NEW OPHTHALMIC MEDICATIONS – Helpful or Harmful?
Brian C. Gilger, DVM, MS, Dipl. ACVO. Dipl. ABT
Professor of Ophthalmology, College of Veterinary Medicine
North Carolina State University, Raleigh, NC

In the past 10 years, there have been several ocular medications introduced, some specifically for veterinary patients, and some for human patients that promise great results. A few in veterinary medicine are not FDA approved for use in animals or humans. We will review some of these drugs, their indications, and discuss their safety and efficacy.

N-acetyl carnosine eye drops (Vision Clarity Eye Drops, Bright Eyes, Can-C, etc)
This eye drop (NAC) was originally developed in Russia and has been suggested that it delays the onset or even reverses age-related cataract (i.e., lenticular sclerosis). It has not been advocated for use in juvenile cataracts.


The mechanisms of prevention and reversal of cataracts with NAC ophthalmic drug are hypothesized to include inactivation of lens antioxidant enzymes (superoxide dismutase), prevention of autooxidation of ascorbic acid, induced cross-linking glycation reactions to the lens proteins, universal antioxidant and scavenging activity towards lipid hydroperoxides, aldehydes and oxygen radicals.

In one uncontrolled study in dogs with cataracts receiving 2% NAC tid for 8 weeks had some marginal reduction in lens opacification in a many of the cases of canine cataract. Lens opacification was improved with treatment in eyes with immature cataract or nuclear sclerosis while in eyes with mature cataract or cataract with associated intraocular inflammatory pathology less reduction was seen.


Dr. Williams has subsequently publically recanted these results and on further evaluation claims that there was no effect with the NAC eyedrops. NAC is not FDA approved for treatment of eye disease, is considered a neutraceutical, and should be considered an expensive, anti-oxidant artificial tear.

REMEND™ Corneal Repair Drops (cross-linked hyaluronan) – Virbac
Canine and feline
Equitrx Corneal Repair Gel Drops (cross-linked hyaluronan) - Bayer Animal Health
Equine

Claims:
• Treatment of acute, trauma-induced, non-infected corneal ulcers in dogs and cats.
• REMEND™ Corneal Repair Drops, with cross-linking technology, have been proven to heal corneal ulcers in as little as 48 hours.
• Natural hyaluronan has been shown to promote migration of corneal epithelial cells and facilitate corneal healing
• The cross-linked hyaluronan in REMEND Corneal Repair Drops promotes cell migration and supports the animal’s natural repair system by providing the optimal environment for healing.

This information is based on in vitro tests and a single published “preliminary study” in rabbits. In this study, an experimental epithelial wound created in normal rabbits treated with the cross-linked hyaluronan had re-epithelialized in 48 hours while in untreated rabbits it took 48-72 hours. There was no difference is healing rate with the cross-linked hyaluronan in inflammatory stromal (chemical–induced) ulcers in this same study. The authors conclude that more studies need to be done. There has been NO published clinical studies in dogs, cats, or horses demonstrating that this drug has any effect on corneal wound healing.


This product is not FDA approved for treatment of eye diseases in any animal.
Kinostat (Aldose reductase inhibitor)
The onset and/or progression of cataracts in dogs with diabetes can be significantly delayed by topical administration of Kinostat. Definitive clinical trials are ongoing.

Bromfenac (0.09% - Xibrom, Alcon Laboratories, Fort Worth, TX)

Bromfenac is a nonsteroidal anti-inflammatory drug (NSAID). The mechanism of its action is thought to be due to its ability to block prostaglandin synthesis by inhibiting cyclooxygenase 1 and 2. Prostaglandins have been shown in many animal models to be mediators of certain kinds of intraocular inflammation. In studies performed in animal eyes, prostaglandins have been shown to produce disruption of the blood-aqueous humor barrier, vasodilation, increased vascular permeability, leukocytosis, and increased intraocular pressure.

Xibrom is FDA approved for the treatment of postoperative inflammation and reduction of ocular pain in patients who have undergone cataract extraction.

Incredibly effective NSAID for treatment of uveitis, especially in diabetic patients in which topical steroids need to be avoided. May delay corneal healing, so it should not be used in animals with corneal ulcers.

Nepafenac (0.1% - Nevanac, Bausch&Lomb, Rochester, NY)

Also a potent topical nonsteroidal anti-inflammatory drug (NSAID). FDA for use after cataract surgery and a potent treatment of uveitis.

4th Generation Fluorinated Quinolone Antibiotics

Moxifloxacin (0.5% - Vigamox – Alcon Laboratories, Fort Worth, TX)

FDA approved as an antibiotic eye drop used to treat bacterial conjunctivitis. Excellent ocular penetration and effective for both gram positive and negative organisms (very wide spectrum). Very effective in veterinary patients, especially for infected corneal ulcers.

Besifloxacin (0.6% Besivance - Bausch&Lomb, Rochester, NY)

Also FDA approved for treatment of bacterial conjunctivitis. It may also have an anti-inflammatory effect. Studies of the use in veterinary patients has yet to be conducted.