

Eye conditions

Patients with red and painful eyes frequently seek advice in the pharmacy. This article focuses on OTC treatment options of the most common eye conditions: red eye and dry eye. It summarizes symptoms and underlying causes and lists do's and don'ts for healthy eyes.

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“Now do you not see that the eye embraces the beauty of the whole world? It is the lord of astronomy and the maker of cosmography; it counsels and corrects all the arts of mankind; it leads men to the different parts of the world; it is the prince of mathematics, and the sciences founded on it are absolutely certain...”

Leonardo da Vinci (1452-1519) expressed in poetic words how much our communication and orientation depends on healthy eyes. At da Vinci's time, eye conditions (mostly infections) were very common. The eye can be the target of infections, inflammations and tumours. Other diseases are chronic glaucoma (increased intraocular pressure and degeneration of the optic nerve head) and retinal diseases. Without treatment, many eye diseases result in blindness.

Today our hygienic standards and treatment options have greatly improved. Eye conditions, however, still exist. In 2003, worldwide more than 750 million units of ophthalmic drugs such as eye drops, ointments and gels were sold.

Red eye accounts for 67 per cent of ophthalmic sales

This overview focuses on the red and the dry eye. Both conditions are usually treated locally with a variety of OTC products. In 2003, 67 per cent of global ophthalmic sales (over 500 Million units, respectively) were due to red eye.

Ophthalmic sales in the Middle East

In Egypt, a yearly total of about US\$18 million is spent for ophthalmics. About 50 per cent of all units sold are anti-infectives. In contrast, dry eye products made only 4 per cent. Do these sales reflect a tenfold higher percentage of eye infections compared to dry eye? Ophthalmic databases show an average prevalence for dry eye of 25 per cent and a lower rate for eye infections. From these figures it can be concluded that a dry eye is a frequently under diagnosed eye condition.

Ophthalmic OTC - the role of the pharmacist

Self-medication is growing but has its hazards. Chronic use of certain OTC eye medications, e.g. vasoconstrictors or uncritical use of home

remedies (camomile) can worsen eye conditions. Thus, the pharmacist plays a crucial role in the differentiation of the patient's underlying causes. Moreover, the pharmacist can give valuable advice to the patient.

Emergencies such as acute glaucoma or sudden vision loss should immediately be referred to the ophthalmologist, because they are sight threatening. An eye doctor should diagnose infections, glaucoma and severe inflammations. These diseases are treated with Rx products.

Red eye

A red eye is the consequence/symptom of many eye-related problems. It is the most common of all ocular symptoms.

The conjunctiva is the thin, transparent tissue that begins at the outer edge of the clear cornea. It covers the sclera, the outer coat of the eyeball, as conjunctiva bulbi and the inner side of the eyelids as conjunctiva tarsi. The conjunctiva is rich in nourishing blood vessels. In healthy eyes it has a white appearance, since vessels are constricted and nearly invisible to the naked eye. The conjunctiva secretes mucus is part of the protective tear film.

Many conditions may cause the conjunctival vessels to dilate. The irritated conjunctiva (“conjunctivitis”) turns red (Figure 1). It is important to keep in mind, that a red eye is a symptom, not a diagnosis. Often, but not always, a red eye is combined with tearing, burning, pain or itching.

A red eye may be caused by physical or chemical stimuli (wind, sand, sun, smoke, acids and bases), by

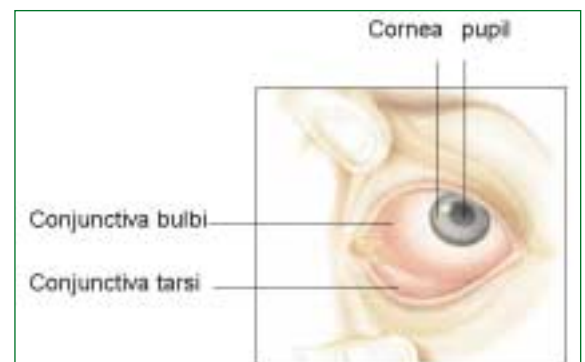


Figure 1: A red eye with irritated conjunctiva

viral or bacterial infections or results from tear film disturbances (dry eye). Patients should not use antibiotics, corticoids and vasoconstrictors unless the reason for the red eye is known. A scheme to differentiate the different types of red eye is given in Table 1.

Non-infectious, acute irritations of the eye may be treated locally with antihistamines. Vasoconstrictors (e.g. anthazolines, naphazolines, sympathomimetics) should only be used for a short period of time. They effectively reduce eye redness, but quickly loose efficacy. When used chronically, they help to develop a dry eye because they decrease tear production.

The leading symptom of allergy is itching. *“If it doesn’t itch, it’s probably not an allergy”*. Allergic reactions usually involve the eyes, nose (allergic rhino-conjunctivitis or hay fever) and the respiratory tract. Of patients who take systemic allergy medication, 73 per cent still suffer itchy, red, watery eyes and need ophthalmic medication.

Dry eyes are often masked by eye redness. Self-medicating patients tend to use vasoconstrictors to get rid of the redness. However, when used chronically, symptoms will aggravate. Dry eyes

should only be treated with artificial tears.

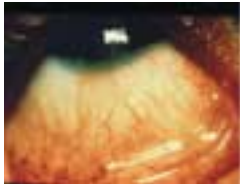




Trachoma

Trachoma is an easily spread infection of the eye, caused by Chlamydia trachomatis. At its onset, it resembles conjunctivitis with symptoms of tearing, photophobia (light sensitivity), pain, swelling of the eyelids, and superior keratitis. Repeated occurrences scar the upper eyelid, eventually turning it inward. The eyelashes then scratch the cornea, leading to blindness. It is a gradual yet painful condition. If treated early with antibiotics, the prognosis is excellent. Untreated, it can cause blindness. Trachoma is usually accompanied by red eye and dry eye symptoms. Artificial tears in addition to antibiotics give relief to the patient.

Dry eye

Customers seeking advice in the pharmacy may tell you the following complaints: *“My eyes are burning when watching TV or working at the computer”*; *“I have a sandy feeling in my eyes”*; *“In the morning my eye lids stick together and are difficult to open”*. These

Table 1: Red eye diagnostic and treatment scheme

Appearance					
Diagnosis	Non-infectious irritative conjunctivitis (physical or chemical)	Dry eye (tear film disorders)	Allergy	Infection	Acute (angle closure) glaucoma
Symptoms	Burning, redness	Red glow, dim, dry eye, pain	Itching, lid oedema, tearing	<i>Bacterial:</i> Exudative, mucopurulent, clotted eye lids, burning, redness, pain <i>Viral:</i> Tearing, burning	Extreme pain caused by abnormally high eye pressure, frontal headache, nausea and vomiting, photophobia (light sensitivity)
Treatment	Artificial tears; antihistamines; vasoconstrictors (only short term!) Brands: Visine® original, Livostin®, Prefrin®, NaphconV A, Ocumethyl®	Artificial tears (Cellulose derivates, e.g. HPMC; Polyvidon; Polyvinyl-alcohol) Brands: Tears natural®, Liquifilm® Tears, Artelac®, Celluvisc®	Cromoglycic acid (slow onset of action, should be taken 2 weeks in advance); Anti-histamines (quick for acute allergy phase); Mastcell stabilizers (highly effective) Brands: Emadine® (Emedastin); Alomide® (Lodoxamide tromethamine)	<i>Antibiotics:</i> Ofloxacin, Ciprofloxacin, Gentamycin, Tobramycin <i>Trachoma:</i> Tetracycline eye ointment; Zithromax® (Azithromycin tablets) <i>Antiviral:</i> Aciclovir, TFT	Substances that decrease elevated eye pressure: topical beta-blockers e.g. Timolol, Pilocarpine, oral Acetazolamid, Mannitol
Comment	OTC	OTC; Refer to an ophthalmologist	OTC; Rx	Rx; Refer to an ophthalmologist	Rx; Emergency case. Immediately refer to an ophthalmologist

symptoms strongly point to a dry eye or kerato-conjunctivitis sicca. This condition affects up to 25 per cent of a population.

Tear film

The tear film protects, moistens and nourishes the eye. It also inhibits bacterial growth and keeps the cornea clear. The tear film has 3 layers: lipid, aqueous and mucin (Figure 2).

A dry eye is characterised by disturbances of one or more layers of the tear film. A dry eye should always be taken seriously. If left untreated, the cornea can be seriously damaged and lose its transparency so that vision gets disturbed. Its symptoms can be quantified by measuring the amount of tear production per time (Schirmer test) or the stability of the tear film (break up time). A dry eye requires regular instillation of artificial tears. **Paradoxically, a dry eye may frequently appear as a chronically tearing, wet eye when the mucin layer is defect.**

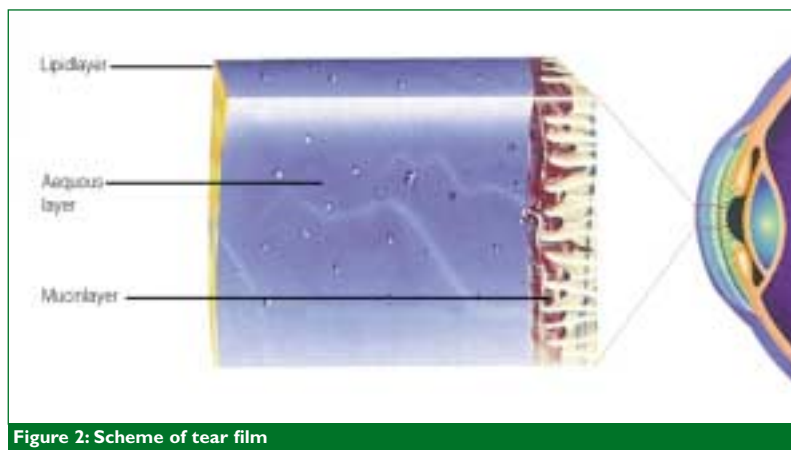


Figure 2: Scheme of tear film

Factors causing a dry eye

- Computer screen work - the eyes “forget” to blink
- Cigarette smoke, wind, sand, UV-light, ozone, heat
- Air conditioners
- Contact lenses
- Postmenopausal women
- Systemic medications (antihistamines, betablockers, oral contraceptives, sedatives)
- Rheumatic diseases (Sjogren’s syndrome), diabetes, hemianopsia
- Eye lid abnormalities

Artificial tears give quick relief and protect the eye surface. They are available in different viscosities.

Recommendations for patients with dry eyes

- Avoid smoke, stress and excess sun light (use eye glasses)
- Make a conscious effort to blink frequently - especially when working with a computer or watching television
- Drink plenty of soft drinks (mineral water, fruit juice)
- Women taking contraceptives should consider pills with low hormonal content
- Contact lens wearers: refresh lenses regularly with unpreserved artificial tears
- Do not apply home remedies, e.g. camomile extracts (*Matricaria chamomilla*) to the eye. They cause allergies and dry eyes

Table 2: Clues to your customers’ red eyes

Symptoms	Possible causes
Burning eyes	Eye irritations and dry eye
Itching eyes	Allergy
Sticky eyes in the morning and excaudate (fluid, such as pus)	Bacterial infection

Table 3: Artificial tears

Low viscosity eye drops	High viscosity gels
Light to medium dry eye symptoms (e.g. deficiency of aqueous layer)	Severe dry eye symptoms (e.g. Sjögren or deficiency of mucus layer; eye burns)
(Cellulose derivates, e.g. Hydroxypropylmethylcellulose (HPMC), Povidone, Polyvinylalcohol)	Carbomer (replaces deficient mucus layer)
Tears natural®, Celluvisc®	Thilo Tears®, Corneregel®

PEARLS TO SHARE WITH PATIENTS

This information does not replace what is in the package insert. The pharmacist should always use their judgement when deciding what information to give a patient when selling a medicine. Always know if you are talking to the patient as they may not know the patient well enough to answer important questions.

Eye drops (OTC and Rx)

BEFORE SELLING THE MEDICINE

Do you wear contact lenses?

Many eye drops can cause problems with contact lenses, especially soft lenses – check the medicine leaflet. Never use contact lenses during infections.

WHEN SELLING THE MEDICINE

Explain how to use them

- Wash and dry hands before putting in the drops
- Use a mirror if possible
- Avoid touching the dropper tip against the eye, eyelashes, or any other surface
- Tilt the head back and look upwards. Gently pull the lower eyelid down
- Hold the dropper above the lower eyelid and squeeze one drop inside the lower eyelid
- Gently release the lower eyelid and blink a few times to spread the drop over the eye
- Replace the cap
- If another drop of the same medicine or of another medicine is needed, wait for a few moments before putting the next drop in. More than one or two drops will run out of the eye
- Press a finger against the corner of the eye (by the nose) for about a minute after using the drops - this can help to stop the drops draining into the nose and throat , especially in children (reduces bitter taste, increases contact with eye).
- Most proprietary eye drops are OK out of the fridge for up to one month (including chloramphenicol). Keep at room temperature to avoid pain when used
- Discard eye drops 1 month after opening
- Brief stinging is usual but tell your pharmacist or doctor if this gets worse.