

Antioxidants 101

By Woodland Publishing, Inc.

Have you ever cut into an apple and watched it slowly turn brown after a few minutes? Or made guacamole and watched the green avocado turn dark? How about seeing metal rust? That is oxidation at work.

Antioxidants are molecules that inactivate the properties of oxidation. Lemons, for example, contain antioxidants that when squeezed on apples, keeps the apple flesh white and when mixed with avocados, preserves green guacamole. Antioxidants are the “cleaning agents” that return metal to its bright and shiny state.

The same oxidation process occurs within the human body. We breathe in oxygen, which the body uses in a variety of ways, but at the same time, it creates oxidation byproducts called free radicals. If we don't have enough antioxidants to neutralize free radicals, they may eventually contribute to diseases such as heart disease, arthritis, diabetes, and macular degeneration. Such diseases result from cumulative oxidation damage. Oxidation is also implicated in the inflammation processes that contribute to aging—such as wrinkles and sagging skin, aching joints, mental fuzziness and forgetfulness.

So, what to do? A good diet and healthy lifestyle habits can help the body protect and repair itself, but left unchecked, we may accumulate an overwhelming burden of free radical damage. A lifetime of poor diet and lifestyle habits contributes to an accelerated aging process. We can improve our chances of living a quality life well into our senior years by increasing our antioxidant intake and adding more colorful foods to our diet and taking dietary supplements.

Antioxidants come in a variety of forms. They are a collective term for vitamins, minerals, amino acids, plant phenols and carotenoids that when combined, provide a considerable fighting force to neutralize free radicals intent on damaging the cells that make up our tissues and organs. Antioxidants work best in when combined as a “team,” which is why it is best to eat a variety of red, green, blue and yellow fruits and vegetables and combine antioxidant supplements together.

Here are a few of the most popular types of antioxidants:

Plant phenols—sometimes called polyphenols, this family of antioxidants numbers in the thousands and is found in all parts of plants—roots, stems, leaves, bark, blossoms, seeds and fruit. Many polyphenols can be found in purple, blue, green and red fruits and vegetables such as grapes, berries, açai, plums, cherries, red cabbage and beets. Some polyphenols in supplement form are: *bioflavonoids* (hesperidin, rutin, quercetin), *procyanidins* (grapeseed and pine bark), *catechins* (green tea, cacao), *resveratrol* (wine, grapes, Japanese knotweed), and *xanthones* (mangosteen rind).

Carotenoids—the oily yellow and orange pigments in fruits and vegetables, such as carrots, peppers, tomatoes, apricots and melons. There are two types of carotenoids: provitamin A carotenoids (beta-carotene that may convert to vitamin A in the body when needed), and xanthophylls (which do not convert to vitamin A but have high antioxidant activity). The most recognizable carotenoids are: *lutein* and *zeaxanthin*, a combination found in the human lens and macula that confers protection from UV rays; *astaxanthin*, the pigment that gives salmon and flamingos their pink color also provides antioxidant protection for the brain; and *lycopene*, the “tomato” antioxidant helps protect cholesterol from oxidation and also offers protection to the prostate.

Vitamins—vitamin E and vitamin C are the main antioxidant vitamins working in the water and oily parts of our cells and tissues. They also work synergistically together to regenerate themselves.

Others—amino acids such as *glutathione*, minerals such as *selenium*, *zinc*, and *copper*, and other nutrients, such as *alpha lipoic acid*, *coenzyme Q-10*, and *N-acetyl-cysteine*—all have antioxidant values in both water and oil-soluble cellular environments.

Although the body can form some of its own antioxidants, it relies heavily on outside sources to combat the daily burden of free radicals. Without a varied diet rich in antioxidants, free radical damage can increase over the years, causing oxidative stress in all of our cells. As with everything in nature, our antioxidant army must be varied and large enough to combat free radicals on many fronts.