

# ANTIOXIDANTS

from DAN'S  
HAND



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A war is being waged right now. I'm not talking about the war in Iraq; the war I'm referring to is in your body and only good nutrition and a healthy lifestyle can bring in the reinforcements.

The bad guys are called free radicals – highly reactive chemicals that damage tissues and DNA by pilfering electrons in a relentless quest to enhance their own stability. The good guys are antioxidants – a group of compounds that help prevent the damage caused by free radicals, often donating electrons to free radicals to make them stable, but in fact, making themselves unstable.

### Free Radicals

Free radicals are most commonly produced as a byproduct of your body processing plain old oxygen. Unless you can find a way to stop breathing (which I don't advise), a certain amount of oxidative stress is inevitable. The funny thing is that your body needs oxygen to produce energy and energy is produced in your body through a process called oxidation. Basically, your body employs paired electrons from oxygen to produce energy. This process creates byproducts that are the dangerous free radicals that cause oxidative damage to your cells. This oxidative stress is combated by antioxidants manufactured by your body and by the foods that you eat. Other sources of free radicals are constantly bombarding your body, including the residual effects of your body's interaction with herbicides and pesticides, alcohol, air pollutants such as cigarette smoke, ultraviolet light, and stress.

But the most common free radicals in the body are byproducts of exercise, and they bind to cells (like those in muscle tissue), causing damage to the membranes and even worse, to your very DNA. DNA acts as a blueprint for your cells; if you mess with your blueprint, you mess with your very structure.

Now consider what happens to your body during a 60 minute session on the tread mill. Suddenly, the amount of oxygen you consume multiplies 10, 20, even 100 fold. This means the oxidative stress multiplies too. Free radicals are created at an alarming rate. It is time to call in the reinforcements – antioxidants.

### Antioxidant Superstars

Folks who work out are absolutely affected more than couch potatoes. Athletes lower their immune systems simply because of the elevated rate at which they release free radicals through oxidative stress. It doesn't stop there. Some of the muscle soreness you feel after a workout is also due to free radical damage, a byproduct of the inflammation you suffer after lifting weights. Several studies have shown that Vitamin E helps reduce exercise-induced free radical damage to muscle cells.

- **Vitamin E** – The body's primary fat-soluble antioxidant. Can both neutralize free radicals and can help prevent free radical formation. Believed to be the primary defense against cellular membrane damage.
- **Vitamin C** – The body's primary water-soluble antioxidant. Helps the body to recycle other antioxidants, especially Vitamin E, so they can neutralize more free radicals. Generally works inside the muscle cells.
- **Selenium** – A mineral antioxidant that works with Vitamin E. Especially important for protecting cell membranes. Appears to play a role in preventing cancer of the colon, lung and prostate.
- **Beta-Carotene** – A powerful carotenoid antioxidant that both neutralizes free radicals and prevents free radical formation. The body can turn beta-carotene into Vitamin A.
- **Alpha-Lipoic Acid (ALA)** – The universal antioxidant. ALA is both water and fat soluble, and therefore can fight free radicals almost anywhere in the body, including the brain. Also improves the function of insulin, which helps support healthy blood-sugar levels.
- **COQ10** – A fat-soluble Antioxidant present in every cell in the body. Thought to be especially effective in preventing signs of skin aging. Also crucial to energy production and heart health.

Eat Well!

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