

The Dangerous Hype of Antioxidants

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Returning to the theme I've had in past articles of things that we "know" for a certain to be true (and then often are not), let's look at antioxidants. We all seem to *know* that free radicals are bad, and that antioxidants mop them up and prevent damage to us, slowing down the aging process, reducing the incidence of cancer and other major illnesses like heart disease. There are just a couple of problems with this theory, the biggest one being that the research shows the complete opposite.

Let's look at some basics first. Free radicals are generated by normal metabolism and yes, they can damage proteins, fats, carbohydrates, DNA and other biological material. The research started after World War II, when scientists saw the damaging effects of the ionizing radiation from atomic weapons, and came to the (correct) conclusion that the damage from radiation and the damage seen in normal tissue can have the same source — free radicals. We have built-in mechanisms to deal with free radicals, but some free radicals always make it through the defenses, and consequently, damage slowly builds (aging) until the body breaks down and we die. Basically, the researchers saw damage, and free radicals were in the area. Knowing that free radicals damage macromolecules, the conclusion was drawn that free radicals caused the damage and sped up the aging process.

This was a really convenient theory, because the logical jump would then say that if you reduce free radicals, then you must reduce the damage caused from them — the aging process, cancer, heart disease, and the like.

The problems started with the research — the initial studies were done adding large amounts of free radicals to petri dishes, seeing the damage to the macromolecules, and then concluding that the same thing happened in the human body. The next, and very large problem with this free radicals equals aging theory is that free radicals actually perform a function in the body and it's a vital one: fighting pathogens like bacteria, increasing apoptosis, and fighting cancer (white blood cells churn out tons of free radicals to bolster the immune response). Taking antioxidants blunts and neutralizes this response. Do you really want that?

Another problem is this: there are no clinical studies conclusively showing that production of free radicals leads to chronic disease and aging. It's mainly on the strength of studies on worms, fruit flies and rats that we have all the hype generated for resveratrol supplements, 1,000 mg of ascorbic acid fizzy drink packets, and the constant recommendation to take alpha-tocopherol (also known as vitamin E).

Unfortunately, not only are there no clinical studies showing that free radicals cause the problems mentioned, but taking antioxidants, especially as supplements, can actually harm you. In 2008, the [Cochrane Collaboration](#) (which is a group of independent scientists who scrutinize the legitimacy and accuracy of studies) looked at 67 different studies with nearly 400,000 participants and came to the conclusion that there was "No evidence to support antioxidant supplements to prevent mortality in

healthy people or patients with various diseases."¹ In fact, it also said "Antioxidant supplements need to be considered medicinal products and should undergo sufficient evaluation before marketing." How many multi-level marketing companies do you think are doing that? Or over-the-counter supplement companies? Why should they? We all keep repeating the mantra that antioxidants must be healthy and keep buying them — the estimates are that in high-income countries, approximately one-third of the population takes antioxidant supplements!

Not only does taking antioxidants seem to make no difference for cardiovascular disease², but it also has been linked to increased rates of lung cancer^{3,4}, gastrointestinal cancer⁵, prostate cancer⁶, reduced apoptosis⁷ and increased mortality⁸. Adding antioxidants can also impair ovulation⁹. The American College of Cardiology and the American Heart Association both state that "the scientific data do not justify the use of antioxidant vitamin supplements for CVD risk reduction." The HDL-Atherosclerosis Treatment 2001 study showed that the addition of antioxidant vitamins blunted the rise of protective HDL. The Alpha-Tocopherol Beta-Carotene Cancer Prevention study reported an increase in cerebral hemorrhage for patients taking merely 50mg of alpha-tocopherol daily (July, 2003). Most damning, in 2007, *JAMA* reported on the largest ever meta-analysis of antioxidant peer-reviewed studies (47 low-bias trials with over 180,000 participants) and stated in conclusion that, "Treatment with beta carotene, vitamin A, and vitamin E may increase mortality." Yikes.

The reason so many studies are being done is because there was first the observation that people who smoked a lot and had large amounts of vitamin E from food in their diet seemed to have lower rates of cancer. Hence, the attempt to see if alpha-tocopherol could lower rates of cancer.

So what's going on? The first problem is with the assumption that free radicals are bad for you. As I stated before, your immune system relies on the release of free radicals from phagocytes (as an example) to destroy the engulfed pathogens of macrophages and granulocytes. They are also involved in cell signaling (redox signaling) and the crucial function of apoptosis. The black-and-white thinking of good/bad is an oversimplification of life in general and is inevitably an erroneous road to start down.

The second problem is the reductionist theory that we have about nutrition. Let's use alpha-tocopherol as an example. This is what's known as vitamin E, but in actuality, the full E complex contains multiple tocopherols, tocotrienols, (8 antioxidant levels in total to protect the vitamin complex), selenium, xanthine, and lipositol, plus other compounds. Yet some researcher decided that alpha-tocopherol was the active ingredient in this entire complex, named that vitamin E and now alpha-tocopherol is made in a lab which puts 1000 percent of the RDA into gel caps, and you actually think that's vitamin E as it's found in nature. It's not — you would never find alpha-tocopherol isolated and in large amounts like that in food.

Ascorbic acid has the same story. Vitamin C is a full complex, including not just ascorbic acid, but also bioflavonoids, rutin, and multiple other compounds. But in naming ascorbic acid "Vitamin C," you can now manufacture it in a lab, and make pills with 1,000 mg of ascorbic acid in them, labeling them as vitamin C. When was the last time you saw a gram of ascorbic acid in nature? Right, never.

The third problem comes from the thought process of "If some works, more must be better." Like it says above, we are now manufacturing these isolates in amounts way beyond how they would be found in nature, and without any of the other compounds that would come with them if they were in a food source. Do you think that could possibly be contributing to the negative results being seen in those

studies? There's also the observation about the transition time for some of these antioxidant isolates. Alpha lipoic acid stays in the body for approximately 24 minutes. Ascorbic acid is also known for quickly flushing out through the urine — people trying to take high doses have to keep ingesting it all day. If these antioxidants were so vital and the body needed so much of it, why would it allow this to happen?

I'm not saying that we don't need antioxidants, but I am saying that taking synthetic, high-dose isolates has the very real potential of harming us. I tell my patients again and again that what has gotten us into trouble is when we mess with our food. We take cows off of grass and feed them corn (losing the Omega-3s), we take the fat out of food, we don't process grains properly, we insist soy is healthy, even when it has been consistently shown that it's not (fermented soy excluded), we overeat fructose because we don't eat seasonally and think that agave nectar must be healthy because it's sold in health food stores, we eat carbs in insane amounts, and we think we know enough about nutrition that we can isolate fractions out of food and think that's better than nature.

It's like we've lost all common sense about food. Then we think some marketing term like "nutraceuticals" must mean that the extra-strength "pharmaceutical" dose of nutrition is even *more* helpful to our malnourished bodies. But it's clearly being shown, especially in this field of antioxidants, that that's *not* true. Yes, eat the fresh fruits and vegetables, with their full complement of vitamin complexes. Buy organic if you can for more nutrient density. If you take supplements, or sell supplements, make sure they're actually food concentrates, not just large amounts of synthetics with some food added. If you need suggestions as to where to find those, let me know.

Don't believe the marketing hype — for your long-term health, avoid mega doses of synthetic vitamin isolates.

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