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# PHYSICIANS' DESK REFERENCE FOR OPHTHALMOLOGY®

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## 6. MEDICATIONS FOR DRY EYE

Dry eye refers to a deficiency in either the aqueous or mucin components of the precorneal tear film. The most commonly encountered aqueous-deficient dry eye in the United States is keratoconjunctivitis sicca, while mucin-deficient dry eyes may be seen in cases of hypovitaminosis A, Stevens-Johnson syndrome, ocular pemphigoid, extensive trachoma, and chemical burns.

Dry eye is treated with artificial tear preparations (see **Table 20**) and ophthalmic lubricants (see **Table 21**). The lubricants form an occlusive film over the ocular surface and protect the eye from drying. Administered as a nighttime medication, they are useful both for dry eye and in cases of recurrent corneal erosion.

TABLE 20  
**ARTIFICIAL TEAR PREPARATIONS**

MAJOR COMPONENT(S)	CONCENTRATION (%)	TRADE NAME	PRESERVATIVE/EDTA*
Carboxymethyl cellulose	0.5%	Refresh Plus	None
	1%	Celluvisc	None
	0.25%	Theratears	None
Glycerin	3%	Dry Eye Therapy	None
Hydroxyethyl cellulose, polyvinyl alcohol		TearGard	Sorbic acid, EDTA
Hydroxypropyl cellulose		Lacrisert (biodegradable insert)	None
Hydroxypropyl methylcellulose	0.5%	Isopto Plain	Benzalkonium chloride
		Isopto Tears	Benzalkonium chloride
		Tearisol	Benzalkonium chloride, EDTA
	1%	Isopto Alkaline	Benzalkonium chloride
		Bion Tears	None
Hydroxypropyl methylcellulose, dextran 70		Ocucoat	Benzalkonium chloride, EDTA
		Ocucoat PF	None
		Tears Naturale II	Polyquad
		Tears Naturale Free	None
		Tears Renewed	Benzalkonium chloride, EDTA
Methylcellulose	1%	Murocel	Methyl-, propylparabens
		Polycarboxophil, PEG-400, dextran 70	EDTA
Polysorbate 80		AquaSite	EDTA, Sorbic acid
		AquaSite multi-dose	EDTA
Polyvinyl alcohol	1.4%	Viva Drops	EDTA
	3%	AKWA Tears	Benzalkonium chloride, EDTA
Polyvinyl alcohol, PEG-400, dextrose	1%	Dry Eyes	Chlorobutanol
		Liquifilm Tears	Chlorobutanol
		HypoTears	Benzalkonium chloride, EDTA
		HypoTears PF	EDTA
		Puralube Tears	Benzalkonium chloride, EDTA
Polyvinyl alcohol, povidone	1.4%	Murine Tears	Benzalkonium chloride, EDTA
	0.6%	Refresh	None
		Tears Plus	Chlorobutanol

\*EDTA = ethylenediaminetetraacetic acid.

SET/DURATION  
ACTION

min/5-6 h  
60 min/6 h  
45 min/5-6 h

ONSET/DURATION  
OF ACTION

2 h/4-6 h

5-10 min/2 h

30 min/6 h

2 h/4-6 h

SIZE(S)(mL)

5  
single use bottle  
5, 10, 15

SIZE(S)(mL)

2.5



TABLE 21

**OPHTHALMIC LUBRICANTS**

TRADE NAME	COMPOSITION OF STERILE OINTMENT
AKWA Tears Ointment	White petrolatum, liquid lanolin, and mineral oil
Dry Eyes	White petrolatum, liquid lanolin, and mineral oil
Duolube	White petrolatum and mineral oil
Duratears Naturale	White petrolatum, liquid lanolin, and mineral oil
HypoTears	White petrolatum and light mineral oil
Lacri-Lube S.O.P., Lubritears	42.5% mineral oil, 55% white petrolatum, lanolin alcohol, and chlorobutanol
Puralube	White petrolatum, liquid lanolin, and mineral oil
Refresh P.M., Dry Eyes Lubricant	41.5% mineral oil, 55% white petrolatum, petrolatum, and lanolin alcohol

**7. OCULAR DECONGESTANTS**

These topically applied adrenergic medications are commonly used to whiten the eye. Three types are available. Those containing naphazoline and tetrahydrozoline are more stable than those with phenylephrine. Usual dosage is 1 or 2 drops no more than 4 times a day (see **Table 22**).

TABLE 22

**OCULAR DECONGESTANTS**

DRUG	TRADE NAME	ADDITIONAL COMPONENTS
Naphazoline hydrochloride	AK-Con*	Benzalkonium chloride, edetate disodium
	Albalon*	Benzalkonium chloride, edetate disodium
	Clear Eyes	Benzalkonium chloride, edetate disodium
	Naphcon	Benzalkonium chloride, edetate disodium
	Vasoclear	Benzalkonium chloride, edetate disodium
Oxymetazoline hydrochloride	Vasoclear	Benzalkonium chloride, edetate disodium
	Vasocon Regular*	Phenylmercuric acetate
Oxymetazoline hydrochloride	Visine L.R.	Benzalkonium chloride, edetate disodium
	Ocuclear	Benzalkonium chloride, edetate disodium
Phenylephrine hydrochloride	AK-Nefrin	Benzalkonium chloride, edetate disodium
	Eye Cool	Thimerosal, edetate disodium
	Prefrin Liquifilm	Benzalkonium chloride, edetate disodium
	Relief	—
Tetrahydrozoline hydrochloride	Collyrium Fresh	Benzalkonium chloride, edetate disodium
	Murine Plus	Benzalkonium chloride, edetate disodium
	Visine	Benzalkonium chloride, edetate disodium

**DECONGESTANT/ASTRINGENT COMBINATIONS**

Naphazoline hydrochloride plus zinc sulfate	Clear Eyes ACR (allergy/cold relief)	Benzalkonium chloride, edetate disodium
Phenylephrine hydrochloride plus zinc sulfate	Zincfrin	Benzalkonium chloride
Tetrahydrozoline plus zinc sulfate	Visine Allergy Relief	Benzalkonium chloride, edetate disodium

\*Prescription medication.

**8. OPHTHA**

Listed in **Table 23** general ophthalmic products. There are actions available for

TABLE 23

**OPHTHALMIC II****TRADE NAME**

AK-Rinse

Collyrium Fresh Eyes

Dacriose

Eye-Stream

Irigate

Lavoptik Eye Wash

**9. HYPER**

Hyperosmolar (hy  
They act through

TABLE 24

**HYPEROSMO****GENERIC NAME**

A. Therapeutic prepa  
Sodium chloride

B. Diagnostic prepa  
Glycerin

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