



Display Settings: Abstract

[Vet Ophthalmol. 2009 Sep-Oct;12\(5\):325-32.](#)

alpha-Luminol prevents decreases in glutamate, glutathione, and glutamine synthetase in the retinas of glaucomatous DBA/2J mice.

Gionfriddo JR, Freeman KS, Groth A, Scofield VL, Alyahya K, Madl JE.

Department of Clinical Sciences, Colorado State University, Fort Collins, CO, USA.

OBJECTIVE: To test the hypothesis that in DBA/2J mice, oxidative stress decreases glutamine synthetase (GS) levels resulting in a loss of neuronal glutamate and that the antioxidant alpha-luminol (GVT) decreases this stress and glutamate loss in some types of glaucoma. **ANIMALS:** DBA/2J mice were separated into two groups, of which one was not treated, and the other treated with GVT in the drinking water. At 7 months of age, retinas were examined from five untreated DBA/2J mice, seven GVT-treated mice, and five C57BL/6 mice (negative controls). **METHODS:** Serial 0.5 microm plastic sections were immunogold stained for glutamate, GS, and total glutathione, followed by image analysis for staining patterns and density. **RESULTS:** Focal decreases in glutamate immunostaining were common in the inner nuclear layer (INL) of DBA/2J retinas, but not in C57BL/6 or GVT-treated DBA/2J retinas. Decreases in glutathione and GS immunostaining were found in DBA/2J retinal regions where neuronal glutamate immunostaining was reduced. Retinas from GVT-treated DBA/2J had no significant decreases in INL levels of glutamate, glutathione, or GS. **CONCLUSIONS:** Retinas of dogs with primary glaucoma are reported to have focal depletion of neuronal glutamate. In DBA/2J mice, similar changes occur prior to the development of clinical disease. In these focal glutamate-depleted regions, levels of glutathione and GS are also reduced, consistent with the hypothesis that oxidative stress contributes to retinal changes in glaucoma. The ability of GVT, an antioxidant, to inhibit retinal abnormalities in DBA/2J mice provides further support for this hypothesis.

PMID: 19751494 [PubMed - indexed for MEDLINE]

[MeSH Terms, Substances](#)[LinkOut - more resources](#)You are here: [NCBI](#) > [Literature](#) > PubMed[Write to the Help Desk](#)