By Greg Arnold, DC, CSCS, June 5, 2011, abstracted from “Dietary polyunsaturated fatty acids reduce retinal stress induced by an elevation of intraocular pressure in rats” in Nutrition Research

The retina in the eye can be thought of as the film of a camera. The most sensitive part of the retina is the macula, which helps us distinguish details in objects like numbers and facial features (1). Damage to the retina can come in the form of macular degeneration, which affects 11 million Americans at a cost of $51 billion per year, with 733 million people worldwide experiencing “low vision” at a cost of $3 trillion per year (2).

Now a new study (3) suggests that omega-3 and omega-6 fats may help maintain eye health. In the study, 48 6-week old male rats were given 1 of 4 diets (12 rats per group) for 3 months:

1) **Control Group** – 25.8% saturated fat, 60.4% monounsaturated fat, 12.1% omega-6 fats, 1.7% omega-3 fats

2) **EPA + DHA Group** – 30.5% saturated, 34.2% monounsaturated, 15.2% omega-6, 20.1% omega-3

3) **GLA Group** – 21.1% saturated, 43.6% monounsaturated, 34.4% omega-6, 0.9% omega-3

4) **EPA + DHA + GLA Group** – 31.5% saturated, 19.4% monounsaturated, 30.5% omega-6, 18.6% omega-3

“Retinal stress” was then induced in one eye of each rat by use of a laser (causing an increase in intraocular pressure). Eye tissue samples were obtained afterwards via methods implemented in previous research (4). Specifically, the researchers were looking at the activity of a protein called GFAP, found to be increased during retinal damage (5).

The researchers found a “significant benefit” of omega-3 and omega-6 supplementation on GFAP activity. Specifically, the EPA+DHA+GLA Group, with 49.1% total omega-3/omega-6 fats, had 75% decreased GFAP activity compared to the control group, which had 13.8% total omega-3/omega-6 (11 vs. 43 immunofluorescence activity/total retinal area). The researchers also observed 56% decreased GFAP activity in the GLA Group (35.3% total omega-3/omega-6) and 60% decreased activity in the EPA+DHA Group (35.3% omega-3/omega-6 but higher saturated fat diet content compared to the GLA Group).

The researchers believe the omega-3/omega-6 fat combination exerted the healthful effects on GFAP activity by inhibiting an increase in an inflammatory protein called prostaglandins and another protein called COX-2 (6, 7). They went on to conclude that “a diet enriched with omega-6, omega-3, or both omega-6 and omega-3 [fats] is able to prevent early retinal damage after an acute elevation of [intraocular pressure].”

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Reference:

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1. “Understanding poor sight and retinal damage” - http://medweb.bham.ac.uk/easdec/coping_with_poor_vision.html

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