

EUDACRIS

A mild solution for the everyday cleansing of eye contour area in cats and dogs

EUDACRIS < U-DÁ-CRIS

The name is inspired by the Greek words « εὖ », which means « good » and « δάκρυ » which means « tear »

Liddell G, Jones HS, Scott R, McKenzie R. A Greek-English Lexicon. Oxford: Clarendon Press; 1940.

Tear staining around the eyes of cats and dogs is caused by a condition called “epiphora”. This condition is defined as tear overflow because of impaired tear drainage by way of the nasolacrimal duct. It is a fairly common problem in some of the smaller breeds, such as Bichon Frisé, Maltese Terrier, Miniature and Toy Poodle, and Tibetan Spaniel, where it’s particularly evident due to their pale coats, since tears stain them a rusty brown. The onset of this kind of condition is generally observed from 2 – 3 months of age onwards, and it is usually bilateral¹. Epiphora can be a secondary condition caused primarily by entropion. Entropion is a common eyelid disorder in dogs; some cat breeds, such as Persians, are also affected. It consists of a turning of the eyelid margin in which the eyelashes and eyelid hair irritate the cornea causing epiphora, blepharospasm, photophobia, conjunctivitis and purulent discharge, corneal vascularization, pigmentation and ulceration if not surgically treated². The red/brown discoloration in tears comes from porphyrin.

Porphyrins are iron containing molecules produced when the body breaks down iron. Porphyrins are excreted through the gastrointestinal tract, urine, saliva, and tears. All dogs have some porphyrin in their tears, but some dogs have more porphyrin and the staining is always more noticeable in white or light-colored dogs³. A mild solution for daily hygiene is needed to reduce stains and discharge around the eye, with a pH and osmolality compatible to those of the healthy eye. Eudacris has a pH=7,5, which is compatible to the lacrimal pH of cats and dogs^{4,5}, and, through the addition of carboxymethylcellulose (CMC), an osmolarity compatible to the one of healthy dogs’ and cats’ healthy eyes⁶.

Witch hazel water (*Hamamelis virginiana*)

Witch hazel water from the plant of *Hamamelis virginiana*, has been traditionally used as an ophthalmic astringent and is listed in The Ophthalmic Prescribers Codex of 1943. The ophthalmic astringents are considered to be extremely mild in action for, unlike topical skin astringents, they are not intended to precipitate proteins to facilitate their removal, but rather simply provide a soothing and washing effect⁷. The distillate from fresh or dried parts (ethanol 6–15%) is suggested by European Scientific Cooperative on Phytotherapy (ESCP) for ocular discomforts⁸. Witch hazel

is known to possess astringent (vasoconstrictive) and hemostatic properties, which have been attributed to the tannin constituents. The anti-inflammatory activity could be due, in part, to a vasoconstrictor activity. Moreover, hamamelitannins and procyanidins possess antiinflammatory activity through inhibition of 5-lipoxygenase and PAF biosynthesis, respectively^{9,10}.

Boric acid

Boric acid is a common antibacterial agent¹¹. It has been extensively used in eye drops, as boric acid in concentrations of from 0.5 to 2% exerted *in vitro* bacteriostatic action of typical pyogenic organisms often found in the eye¹². This action was not inhibited by lacrimal secretions, but instead was slightly increased. A solution of 2% boric acid was deemed safe for irrigation of the intact eye and removal of the attached exudate and foreign bodies in healthy dogs¹³. The boric acid in Eudacris oxidizes the iron in the porphyrins and is expected to lighten the staining³.

References

1. Turner S. 2008. *Small animal ophthalmology*. Edinburgh; New York: Elsevier Saunders. 370 pp.
2. Laus JL, Vicenti FAM, Talieri IC, Jorge AT, Bolzan AA. 1999. Primary entropion in persian cats. *Cienc. Rural*. 29(4):737–40
3. Berger S. 2019. Tear Staining in Dogs: An Ophthalmologist's Perspective
4. Beckwith-Cohen B, Elad D, Bdolah-Abram T, Ofri R. 2014. Comparison of tear pH in dogs, horses, and cattle. *Am J Vet Res*. 75(5):494–99
5. Chen FS, Maurice DM. 1990. The pH in the precorneal tear film and under a contact lens measured with a fluorescent probe. *Exp Eye Res* 50(3):251–59
6. Korth RME. 2011. Die Osmolarität des Tränenfilms bei Hund, Katze und Pferd
7. Doughty M. 1997. A guide to ophthalmic Pharmacy Medicines in the United Kingdom. *Ophth Physiol Optics*. 17:S2–8
8. European Scientific Cooperative on Phytotherapy, ed. 1997. *Monographs on the medicinal uses of plant drugs*. Fasc. 4. Exeter: ESCOP
9. Capasso F, Gaginella TS, Grandolini G, Izzo AA. 2003. Plants and the Cutaneous System. In *Phytotherapy*, pp. 309–31. Berlin, Heidelberg: Springer Berlin Heidelberg
10. Faivre C, Ghedira K, Goetz P, Le Jeune R. 2009. *Hamamelis virginiana* L. (Hamamelidaceae). *Phytothérapie*. 7(4):215–20
11. Schmidt M, Schaumberg JZ, Steen CM, Boyer MP. 2010. Boric Acid Disturbs Cell Wall Synthesis in *Saccharomyces cerevisiae*. *Int J Microb*. 2010:1–10
12. Novak M, Taylor WI. 1951. Antibacterial Action of Boric Acid in Lacrima (Tears)†. *J Amer Pharm Assoc (Scientific ed.)*. 40(9):430–32
13. Abdelhakiem MAH, Abdelbaset AE, Farghali MRF. 2017. Effect of four irrigation

solutions on the intraocular pressure and total bacterial count of the normal eye in dogs. *J Adv Vet Res.* 7:120–24