Breakthrough Glaucoma Research!

**Presented at the 2014 American College of Veterinary Ophthalmology Meeting**

Glaucoma is a neurodegenerative disease, affecting optic nerve and retinal ganglion cells. The pathogenesis of glaucoma involves various factors, one of which is hypothesized to be oxidative stress. Strategies to reduce oxidative stress help support eye health in dogs with glaucoma, including supplementation with Ocu-GLO Rx™.

This clinical research study, **presented last month at the 2014 American College of Veterinary Ophthalmologists Annual Conference by Dr. Corey Schmidt of Colorado State University**, shows that Ocu-GLO Rx™ significantly decreased oxidative stress and the intraocular pressures (IOPs) of 8 month old D2 mice compared to untreated D2 mice (D2 mice develop genetic glaucoma). Also, density image analysis revealed significantly more malondialdehyde (MDA) and nuclear transcription factor (nrf2) staining in the ganglion cell layer (GCL) of untreated D2 mice compared to the control and treated D2 mice. MDA is a marker for lipid peroxidation of polyunsaturated fatty acids, and is used to measure the level of oxidative stress present. Nrf2 regulates the expression of antioxidant proteins that protect against oxidative damage. In untreated D2 mice, IOPs and also oxidative stress markers in the GCL neurons were increased by 8 months of age compared to the controls. The oxidative stress in the treated eyes was almost completely halted. These results suggest that the elevations in IOP and changes in oxidative stress present in untreated D2 mice were reduced by feeding Ocu-GLO Rx™.

While Ocu-GLO Rx™ has been a retail nutraceutical product for 5 years, it previously existed for 3 years as a compounded prototype and was dispensed for patients of veterinary ophthalmologists Carmen Colitz and Terri McCalla as part of a clinical study. During 8 years of clinical experience with Ocu-GLO Rx™, Drs. Colitz and McCalla have noted clinical benefits in patients with glaucoma, progressive retinal atrophy (PRA), senile retinal degeneration, uveitis regardless of underlying cause, mild keratoconjunctivitis sicca, immune-mediated...
blepharitis/conjunctivitis, and in pre- and post-operative cataract surgery patients. Additionally, dogs with PRA and also most diabetic dogs placed on Ocu-GLO Rx™ prior to the development of significant cataract formation were found to have reduced incidence of cataractogenesis (PRA causes secondary "toxic" cataracts to form).

Ocu-GLO Rx™ is also recommended as a lifetime supplement for dogs of breeds (and mixed breeds) at risk for developing ocular disease. Breeds at risk for developing primary (inherited) glaucoma include: Boston Terrier, Basset Hound, Cocker Spaniel, Jack Russell Terrier, Shih Tzu, Chow Chow, Shiba Inu, and Arctic Circle breeds (such as the Siberian Husky and Norwegian Elkhound).

Dr. Carmen Colitz is a board certified veterinary ophthalmologist with a PhD in Comparative and Experimental Medicine.
OcuGLO Rx™ DECREASES LIPID PEROXIDATION, NUCLEAR TRANSLOCATION OF nrf2, AND INTRAOCULAR PRESSURE IN GLAUCOMATOUS DBA/2J MICE

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Purpose. To test the hypothesis that the canine antioxidant OcuGLO Rx™ decreases oxidative stress and nuclear translocation of nrf2 in glaucomatous DBA/2J (D2) mice and to evaluate the effect of OcuGLO Rx™ on intraocular pressures (IOPs) in mice.

Methods. D2 mice and the control (C57) mice were fed either OcuGLO Rx™ enhanced or a control diet from 2 months of age until sample collection. IOPs were obtained from each eye, 2 or 3 times a month, from 2-8 months of age. Sample collection consisted of retinal immunohistochemistry for 2 markers of oxidative stress, malondialdehyde (MDA) and nrf2, followed by image analysis for staining patterns and density.

Results. Treatment with OcuGLO Rx™ significantly decreased the IOPs of the 8 month old D2 mice compared to untreated D2 mice. Density image analysis revealed significantly more MDA and nrf2 staining in the ganglion cell layer (GCL) of untreated D2 mice compared to the control and treated D2 mice.

Conclusions. In untreated D2 mice, IOPS and also oxidative stress markers in the GCL neurons were increased by 8 months of age compared to the controls. Results suggest that these elevations in IOP and changes in oxidative stress were decreased by feeding OcuGLO Rx™. The ability of OcuGLO Rx™, a mixture of antioxidants, to decrease oxidative stress and IOPs in D2 mice provides further support for the hypothesis that oxidative stress contributes to the pathogenesis of some types of glaucoma. Partially supported by Animal Necessity LLC. None.