Dietary Omega-3 Fatty Acids and Improvement of Visual Acuity in School-Age Children

Reference:

Protective Effects of Dietary Supplementation with Natural Omega-3 Polyunsaturated Fatty Acids on the Visual Acuity of School-Age Children with Lower IQ or Attention-Deficit Hyperactivity Disorder


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Summary:

Previous studies have supported the benefit of increased intakes of DHA (docosahexaenoic acid) omega-3 fatty acid during pregnancy and lactation (or via infant formula) on visual acuity in infants and young toddlers. The present study was directed to investigate the potential benefit of enhanced dietary omega-3 fatty acid intakes in children ages 7-12 on visual acuity. The study population comprised of 179 children (average age being 9.6 years) of whom 88 had lower IQs and 91 had ADHD (attention-deficit hyperactivity disorder). The children were randomized to the omega-3 group (consuming an omega-3 egg daily markedly enriched in alpha-linolenic acid plus DHA) or a ‘regular’ egg (very low levels of omega-3 fatty acids). Before and after consuming the eggs each day for a period of 3 months, blood measures of omega-3 fatty acids were performed by gas-liquid chromatography as well as optical assessments for visual acuity.

As expected, the omega-3 egg intervention produced marked increases in the DHA levels in the red blood cells (from an average of 6.3 up to 10.3 % of total fatty acids) with a much lesser increase/change with the ‘regular’ eggs (from 6.7 to 9.0 %). Following the 3-month period, the children in both groups showed an improvement in visual acuity with that in the omega-3 egg group being significantly better than for the ‘regular’ egg group. The authors concluded that the higher dietary omega-3 intakes improved both visual acuity and the omega-3 blood status in school-age children with lower IQs or ADHD.
The present study suggests that even modest improvements in omega-3 intakes via dietary sources (e.g., omega-3 eggs) may enhance visual acuity in school children. In this study, it is noted that both egg groups contained omega-3 fatty acids which could possibly have accounted for the modest improvement even in the group consuming ‘regular’ eggs. The latter eggs contained a total of 55 mgm omega-3/100 gm egg as compared to 947 mgm omega-3/100 gm for the omega-3 eggs. The omega-3 eggs were enriched in three omega-3 fatty acids: alpha-linolenic acid plus EPA plus DHA. The DHA content of the omega-3 egg averaged 321 mgm/100 gm egg. Furthermore, the rise in blood levels of DHA with the omega-3 egg consumption was dramatically greater than for any other omega-3 fatty acid suggesting that any benefit of the omega-3 egg on visual acuity was most likely attributable to DHA. DHA is also by far the predominant omega-3 fatty acid found in the photoreceptor cells of the human eye.