

## **-Atropine-**

### ***Supplemental Information***

During the NOSB meetings held in Washington, DC in September of 2002, Atropine was petitioned and discussed by the board. The material was deferred due to a lack of information. This supplement concentrates primarily on atropine for use in eye dilation in organic livestock.

Commonly administered to the eye for treatment of uveitis, atropine is a parasympathetic blocking agent. Mydriasis, the medical term for eye dilation, turns out to be one of the major purposes of atropine. It does not lower the pressure in the eye.

Unlike other mydriatic products, however, atropine does not compromise the conventional aqueous outflow pathways. On the other hand, atropine has been found to improve uveoscleral outflow, which is defined as the aqueous outflow via structures other than the iridocorneal angle. In horses, this pathway plays a greater role than it does in other species because of certain details in the horse's eye structure. The fact that the uveoscleral outflow is improved with atropine, indicates that if the subject were to have glaucoma, it would not be exacerbated, a typical side effect of mydriatic drugs on cattle suffering from glaucoma. This does not mean that atropine can be used to help *cure* glaucoma (there is definitely not enough information here to come to that conclusion), but the effects atropine cannot make it worse.

Atropine has also been connected with the ability to reduce the interocular pressure in equine, but this is not statistically significant enough to make that argument. Although there is strong experimental evidence lacking, atropine is thought to help stabilize the blood-aqueous barrier within the animal's eye. It should be noted that most of the studies regarding this particular effect have been conducted on horses and not on cattle.<sup>1</sup>

As a mydriatic agent, atropine keeps the eyes dilated for several days so the animal should not be kept in areas where there is not a lot of sunlight because its eyes will be extremely sensitive for days after atropine administration. This is different from the effect accomplished with 0.5-1.0% tropicamide, which lasts for only a few hours.<sup>2</sup>

In treating cataracts, atropine can be used as palliative therapy in animals which cannot go through surgery. For this, atropine's pupil dilation property allows the animal to see *around* the axial cataract and should be administered once every three days.

In use for treatment against uveitis, a rupture in the lens of the animal's eye, atropine is used as conservative therapy. Here the laceration of the cornea is treated with topical and systemic antibiotics/corticosteroids and topical atropine. These patients are often blind and the eye is chronically inflamed if lens extraction is not performed at a latter date.<sup>3</sup>

Note: all other information regarding atropine (i.e. toxicity, interaction within the body, etc.) can be found in the original TAP report.

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<sup>1</sup> *Effect of topical atropine on intraocular pressure and pupil diameter in the normal horse eye.* Albert J. Mughannam, Nedim C. Buyukmihci, and Phillip H. Kass. Veterinary Ophthalmology (1999) Volume 2. Pgs. 213-215

<sup>2</sup> *The Ophthalmic Examination.* Paul E. Miller, DVM.

<sup>3</sup> *The Lens.* Paul E. Miller, DVM

