DÔMES PHARMA

LUBRICATION AND HYDRATION

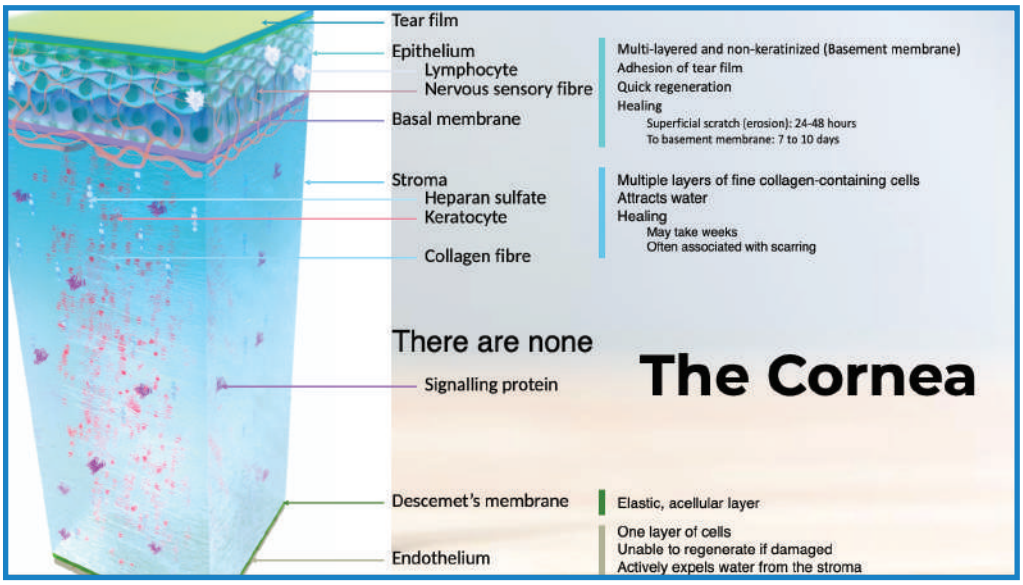
Ocunovis™ Procare 0.4% with Amino Acids

A unique patented innovation to lubricate the eyes of cats, dogs, horses, and exotic pets.

BIOHANCE CROSSLINKED HA

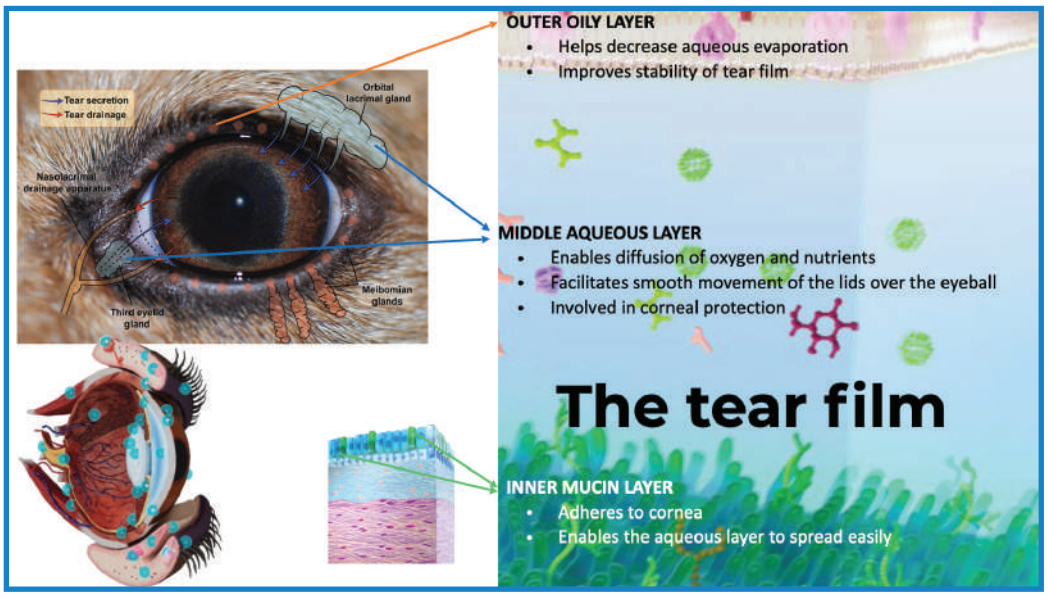
THE TEAR FILM IS THE HYDRATION OASIS OF THE EYE

In a cross-section of the normal cornea, you would see the following divisions. (Please focus on the superficial layers through the basement membrane.)



The cornea is made of different layers. The outside layer (epithelium) is covered by the tear film. A multilayered non-keratinized tissue covers the basement membrane. One of its roles is to provide adhesion for the tear film so it doesn't just slide off the surface of the cornea. It is characterized by a quick regeneration ability. It can heal within 24 hours from minor scratches but can take up to ten days when eroded to the basement membrane.

TEAR FILM'S THREE LAYERS



As the cornea is avascular, the tear film is a liquid tissue that covers the cornea and acts as blood if you will.

It consists of 3 different layers.

- The **inner mucin layer** which is in contact with the cornea. It is responsible for the adhesion of tears and helps the aqueous layer to spread evenly. The goblet cells are responsible for producing the mucin.

- The **middle aqueous layer** is the most important in terms of the thickness of tear film. It is responsible for oxygen and nutrients to the cornea and replaces vascularization. It provides lubrication for the eyelid over the eyeball. The middle layer also plays a part in protection with enzymes and natural antimicrobial protection.

- Finally, there is the **outermost oily layer** which helps to make the tear film last longer and to be more stable.

THE ROLE AND FUNCTIONS OF TEAR FILM

1. It provides lubrication for smooth movement.
2. It provides hydration.
3. It provides nutrition – specifically oxygen, protein, and electrolytes.
4. It is a mechanical barrier for the cornea— an extremely important role. If an animal is not adequately producing tears, there is a downstream impact on the cornea.
5. Finally, when there is damage to the eye, it produces its own growth factors, antimicrobials, and other factors that help with healing.

WHAT ARE SITUATIONS WHEN THE TEAR PRODUCTION IS IMPACTED?

First and foremost is when a patient is under anesthesia.

This is also referred to as treatment-induced impairment of tear production. In any anesthetic procedure, lubrication is applied to the patient. It is typically applied at the beginning of the procedure. However, up to 4 hours post-anesthesia there is reduced tear production for that animal. Other studies report 24-48 hours post anesthesia where tear production may have not been restored to what is normal for that patient. It may be of benefit to reapply lubrication prior to extubation and to send the animal home with additional lubricating eye drops.

To address this form of dry eye during anesthesia, Eye Lube Pro was developed. We increased the concentration of HA by 20% compared to the leading alternative. If you are looking for a bulk lubricant for in-clinic use or for large volume use cases, this has more of the key ingredient compared to the alternative at a better price.

EYE LUBE PRO

CONTAINS 20% MORE HYALURONIC ACID THAN OPTIXCARE™

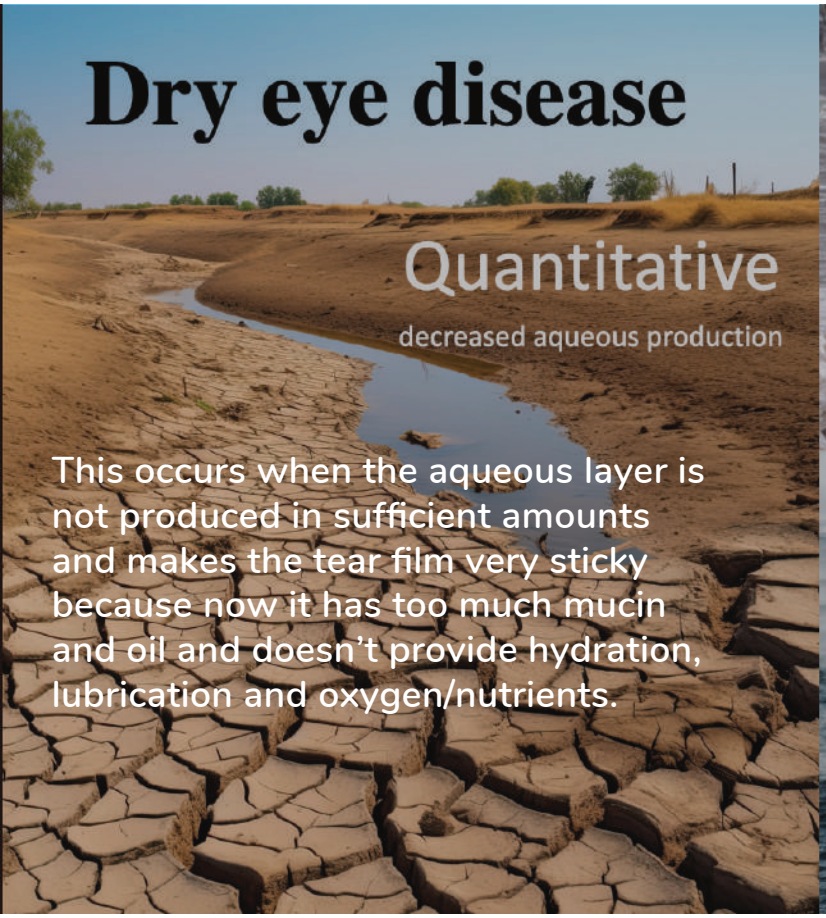
- TRADITIONAL HYALURONIC ACID AND CARBOMER BASED SOLUTION
- *20ML FORMAT TUBE IDEAL FOR LUBRICATION DURING SURGICAL PROCEDURES
- BULK LUBE FORMULA PROVIDES A VALUE BASED APPROACH TO LONG˚TERM LUBRICATION
- MANUFACTURED BY DOMES PHARMA IN SALT LAKE CITY, UTAH.

*IN SITUATIONS WHERE THE BLINK REFLEX IS DIMINISHED IT IS RECOMMENDED TO APPLY LUBRICATION EVERY 30 MINUTES

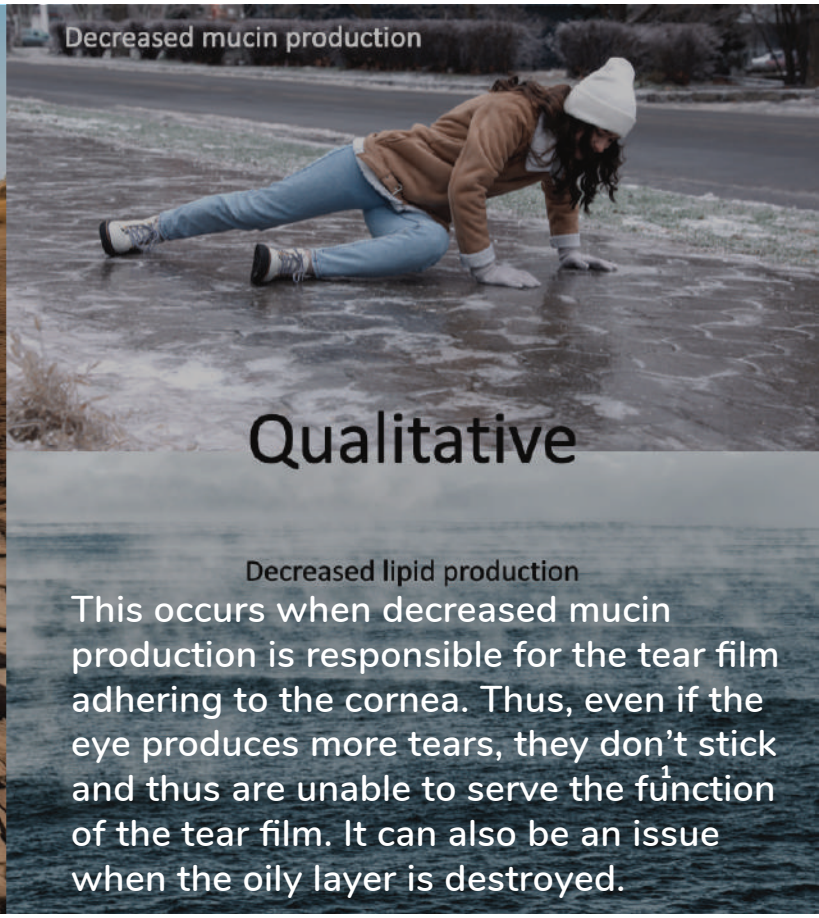
Dry Eye, also known as Keratoconjunctivitis Sicca (or KCS), is a common condition in dogs.

Dry Eye is a very common disease. Five percent of all dogs are impacted by KCS where the dog's own immune system attacks the tear gland. The tear gland is not able to produce the tears it needs. Prevalence is higher at 20% of those predisposed breeds (brachycephalic – such as boxers, bulldogs, and terriers).

WHAT ARE THE TWO VERSIONS OF DRY EYE?



This occurs when the aqueous layer is not produced in sufficient amounts and makes the tear film very sticky because now it has too much mucin and oil and doesn't provide hydration, lubrication and oxygen/nutrients.



This occurs when decreased mucin production is responsible for the tear film adhering to the cornea. Thus, even if the eye produces more tears, they don't stick and thus are unable to serve the function[1] of the tear film. It can also be an issue when the oily layer is destroyed.

WHAT ARE THE THREE KEYS TO DRY EYE TREATMENT?

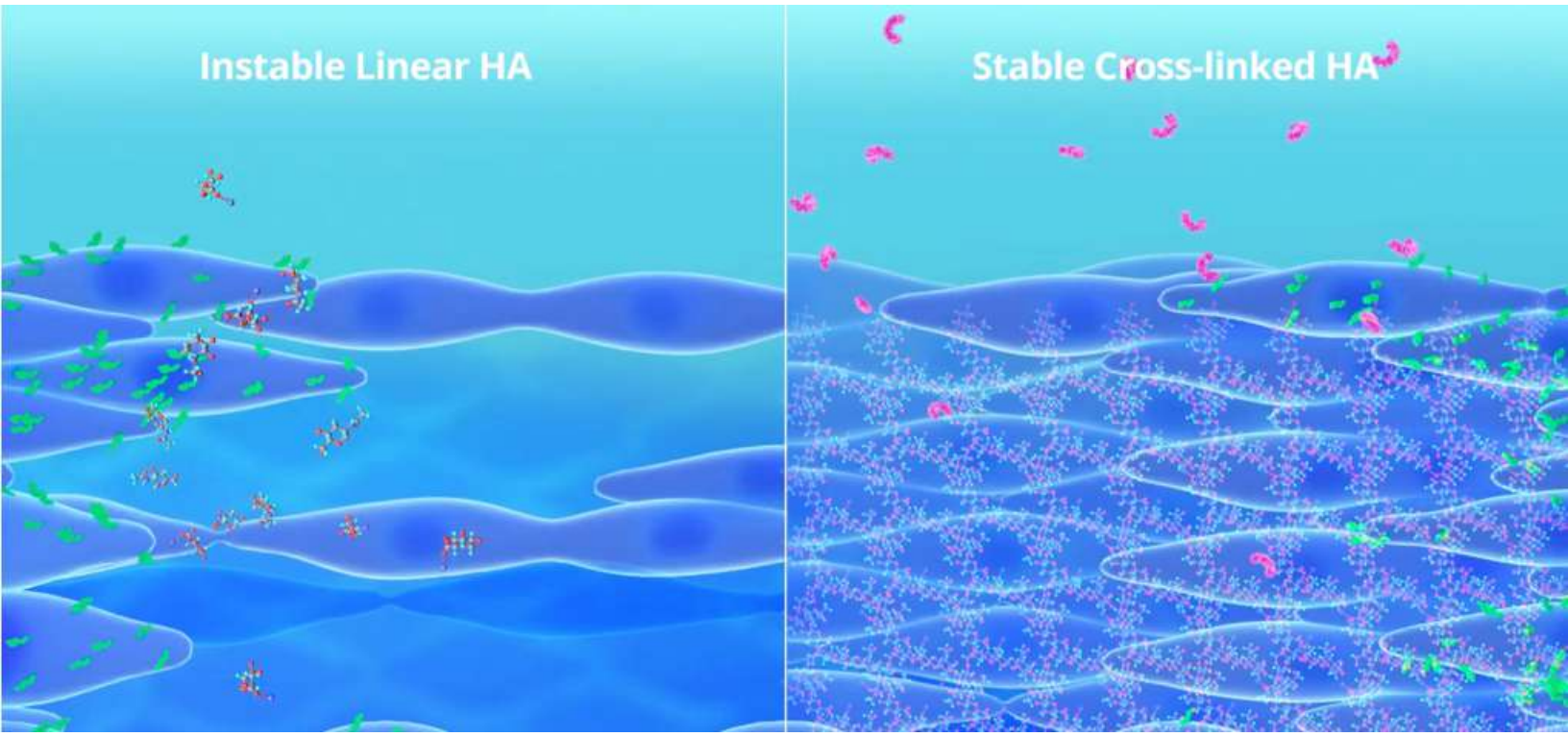
1. Manage the Underlying Disease:
   A. If immune-mediated, immunosuppressive lacrostimulant drugs are indicated.
   B. Lacrostimulant drug protects tear glands from being attacked by the immune system in the future and stimulates tear production.
2. Manage and Treat Underlying Infections
3. Apply Artificial Tears and Tear Supplements
   A. Even when dogs respond to cyclosporine, tear supplementation keeps eyes as comfortable as possible.

BIOHANCE CROSSLINKED HA

An advanced and patented bioengineering technology with highly concentrated cross- linked HA for a long- lasting ocular persistence(2).

WHAT IS BIOHANCE™ AND WHY IS IT IMPORTANT TO OCULAR HYDRATION?

BioHance™ is a new bio-engineered, cross-linked hyaluronic acid (HA) that enables linear HA to be arranged into a scaffold. The cross-linking allows HA to be less easily degraded which prolongs its action and stability on the ocular surface.



Cross-linked HA can act as a shield for a weakened ocular surface. Cross-linked HA or BioHanceTM also provides superior tear film replacement and comfort.

WHY ARE AMINO ACIDS IMPORTANT IN THE OCUNOVIS PROCARE FORMULATION?

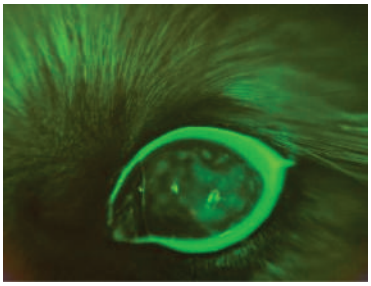
The tear film provides nutrition to the eye. The amino acids in Ocunovis Procare help to supplement tears when the tear film quality or quantity is impacted.

Multiple studies have now supported increased residence time of BioHance. For Ocunovis Procare, the residence time has been shown to last 2-5x longer than traditional artificial tears! This is why BioHance and cross-linked HA is so important to use with your patients!

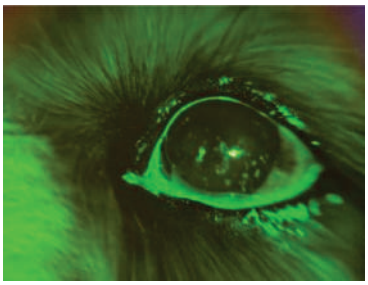
(2) Montiani-Ferreira, F et al (2022) Fluorometric evaluation of cross-linked vs linear hyaluronic acid eye lubricants. ACVO 2022 Conference poster session.

Longer Lasting Lubrication and Support Backed By Science

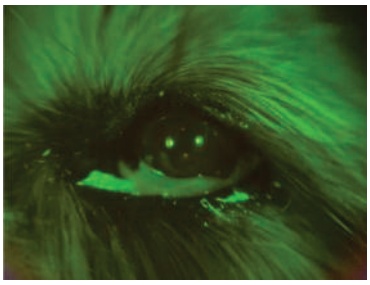
BioHAnce™ extends residence time and is maintained on the ocular surface for **HOURs*** vs 10-20 minutes for **Non** cross-linked hyaluronic acid (HA)†



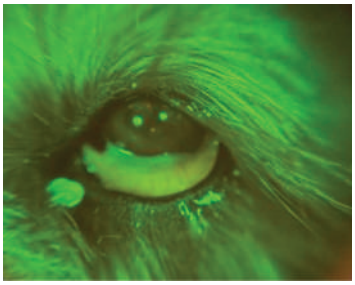
0 Minutes



Cross-linked Hyaluronic Acid (0.4%) – Ocunovis ProCare 5 Minutes



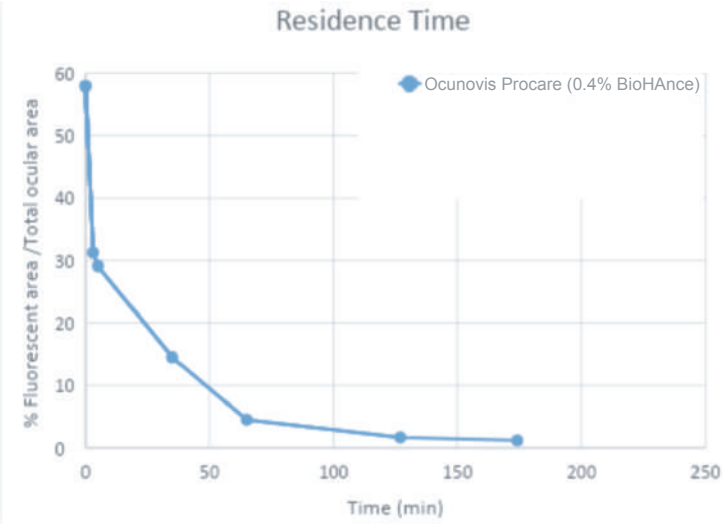
Cross-linked Hyaluronic Acid (0.5%) – Ocunovis ProCare 127 minutes



Everted eyelid showing deposit

Cross-linked Hyaluronic Acid (0.75%) – Ocunovis ProCare 180 minutes

Dual phase replenishment of lubrication that is maintained in the medial canthus due to the Crosslinked HA properties



* Privately help study performed by EyeGate Pharma (rabbit, healthy and debrided eyes), Privately held study perfromed by Sentrx Animal Care with healthy dog eyes, †Mochizuki et al, Laboratory Science 2007, Snibson et al, Cornea, 1992

ADVANCED LUBRICATION, EASE AND COMFORT

Lubricate and defend the cornea in case of dry or irritated eyes

Improved corneal lubrication and hydration

UNIQUE FORMULATION

- **BioHAnce™ cross-linked HA: 0.4%**
- **Concentrated cross-linked HA for a longer-lasting lubrication[2]**
- **No preservatives for a better tolerance**

STRONG POINTS

- **Corneal defence**
  - Cross-linked HA was shown to help stabilise the tear film[3]
  - Cross-linked HA was shown to improve lubrication and hydration[2]
- **Improved residence time[2, 4]**
  - Better mucoadhesive properties of the concentrated cross-linked HA compared to linear HA
  - More stable than linear HA, it lasts 2-5 times longer than traditional artificial tears
  - Broader coverage of the ocular surface
- **Comfort for pets and pet owners**
  - The cross-linked HA creates a sheer thin film without blurring the vision, unlike linear HA[3]
  - Preservative-free to avoid irritation or stinging sensation[5]
  - The improved residence time allows for less frequent applications[3]

SUPPORTED BY A CONTROLLED STUDY IN DOGS

Significant improvement of ocular irritation was shown when administered twice daily[3]. Additionally, the cross-linked HA outperformed a standard lubrication product containing 0.3% linear HA when administered 3 times daily[6].

HOW TO USE

1. Simply apply 1 to 2 drops directly onto the eyes 2 times a day.

   *They can be applied as often as needed, but studies support a longer lasting duration as compared to other HA based eye lubricants

2. The natural movement of the eyelid will distribute cross-linked HA over the eye surface.

Ocunovis™ Procare can be used for dry, irritated eyes and other conditions where eye lubrication and hydration may be beneficial.

- Volume 5 mL
- Store at ambient temperature

BIOHANCE CROSSLINKED HA

ADVANCED LUBRICATION

- A patented, cross-linked hyaluronic acid: 0.4%
- Enhances lubrication and hydration of dry and irritated eyes
- Twice-daily application that lasts 2-5x longer than traditional HA drops
- Clinically shown to improve tear film stability

(2) Montiani-Ferreira, F et al (2022) Fluorometric evaluation of cross-linked vs linear hyaluronic acid eye lubricants. ACVO 2022 Conference poster session.
(3) Williams, DL et al (2013) A crosslinked HA-based hydrogel ameliorates dry eye symptoms in dogs. International Journal of Biomaterials 2013;460437.
(4) Plummer, CE et al (2022) Evaluation of topically applied cross-linked hyaluronic acid (Remend®) on the ocular surface of clinically healthy dogs. ACVO 2022 Conference Poster session.

(5) Goldstein, MH et al (2022) Ocular benzalkonium chloride exposure: problems and solutions. Eye (London, England) 36(2):361–368.
(6) Williams, DL; Mann, BK (2014) Efficacy of a crosslinked hyaluronic acid-based hydrogel as a tear film supplement: a masked controlled study. PLoS ONE 9-6:e99766.

DOMES PRODUCTS CONTAINING THE BIOHANCE™ TECHNOLOGY

ocunovis procare
BioHAnce™ Gel Eye Drops with Amino Acids

Lubrication designed to last longer

oculenis
BioHAnce™ Ocular Repair Gel

Corneal repair gel

eye lube pro

Bulk lubrication at a value price

Sentrx Product Name	Key Ingredients	Use and Support
Ocunovis™ ProCare BioHAnce™ Gel Eye Drops with Amino Acids	.40% Cross-linked HA	• Lubrication for dry eye with as little as 2 applications a day • Shown to help stabilize tear film (2) • Lasts 2-5x longer than traditional artificial tears (2,3)
Oculenis™ BioHAnce™ Ocular Repair Gel	.75% Cross-linked HA	• Supports 50% faster healing of damaged cornea (4) • Unlike serum, shown not to bind to antibiotics (5)

BioHAnce™ technology uses advanced bioengineering to create a molecular matrix of cross-linked hyaluronic acid. Cross-linked HA creates a cellular scaffolding with unique physical and chemical properties that extend lubrication 2-5x longer than traditional HA drops(2,3) and accelerates the bodies own healing process by up to 50%(4). Cross-linking creates a more viscous lubricant at a lower concentration with muco-adhesive properties that extends duration in a way traditional products cant. HA that is cross-linked also creates a sheer thinning property where the gel rebounds during blinking and does not blur or get discarded from the ocular surface like traditional lubricants. Once HA has been cross-linked, it changes the chemical and physical properties. Thus, you can't compare the concentration of an HA product to the concentration of a cross-linked product.

Eye Lube Pro Lubricating Gel	**Carbomer** and .30% traditional HA	• Just like other traditional eye lubes, product may need to be applied more often • HA and carbomer formulation offers bulk lubrication at a value price

EYE EXPERTS

As an international reference in ophthalmology, Dômes Pharma is committed to providing veterinarians, nurses, and pet owners with:

- An extensive range of innovative ophthalmic products, from daily care and prevention to diagnostics and therapeutics
- Our teams' scientific and technical expertise
- A broad range of services, including disease management guidelines and innovative educational experiences.

domespharma.us/learnmore

1.EVALUATION OF TOPICALLY APPLIED CROSS-LINKED HYALURONIC ACID (REMEND®) ON THEOCULAR SURFACE OF CLINICALLY HEALTHY DOGS (CE Plummer, 1 BC Martins, 2 C Bolch, 3 PS Martinez, 1 Carbia BE, 1) College of Veterinary Medicine, University of Florida; 1 School of Veterinary Medicine, Univer sity of California- Davis; 2 Institute for Vision Research, University of Florida; 3
2.FLUOROMETRIC EVALUATION OF CROSS-LINKED VS LINEAR HYALURONIC ACID EYE LUBRICANTS (F Montiani-Ferreira, 2 SK Atzet, 1 AD Fankhauser, 1 EK Behan, 1 DJ Haeussler, 3) SentrX Animal Care;1 Veterinary Medicine Department, Federal University of Paraná; 2 Animal Eye Institute; 3
3. PRECORNEAL RETENTION TIME OF OCULAR LUBRICANTS IN DOGS (L Bedos, 1 RA Allbaugh, 1MM Roy, 1 MA Kubai, 1 L Sebbag 1,2) Iowa State University College of Veterinary Medicine 1; Koret School of Veterinary Medicine, The Hebrew University of Jerusalem 2.
4.Williams DL, Wirostko BM,Gum G, Mann BK. Topical cross-linked HA-based hydrogel accelerates closure of corneal epithelial defects and repair of stromal ulceration in companion animals. Invest Ophthalmol Vis Sci. 2017;58:4616–4622. DOI:10.1167/iovs.16-20848
5.EVALUATION OF CROSSLINKED HYALURONIC ACID GEL DROPS AND THERAPEUTIC COMBINATIONS FOR OPHTHALMIC INFECTIONS (SK Atzet, 1 AD Fankhauser, 1 EK Behan, 1 BK Mann, 1) SentrX Animal Care;1