Health Tips From The Professor:
The Seventh Generation Revisited

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When I was a young man I read an article called "The Seventh Generation" in Organic Gardening magazine. That article was based on the old Indian admonition to consider the effects of everything we do on the seventh generation of our descendents.

The article was written before the environmental movement had co-opted the seventh generation concept. It was also written at a time when the food industry and the public had really started buying into the "better living through chemistry" concept. Processed foods, fast foods and artificial ingredients had just started to replace real foods in the American diet.

The author envisioned a world in which, if we continued to eat nutrient depleted foods, each generation would be sicker than the previous generation until by the seventh generation our descendents would live\ miserable, sickly, shortened lives - and nobody would know why.

That article made a powerful impression on me. I always like to keep my mind open to new ideas, especially ideas that challenge my preconceived thinking.

So I asked myself "Could it be true? Could it actually happen?"

Of course, the author did not have the foresight to predict the obesity epidemic, so he did not envision a world in which we might live sicker, shorter lives in as little as one or two generations.

In addition, the author was not a scientist, and his whole premise seemed scientifically implausible at the time. In those days we thought of DNA as the sole determinant of our genetic potential and as something that could not be influenced by our environment. Now we know the DNA and the proteins that coat the DNA can be influenced by the foods we eat and other environmental factors - and that those changes can be passed down from generation to generation. This has lead to a whole new scientific discipline called epigenetics.

All of that leads me to this week's article (Bondi et al, Biological Psychiatry, doi:10.1016/j.biosych.2013.06.007). Let me start by pointing out that this is an animal study. It was done with rats. I usually base my health tips on human clinical trials, but it is simply not

possible to do multi-generation studies in humans.

The authors hypothesized that omega-3 fatty acid deficiency could be associated with psychiatric disorders such as ADHD, autism, schizophrenia and depression. They based this hypothesis on the known role of omega-3 fatty acids in both brain development and maintenance of normal brain function. They also pointed to numerous clinical studies showing that omega-3 fatty acids could either prevent or reduce the severity of these diseases in humans.

They focused on adolescent rats as well as adult rats because these diseases frequently emerge, and are sometimes more severe, during the adolescent years in humans. Finally, they included second generation rats in the study because the change in our food supply that created an excess of omega-6 fatty acids and a deficiency of omega-3 fatty acids started in the 1960s and 1970s. They reasoned that if the effect of omega-3 deficiency is multigenerational it would be more severe in today's human adolescents. As I said before, you can't do multigenerational studies in humans, but you can do them in rats.

They separated litters of rat pups from omega-3 sufficient parents into two groups. One group was fed a diet sufficient in omega-3 fatty acids, and the second group was fed an identical diet except that it was deficient in omega-3 fatty acids. When the omega-3 sufficient group reached adulthood, they were mated and their offspring were continued on the same omega-3 sufficient diet. Similarly, when the omega-3 deficient group reached adulthood, they were mated and their offspring were raised on the same omega-3 deficient diet.

They put each group of rats through a series of behavioral tests when they were adolescents and again when they were adults. It is beyond my expertise to analyze the validity of rat behavioral assays, but the authors claim that the tests they employed were good measures of behavioral traits in human that would be classified as hyperactivity, anxiety, attention deficit disorder and reduced behavioral flexibility. [If you have adolescents in your household, some of those behaviors may sound awfully familiar].

The results were thought provoking. They found little evidence that omega-3 fatty acid deficiency triggered these behaviors in the first generation rats. However, they found strong evidence that omega-3 fatty acid deficiency triggered each of those behaviors in the second generation rats - and the effect was much stronger in the adolescent rats than in the adult rats.

The Bottom Line

At the present time, it just isn't possible to predict the significance of this study for you. This is a single study. And, it is an animal study. It could mean nothing, or it could mean everything.

We do know that the incidence of ADHD in US children has increased by 38% from 2003 to 2012 - and nobody really knows why. We also know that some studies have shown that the American diet is often deficient in omega-3 fatty acids. These same studies have suggested that providing adequate amounts of omega-3 fatty acids in the diet may prevent or reduce the symptoms of ADHD.

I'm a hard-nosed scientist. So I'm not going to be one of those bloggers who writes sensational headlines claiming that omega-3 fatty acid deficiency, or some other nutritional factor, is the cause of our skyrocketing rates of ADHD.

But, it is enough to make you wonder "What if? Could it be true?"

To Your Health!
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