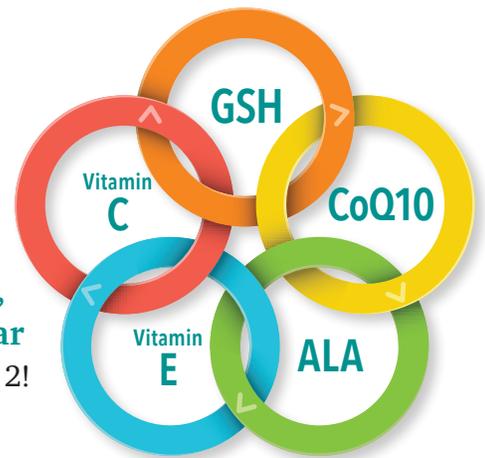


# PART 2

## The Antioxidant Network

by Ivy Wood

**Antioxidants.** In Part 1 you learned how important antioxidants are to your health and how much they depend on one another. **Thus, this amazing network is your armor against cellular damage, premature aging and disease.** Now, on to Part 2!



### The Network

Let us review. According to Lester Packer, PhD of UC Berkeley, regarded as the foremost antioxidant research scientist, “There are literally hundreds of naturally occurring antioxidants” but he considers the top five as vitamins C and E, alpha lipoic acid (ALA), coenzyme Q10 (CoQ10), and glutathione (GSH). When all five are present at adequate levels in the body they can recycle one another all the more efficiently, making the whole greater than any one antioxidant alone.

Oxidative or free radical damage is a daily event that you cannot escape if you live and breathe. Who do your cells call when they need damage control? Antioxidants. Glutathione (GSH) is the master and most important. Without it, cells die. Levels decline with age and cannot be adequately supplemented through diet so ALA is necessary to recycle and raise GSH.

Alpha lipoic protects both water and fat soluble parts of the cell and thus is considered “universal”. ALA also helps metabolize fats and sugar for energy and recycles *all four* of the other antioxidants. CoQ10’s duality offers free radical protection and the force behind energy production, along with the mineral magnesium, and thus directly affects mitochondrial function. CoQ10 recycles vitamins C and E. Like glutathione, CoQ10 is another required nutrient for cell life. Each of these antioxidants, their availability and actions are explained in detail in Part 1. Now it’s time to look at the rest of the network, vitamins C and E.



as “the most efficacious, safe and cost-effective medicine.” PubMed reports more than 50,000 published research studies and that’s not their entire list.

Experts such as the Linus Pauling Institute (LPI) emphasizes that “a vitamin C intake of at least 400 mg daily is particularly important for older adults who are at higher risk for chronic diseases caused, in part, by oxidative damage, such as heart disease, stroke, certain cancers, and cataract.” The National Institutes of Health (NIH) views are similar as they state higher vitamin C levels relate to lower rates of “cancers of the lung, breast, colon or rectum, stomach, oral cavity, larynx or pharynx, and esophagus.” They further report that C levels are lower in those with cancer. As cancer and heart disease are the top two causes of death in the U.S., more people should be taking advantage of this nutrient marvel since its safety record is impeccable.

Vitamin C is water soluble so it's best to take in a split dose in morning and evening for consistent levels to maintain protection. Current research suggests an optimal dose to strive for is 2000 mg daily or your bowel tolerance (the point at which too much causes loose stools).

### Vitamin E

Vitamin E often does not get the recognition it's due yet its role as a lipid free radical scavenger is without contestation with more than 35,000 PubMed published studies on its antioxidant ability alone. Vitamin E fights free radicals in the fatty portions of the cell. It can be recycled by vitamin C, ALA, and CoQ10. Packer cites E as pivotal in halting “the biochemical chain of events that leads to the spread of free radicals”, solidifying its role in the network.



Vitamin E taken daily “will substantially reduce your risk of heart attack or stroke,” and if you’ve already had heart attack number one, vitamin E can “significantly reduce your risk” of heart attack number two according to Packer. Several observational studies have associated lower rates of heart disease with higher vitamin E intakes. The NIH describes one study of about 90,000 nurses “found that the incidence of

**Vitamin C** Vitamins are compounds (amines) which are vital to health because they are not synthesized in adequate amounts in the body. You need to obtain them in your daily diet and/or supplementation, especially the water soluble ones like Vitamin C. Best known for its role in immunity as a potent free radical scavenger to prevent and lessen the common cold, C is anything but common. This vitamin helps protect cells against chemotherapy in cancers and being investigated for pain conditions (see More Reading). It’s on the World Health Organization’s List of Essential Medicines



*Continued*

## The Antioxidant Network Part 2

continued

heart disease was 30% to 40% lower in those with the highest intakes of vitamin E, primarily from supplements.”

Look to E for other anti-aging properties. Vitamin E may help prevent brain cells from aging, working to delay the onset of Alzheimer’s disease more effectively than a prescription drug. Each of the 100 billion neurons that make up your brain is encased in a layer of fat, making the composition of your brain about 60% fatty tissue. An antioxidant specific to fat, then, is a no-brainer for protecting this incredibly important organ as oxidative damage is implicated in age-related cognitive decline and the progression of Alzheimer’s. In addition, E present in skin care products helps lessen oxidative sun damage and diminish the look of wrinkles while protecting against new damage.

### Network Helpers

Although you have help from the top five antioxidants, they have a network too. Bioflavonoids, a group of compounds found in fruits, veggies and plants, also support overall health. They too help the network recycle while providing other individual benefits that are essential to good health. Lycopene from tomatoes, Pycnogenol® from pine bark, grape seed extract, quercetin, and ginkgo biloba are just a few of the well-known bioflavonoids. Like antioxidants, Dr. Packer’s research found “complex mixtures of flavonoids...are even more powerful than their individual components”. Other network and immune helpers include minerals such as selenium and zinc and vitamin A.

### Network Protection

Although mentioned in Part 1, it bears repeating. *The absence of one member of the top five in the network decreases the effect of the network overall.* Your immunity and ability to stay healthy and combat disease depend on “full coverage”. Age, lifestyle and diet all affect your network. Anti-aging experts suggest a healthy diet, exercise, good sleep and avoiding stress as good lifestyle choices. Although aging is inevitable, balancing your antioxidants to oxidative damage from environment, stress, and disease can make you “younger” on the inside than your chronological age.

#### THE ANTIOXIDANT NETWORK

Optimal Daily Dosing\*

Alpha Lipoic Acid.....	100 mg
CoQ10 or Ubiquinol .....	100 mg
Glutathione .....	N/A**
Vitamin C .....	2000 mg
Vitamin E .....	400 IU

\* Deficiency conditions and chronic disorders may require higher amounts. Consult your health care professional for personal needs.

\*\*To raise GSH levels, take ALA and/or Vitamin C

Here’s another note on disease. According to Michael Janson, M.D., researcher and physician of orthomolecular medicine (like Pauling), “Supplements ... are among the most valuable

and safe substances for prevention and treatment of serious chronic and acute diseases associated with mortality, as well as everyday health problems that cause discomfort and disability.” And there is probably no disease that does not have one or more nutritional deficiencies as those with fibromyalgia (FM) know all too well. People with FM are high in oxidative stress, have amplified pain, low energy and serotonin, poor sleep and mitochondrial dysfunction. CoQ10, ALA and quercetin have been shown as effective supplements. Neurodegenerative disorders such as multiple sclerosis, Parkinson’s and Alzheimer’s are helped with CoQ10 and ALA as well.

Likewise, the biggest user of CoQ10 is the heart muscle which statin drugs for cholesterol block. Cancer therapy now boasts the use of vitamin C, both to offset chemotherapy drug side effects and bolster immune function under extreme oxidative

stress. Vitamin E is a classic fat soluble nutrient for all aspects of heart disease, heart vessel health, hypertension and brain health. GSH supplements are not effective according to Packer; though levels can be raised with ALA and vitamin C both.

If you have a chronic disease, get educated about the possible nutritional deficiencies and supplement accordingly. One way to do that is via the TyH Health Library online, where hundreds of free articles can be found. Or call us! Sometimes you need a therapeutic dose to get back to optimum levels; then reduce to a dose

to maintain that level. Sometimes even discontinue. Even if a supplement can’t cure your disorder, remember that your body was meant to operate in a specific way which means supplying all the necessary nutrients.

One way to cover your nutritional bases and get your daily network quota is to look to your multivitamin mineral (MVM) complex. A good MVM should include antioxidants, so check the label. Multi-Gold™, for example, has 9 in all: vitamins A, C, and E, ALA, CoQ10, plus helper bioflavonoids, and even the immune minerals selenium and zinc. Taking a daily MVM helps you stock your network, stay healthy by providing a wide “coverage” on a daily basis.



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### More Reading in the TyH Health Library Online

- ◆ The Antioxidant Network Part 1
- ◆ CoQ10, Keys to Health
- ◆ Multi-Gold, Advance Your Health
- ◆ Vitamin C & Pain, New Insights
- ◆ Vitamin E, Looking at E

WHERE TO GET C & E		
TyH Source	C	E
Multi-Gold™ (4 Caps)	300 mg	200 IU
Fibro-Care™ (2 Caps or Tabs)	100 mg	
Fibro-Care Cal™ (2 Tabs)	50 mg	
Buffered-C 500 (1 Cap)	500 mg	
Vitamin E (1 SG)		400 IU
ALA 100 mg (1 Cap)	250 mg	30 IU
Eye Complex (3 Caps)	300 mg	200 IU