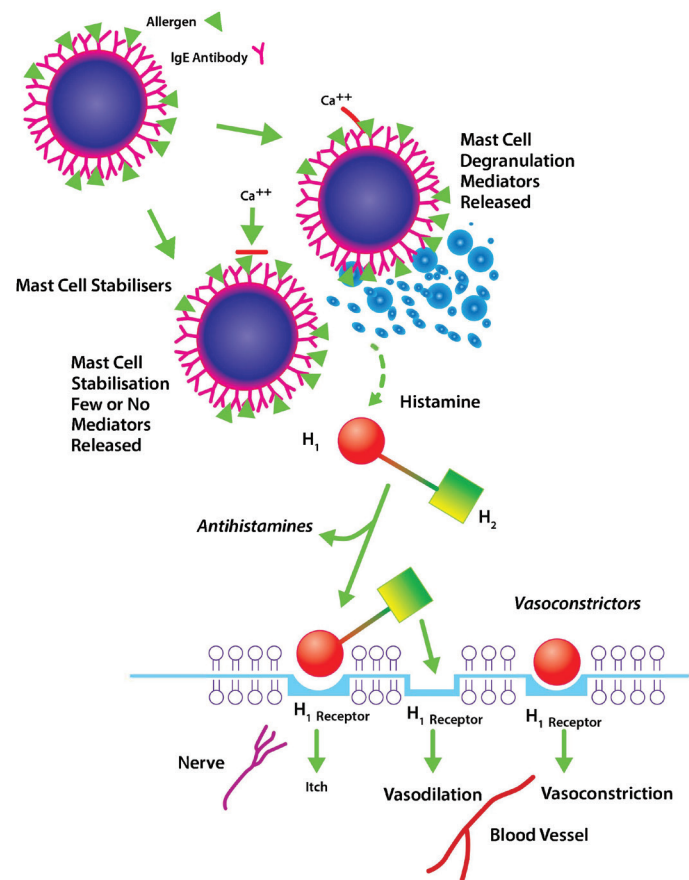


Figure 1. Mechanism of allergic conjunctivitis.

3-5 days.⁴ Olopatadine is both a mast cell stabilizer and a histamine H₁ antagonist and has demonstrated decreased chemotaxis and inhibition of eosinophil activation.

Olopatadine was the first dual-action agent available for ophthalmic use in 1996. Since then, other dual-action agents have come to the ophthalmic prescription market, including ketotifen, azelastine, epinastine, bepotastine, and alcaftadine.⁵ Dual-action agents are indicated for 2-3 times daily dosing, except for olopatadine and alcaftadine, each of which are indicated for once daily dosing.⁵

In 2006, ketotifen 0.025% (Zaditor; Alcon, Fort Worth, TX) was the first dual-action anti-allergy drop available OTC in the United States. Almost 15 years later, olopatadine was approved by the Food and Drug Administration (FDA) to be only the second dual-action anti-allergy ophthalmic solution for ocular allergy itch relief available OTC as Pataday Twice Daily Relief (olopatadine hydrochloride 0.1%), Pataday Once Daily Relief (olopatadine hydrochloride 0.2%), and Pataday Once Daily Relief *Extra Strength* (olopatadine hydrochloride 0.7%) (Figure 2). The prescription-to-OTC switch made both Pataday Once Daily Relief and Pataday Once Daily Relief *Extra Strength* the only once-daily dosing dual-action anti-allergy ocular itch relief ophthalmic drops for available OTC in the United States.

The Pataday products offer rapid ocular allergy itch relief up to 8 hours (Pataday Twice Daily Relief), 16 hours (Pataday Once Daily Relief), and 24 hours (Pataday Once Daily Relief *Extra Strength*) after drug instillation.⁶⁻⁸ Pataday Twice Daily Relief also demonstrated a significantly greater reduction in ocular redness compared to vehicle at 27 minutes (onset) and 8 hours after drug instillation.⁷ At 16 and 24 hours after drug instillation, the reduction in itching with Pataday Once Daily Relief and Pataday Once Daily Relief *Extra Strength* were significantly greater compared to vehicle.^{6,8}

Combined data from nine clinical studies show that Pataday Once Daily Relief has a favorable ocular safety profile, with few reports of ocular adverse events, the most commonly reported being ocular pain with Pataday Once Daily Relief (1.1%) and decreased visual acuity, ocular discomfort, and dry eye with vehicle (1.0-1.3%).⁹ Furthermore, for Pataday Once Daily Relief *Extra Strength*, the most commonly reported adverse reactions occurred in 2-5% of patients treated with either Pataday Once Daily Relief *Extra Strength* or vehicle and included blurred vision, dry eye, superficial punctate keratitis, dysgeusia, and abnormal sensation in the eye.¹⁰

CONCLUSION

Dual-action (antihistamine/mast cell stabilizers) anti-allergic agents utilize two mechanisms of action to provide ocular allergy itch relief: antihistamine and mast cell stabilization. Approximately 16 years after FDA approval of the first OTC



Figure 2. Pataday products available over the counter (left to right): Pataday Once Daily Relief (olopatadine hydrochloride 0.2%; formerly Pataday), Pataday Once Daily Relief *Extra Strength* (olopatadine hydrochloride 0.7%; formerly Pazeo), and Pataday Twice Daily Relief (olopatadine hydrochloride 0.1%; formerly Patanol).

dual-action anti-allergy agent, olopatadine is now only the second dual-action agent available OTC for ocular allergy itch relief in the United States. Pataday provides rapid ocular allergy itch relief in three different strengths to last up to 8 hours (Pataday Twice Daily Relief), 16 hours (Pataday Once Daily Relief), and 24 hours (Pataday Once Daily Relief *Extra Strength*), offering patients the only dual-action once-daily 16- and 24-hour ophthalmic formulations OTC. ■

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