

THE DENTAL student examined her inflamed, bleeding gums and loose teeth. From all appearances it looked as though her teeth would have to be pulled. A supervising dentist with an experienced eye asked the woman what she ate. Her diet consisted largely of beans, rice, and meat, no vegetables or fruit to speak of. He diagnosed the woman with scurvy and told her that if she started eating fresh fruits and vegetables that she would be able to keep her teeth. This woman, who lived in a town surrounded by orange groves and grapefruit trees, had a vitamin C deficiency!

Nutrient deficiency is not solely a third world concern. While symptoms may be less conspicuous here, a trained eye may see inadequacy of even a common nutrient that Americans don't have a hard time over-consuming, such as vitamin C, or even fat. Last month we were reminded that there are

a variety of fats, each possessing unique qualities. We learned that the American diet is excessive in omega-6 fat, as found in vegetable oils, and disproportionately low in omega-3 fat. Herein lies reason for concern.

A research group from the University of Oxford reported that 6-10 year old children with the lowest blood levels of the omega-3 fatty acid, DHA, exhibited a lower working memory and a poorer reading ability as compared to children with much higher levels. A clinical trial was conducted on 362 children, ages 7-9 years, from elementary schools in the United Kingdom. These children were considered "poor readers" as they were ranked in the bottom third as compared to classmates. The children were divided in half, 180 of them receiving 600 mg DHA/day for a period of 16 weeks. The control group of the remaining 182 children, were given a placebo. At the end of 16 weeks the worst readers and spellers were found to benefit the most from

DHA supplementation. "The researchers concluded that DHA supplementation appears to be a safe and effective way to improve reading and behaviour in healthy but under-performing children from mainstream schools."¹

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Lead researcher Dr. Paul Richardson stated: "I have no doubt that the vast majority of children in the United Kingdom and in North America are under-consuming the long-chain omega-3 fatty acids needed for optimal reading ability and behaviour."² Intakes of 600 mg DHA/day are approximately 10 times greater than average daily intakes in North America today but similar to that of many children in Japan.

The aged brain has also been found to greatly benefit from supplementation of the right kind of fat. For example, in Sweden, 252 cognitively healthy elderly, age 70, were categorized into four groups based on their intake of EPA and DHA. They were followed for 5 years. It was found that the amount of DHA they consumed was positively associated with gray matter volume and an increased global cognitive performance score, which measures orientation, word registration, attention, word recall, and language. Those who consumed the most scored 21 percent better than those who consumed the least.³ Similar results have come from the well-known Framingham



Heart Study. A 47 percent reduction in the risk of developing all-cause dementia was observed in those with the highest plasma levels of DHA.⁴

The major dietary source of DHA is seafood. Fish oil is the common supplemental form. However, the risk of fish oil being contaminated with a troubling list of pollutants, such as mercury and PCBs, is significant. These contaminants are harmful to the brain. Molecular distillation purifies fish oil

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of toxins. The purity of fish oil is an important factor to consider.

Vegetarian sources of omega-3 fatty acids are rich in the fatty acid ALA. Remember that there are three omega-3 fatty acids. ALA is a precursor to EPA and DHA. The body can make DHA from ALA, but apparently, the process is not very efficient. Vegetarian and vegan diets provide little EPA and DHA directly. Flax seeds, chia seeds, and walnuts are excellent sources of ALA and one hopes that a sufficient amount is consumed for the conversion to DHA to occur. However, one cannot know for sure without being tested.

Based on his clinical experience, Joel Fuhrman, M.D. has found that the fatty acid analysis of many of his patients is less than optimal. "I find that a large percentage of individuals who do not eat fish or seafood regularly do not have optimal levels of DHA—even those using walnuts and flaxseeds on a regular basis. Although, there are some vegans and vegetarians regularly consuming walnuts and flaxseeds (which supply adequate ALA) who may produce enough DHA and EPA on their own and may not

require supplementation. However, because this issue is so imperative to their health it should be confirmed with a blood test before assuming that the conversion level is adequate."⁵ Fuhrman upholds a plant-based diet as the optimal diet for man, and yet expresses a potential need for supplementation.

Yes, fish trump the vegetarian sources we've mentioned as a source of DHA, but where do the fish obtain it? What is their source? Predatory species

obtain concentrated high levels of EPA and DHA, as well as pollutants from the smaller fish they feed on. Ultimately however, the answer is found at

the origin of the food chain, as it usually is, in plants. The source of the omega-3 fatty acids, EPA and DHA, in the aquatic ecosystem is algae.

The bio-equivalency of algae sourced DHA and fish oil appears to have been proven. Studies comparing both sources have found that both are absorbed and increase DHA levels in plasma and red blood cells equivalently.⁶ Scott Doughman, PhD, has verified this in his research as well. His company PureOne is one source for organically produced DHA-rich microalgae oil.

In a nation where over 60 percent of the citizens are overweight or obese and overconsumption of fat has compromised health, it may seem ridiculous to talk of fat supplementation. The Bible attests to the discrepancy of deficiency in the presence of plenty. "This is what the Lord Almighty says; 'Give careful thought to your ways. You have planted much, but harvested little. You eat, but never have enough. You drink, but never have your fill. You put on clothes, but are not warm. You earn wages, only to put them in a purse with holes in it'" (Haggai 1:6, NIV).

Something more, or perhaps something different is needed. A supplement is something added to complete or to make up for deficiency, to fill the need, to fix the holes. If we would stop to consider our great lack, we would seek healing for the inflamed, insecure state of our soul. His wisdom for our ignorance, His strength for our frailty, His fullness for our emptiness, His salvation for our lack, all provided by the Divine Supplement.

¹ A. Richardson, P. Montgomery, "DHA Supplementation Improves Reading in Underperforming Children," *DHA-EPA Omega-3 Institute*, May 31, 2012, <http://www.dhaomega3.org/Cognitive-Performance/DHA-Supplementation-Improves-Reading-in-Under-Performing-Children-ISSFAL-2012>.

² Ibid.

³ O. Titova, P. Sjögren, C. Benedict, et al, "Dietary intake of eicosapentaenoic and docosahexaenoic acids is linked to gray matter volume and cognitive function in elderly," NCBI, PubMed.gov, <http://www.ncbi.nlm.nih.gov/pubmed/22791395>.

⁴ E.J. Schaefer, V. Bongard, "Plasma phosphatidylcholine docosahexaenoic acid content and risk of dementia and Alzheimer disease: the Framingham Heart Study," NCBI, PubMed.gov, <http://www.ncbi.nlm.nih.gov/pubmed/17101822>.

⁵ Joel Fuhrman, MD, "What Vegans May be Missing," http://www.drfuhrman.com/library/what_vegans_may_be_missing-DHA.aspx.

⁶ L. Arterburn, H. Oken, E. Bailey Hall, J. Hamersley, C. Kuratko, J. Hoffman, "Algal-Oil Capsules and Cooked Salmon: Nutritionally Equivalent Sources of Docosahexaenoic Acid," NCBI, PubMed.gov, <http://www.ncbi.nlm.nih.gov/pubmed/18589030>.



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