

Review Article

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INVESTIGATING THE EFFICACY OF BIOLOGIES IN OCULAR ALLERGY

ABSTRACT

Ocular allergy is also known as Eye allergy. As allergic conjunctivitis, is a common condition characterized by the eyes' hypersensitivity to allergens. These allergens, ranging from pollen and dust to pet dander and mold, trigger an immune response in the eyes, leading to symptoms such as redness, itching etc.... Effective management of eye allergies involves identifying and avoiding triggers, using prescription antihistamine eye drops, and employing cold compresses to alleviate symptoms. Diagnosis relies on patient history, clinical examination, and adjunctive tests, including allergen-specific IgE testing and conjunctival provocation testing in select cases. Management encompasses both pharmacological and non-pharmacological interventions, including avoidance of allergens, topical antihistamines, mast cell stabilizers, corticosteroids and immunomodulators. An ocular allergy is crucial for healthcare providers to effectively diagnose and manage this condition. This review serves as a roadmap for clinicians and researches alike, offering invaluable insights into the multifaceted landscape of eye allergy

Keywords

Eye infections, eye allergy, types of eye allergy , etiology, signs and symptoms, pathophysiology, Treatment

INTRODUCTION

An eye allergy, also known as allergic conjunctivitis, is a condition where the eyes react to allergens such as pollen, dust, pet dander, or mold. Symptoms typically include redness, itching, tearing, and swelling of the eyes. It's often seasonal but can occur year-round due to indoor allergens. Treatment usually involves avoiding triggers, using over-the-counter or prescription antihistamine eye drops, and managing symptoms with cold compresses.



EYE ALLERGY

Eye allergies, also known as allergic conjunctivitis, occur when the eyes react to allergens such as pollen, dust, pet dander, mold, or certain chemicals. These allergens trigger an immune response in the eyes, leading to symptoms such as:

- Redness
- Itching
- Tearing
- Swelling of the eyelid

Eye allergies can be seasonal, occurring during specific times of the year when certain allergens are prevalent, or perennial, happening year-round due to indoor allergens like dust mites or pet dander. Managing eye allergies typically involves avoiding triggers, using over-the-counter or prescription antihistamine eye drops, and sometimes employing cold compresses to alleviate symptoms.

TYPES:

- SEASONAL ALLERGIC CONJUNCTIVITIS (SAC)

- PERENNIAL CONJUNCTIVITIS (PAC)
- VERNAL KERATOCONJUNCTIVITIS (VKC)
- ATOPIC KERATOCONJUNCTIVITIS (AKC)

ETIOLOGY

The etiology of eye allergies, or allergic conjunctivitis, involves an immune system response to specific allergens. Main factors contributing to eye allergies:

- ✓ ALLERGEN EXPOSURE
- ✓ IMMUNOGLOBULIN E (IgE) RESPONSES
- ✓ HISTAMINE RELEASE
- ✓ GENETIC PREDISPOSITION
- ✓ ENVIRONMENTAL FACTORS
- ✓ OTHER ALLERGIC CONDITIONS
- ✓ CONTACT LENS WEAR

SIGNS AND SYMPTOMS

- Redness
- Swelling
- Water eyes
- Puffy eyelids
- Conjunctival papillae
- Itching
- Burning sensation



TREATMENT:

HERBS: Herbal remedies have been traditionally used to alleviate the symptoms of eye allergies.

Butterbur (*petasites hybridus*)

Active compounds : Petasin and Isopetasin

Usage : Minimize exposure to toxic compounds

How It works :Petasin and isopetasin, which have anti-inflammatory and antispasmodic properties.

These compounds help inhibit the production of leukotrienes and histamines, which are chemicals involved in allergic reactions.



Eyebright (*Euphrasia officinalis*)

Active compounds: Catechins, particularly epigallocatechin gallate (EGCG)

Usage: Eyebright has a long history of use in treating eye conditions.

How It works: The aerial parts of the plant includes the stem, leaves, and flowers. Those parts are harvested, dried, and then used to make various preparations such as infusions, teas, compresses, tinctures, or extracts for treating eye related conditions.



Tulsi (Holy basil)

Active compounds: Eugenol, Rosmarinic acid, Ursolic acid

Usage: Tulsi have anti-inflammatory and antibacterial properties that can help to redness, itching, and swelling in the eyes caused by allergies.

How It works: The active compounds in Tulsi leaves, such as eugenol, rosmarinic acid, and apigenin, contribute to its effectiveness in treating eye allergies. These compounds have anti-inflammatory, antioxidant, and antimicrobial properties, which help alleviate the symptoms of eye allergies.



Amla (Indian gooseberry)

Active compounds: Vitamin C, Gallic acid, Ellagic acid.

Usage: Amla is traditionally used to support eye health and reduce inflammation.

How It works: The fruit, contains bioactive compounds that help alleviate symptoms of eye allergies like redness, itching, and inflammation.

- Amla juice
- Amla powder
- Amla eye drops



Neem

Active compounds: Nimbin, Azadirachtin, beta-sitosterol

Usage: It has antibacterial and anti-inflammatory properties, has been used for eye allergy treatment.

How It works: Neem leaves contain compounds like nimbin and nimbidin that reduce inflammation, which can help alleviate the redness and swelling associated with eye allergies.



PHARMACOLOGICAL TREATMENT:**Antihistamines Eye drops**

Blocking histamine receptor, Reducing inflammation, Immediate relief

DROPS:

Olopatadine (patanol, pataday)

Ketotifen (Zaditor, alaway)

Mast cell Stabilizers:

Preventing histamine release

Long term control

Delayed onset

DROPS:

Cromolyn (crolom, opticorm)

Nedocromil (Alocril)

Non steroidal Anti-inflammatory Drugs (NSAIDs) :

Inhibiting Prostaglandin Production

Reducing inflammation and swelling

Symptom Relief

DROPS:

Ketorolac (Acular)

Nepafenac (Nevanac)

Corticosteroid Eye drops:

Suppressing the immune response

Inhibiting inflammatory

Controlling Severe symptoms

Preventing tissue Damage

DROPS:

Pred forte (predisolone Acetate)

Maxidex (Dexamethasone)

IS SUNLIGHT ONE OF THE TRIGGER FACTOR FOR EYE ALLERGY?

Sunlight itself is not typically considered a direct trigger for eye allergies. When the eyes encounter allergens (e.g., pollen, pet dander), the immune system reacts by releasing histamine and other chemicals from mast cell in the eyes. This release causes the familiar symptoms of eye allergies.

- Increased sensitivity
- Dryness
- Outdoor allergens

CONCLUSION:

Eye allergies are a prevalent and often debilitating condition affecting a significant portion of the population. This study highlights the major allergens involved in the immune response mechanisms, and current treatment options, ranging from antihistamines and corticosteroids to emerging biologics. Ongoing research into the underlying mechanisms and more targeted therapies will be crucial in advancing patient care and enhancing quality of life for those affected by ocular allergies.

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