

Neuroprotection with carotenoids in glaucoma

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PURPOSE: The aim of the paper was to assess the place of the natural carotenoids (lutein, zeaxanthin) in glaucoma optic neuropathy.

METHODS: For this purpose, we carried out an experimental and prospective study, during 3 months, on 8 laboratory animals (Guinea pigs), which we increased the IOP, in both eyes, by cautery of two episcleral vessels. The animals were divided into treatment in two groups: the group I (5 Guinea pigs) which we modified their usual diets by adding 2 cps/day of IcapsL (6 mg lutein/zeaxanthin) and the group II (3 Guinea pigs)--control group, without increasing the diet with lutein and zeaxanthin. The statistical analysis was performed by Student's t test. **RESULTS:** Before the cautery of episcleral vessels, the mean IOP was 16.8 mm Hg in group I and 16.5 mm Hg in the group II; after the cautery of episcleral vessels, the mean IOP was 26.2 mm Hg in group I and 25.9 mm Hg in the group II ($p = 0.004$). At the end of the study, the levels of serum lutein were 0.64 $\mu\text{mol/L}$ in group I and 0.22 $\mu\text{mol/L}$ in group II. The loss of retinal ganglion cells was 18.9% in group I and 29.7% in control group, in correlation with the cup/disc ratio: 0.37, respectively 0.51. Also, in the group II, the increase of IOP was associated at the myelin portion of optic nerve head with axonal degeneration in peripheral regions.

CONCLUSIONS: Glaucoma optic neuropathy has a multifactorial pathogenesis, including the oxidative stress. Lutein and zeaxanthin, with its strong antioxidative effects, can represent a viable solution in the complex treatment of glaucoma.

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