



## Antioxidants in Health and Disease: The Big Picture

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Medical literature is filled with information that suggests that a common denominator in the aging process and in the major degenerative diseases associated with aging is oxidative damage. This has led to an interest in the use of antioxidants in the prevention and treatment of such problems. There are hundreds, if not thousands, of articles on this subject. Some are retrospective, others prospective. They deal with large and small samples of short and long duration. They also range from the womb to the tomb.

An examination of forty of these studies was done to explore the relationship of antioxidants to such common disorders as heart disease, cancer, diabetes, arthritis, cataracts, and macular degeneration (deterioration of the eye) as well as other medical problems. It was found that antioxidants are necessary for good health in larger amounts than usually believed and that they should be initiated much earlier in life to derive their full benefits.

Each of the forty studies focused on a group of patients with a particular medical problem. In addition to those mentioned above, these included measles, human immunodeficiency virus (HIV), Alzheimer's disease, respiratory tract infections, and precancerous conditions. Also examined were mortality and life expectancy rates. All the studies tried to assess the relationship between antioxidant use and patient outcomes.

The results? Overall, the patients fared significantly better when the best-known antioxidants, vitamins A, C, and E, were administered in amounts considerably higher than the daily Recommended Dietary Allowances (RDA) set by the Subcommittee on Foods and Nutrition of the National Research Council. Beta carotene in amounts larger than usually recommended also had a positive effect.

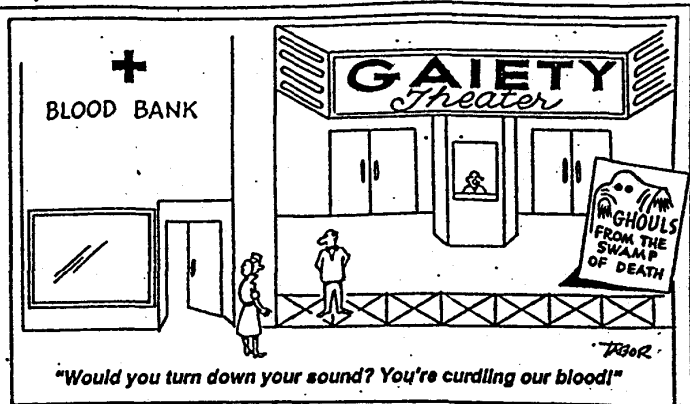
In one study, a comparison was made of patients with Parkinson's disease who received vitamin E, in dosages from 400 to 3200 international units a day with those not taking vitamin E. Improvements in performance, mentation, and activities were seen only in the group taking vitamin E.

In a study of preschool children with a history of frequent respiratory illness, those who were given 450 micrograms of vitamin A each day for eleven months experienced nineteen percent fewer episodes of respiratory symptoms than those who took a placebo. And in patients without known hypertension, the higher the blood level of vitamin C, the lower the blood pressure.

Even infertility was found to be related to the need for antioxidants. One gram of ascorbic acid per day for sixty days was provided to twenty clearly diagnosed infertile but otherwise healthy men. A separate control group of twenty men was given placebos. At the end of these two months, conception occurred only in the couples taking vitamin C supplements.

And the list of studies goes on.

Of course, many questions about the use of antioxidants continue to be unanswered. We still do not know all of the antioxidants. We are still not sure of the necessary dosages except that they are larger than usually recommended. We have very little information about the amounts required for different diseases. For example, are the



dosages larger for macular degeneration than they are for heart disease? Or are the amounts to be determined by the amount of oxidative damage that has been done by the disease? Perhaps more importantly, when and for how long should the high levels of antioxidants be given? Since the problems of aging and age-related diseases tend to have a long incubation period and an insidious clinical course, the question of when to begin an antioxidant program is still unresolved. The one thing we know for sure is that to start when the disease actually appears is too late.

In the end, how we fare depends on two sets of factors. On the one hand, we are at the mercy of numerous environmental threats — physical, chemical, microbial, thermic, radioactive, and psychological. For macular degeneration, the dominant hazard is solar radiation; for lung cancer, it is tobacco consumption. However, how we fare is also a result of how well we tolerate these environmental challenges. Antioxidants serve as an important ingredient in building resistance and reducing susceptibility to disease and age-related degeneration. However, how much, when, and for how long are still the agonizing questions.