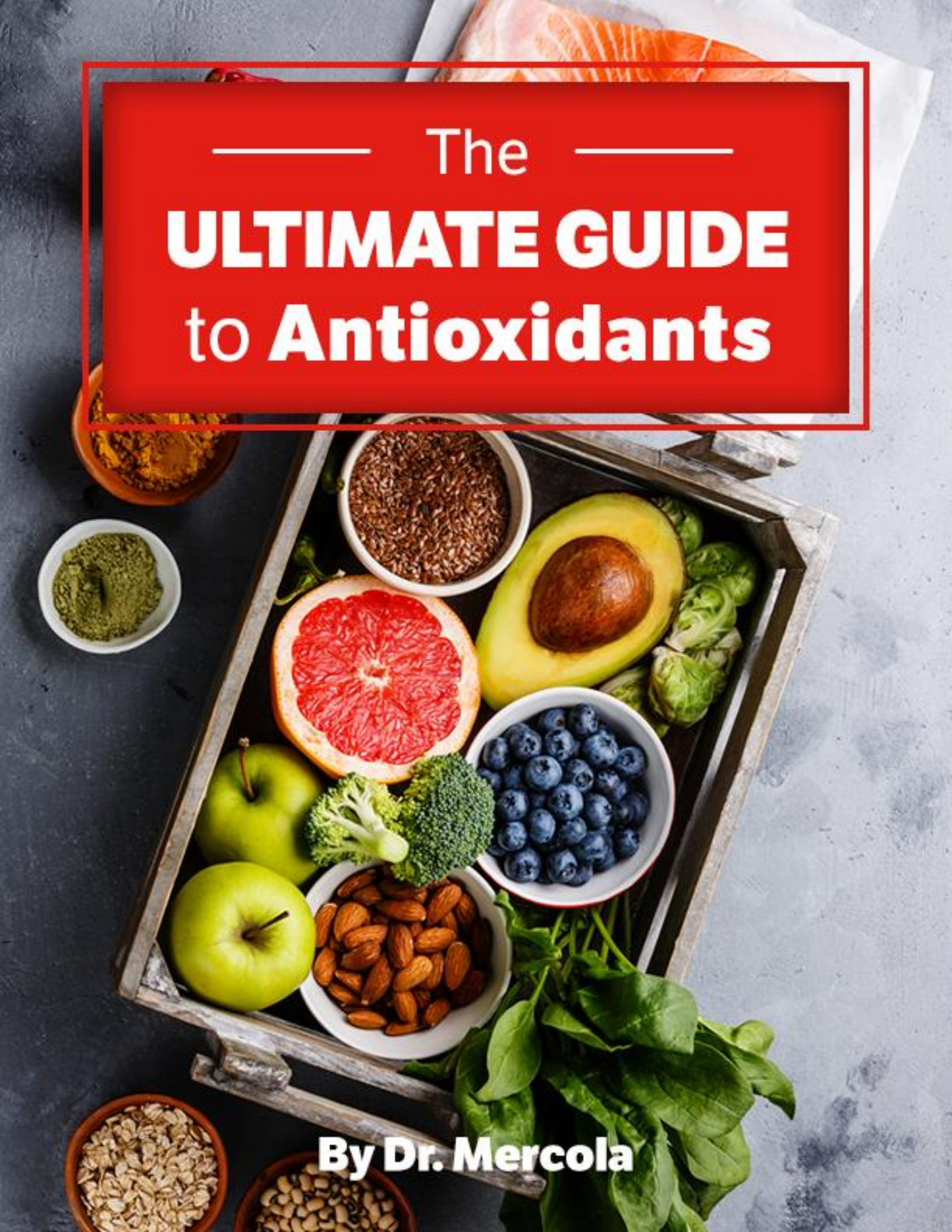
The
ULTIMATE GUIDE
to Antioxidants
By Dr. Mercola

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Introduction

Antioxidants, without a doubt, are an essential part of optimal health because they can help people suffering from certain conditions and assist with enhancing well-being. Even conventional Western physicians have acknowledged the significance of antioxidants for your health.

However, have you ever wondered about the exact purpose of antioxidants for your health? Are antioxidants all that they claim to be, or are they just a marketing ploy?

Antioxidants Have Been Used for Many Years Now

Antioxidants were discovered at different points in history, with some even being utilized in ancient civilizations. Here are some background stories on how some of the most popular antioxidants today were discovered:

- In ancient Egypt, a **vitamin A-rich liver extract** was used as a cure for night blindness. In fact, Roman soldiers were said to travel all the way to Egypt to receive the liver extract treatment.

  Fast forward many years later to 1912, Dr. Elmer McCollum of the University of Wisconsin discovered vitamin A in butter. During that time, vitamin A was called "fat-soluble A." In 1930, the structure of vitamin A was eventually determined and in 1947, this vitamin-antioxidant was synthesized in the laboratory.

- Native Americans drank an extract made from the bark and needles of the pine tree, which was prepared like a tea, to address scurvy. What made this drink beneficial was its high **vitamin C** content. However, this vital piece of knowledge remained exclusive to their own population for many years.

  A vitamin C breakthrough began in 1928, when a Hungarian scientist named Albert Szent-Györgyi isolated hexuronic acid from the adrenal gland, and the substance was eventually deemed as vitamin C. Four years later in 1932, vitamin C became the first vitamin to be produced in a laboratory.[1]

- In 1888, J. de Rey-Paihade discovered **glutathione** from yeast extracts, various animal tissues (beef skeletal muscle and liver, fish skeletal muscle, lamb small intestine and sheep brain) and in fresh egg white.

  Additional studies regarding this antioxidant's structure were conducted by Sir Frederick Gowland Hopkins in 1921, and ultimately, he was responsible for naming the said antioxidant "glutathione."[2,3]

- Richard Kuhn discovered **astaxanthin** in 1938 after he identified and isolated it from lobster. Astaxanthin is one of the earliest carotenoids to be examined.[4]

Everything You Need to Know About Antioxidants in One Resource

These early encounters prove that antioxidants are not an entirely new concept – they are substances that have proven their worth time and time again.

If you're interested in learning more about antioxidants, continue reading this guide. You will discover the different antioxidants known today, and their best food sources. You'll also learn whether antioxidant supplements are good for you, as well as lifestyle tips that can help complement intake of antioxidant-rich foods or supplements.

What Are Antioxidants?

Antioxidants are mainly described as a class of molecules that are capable of preventing the oxidation of another molecule. Your body naturally circulates various nutrients because of their antioxidant properties, and also creates antioxidant enzymes that help control free radical chain reactions.

Antioxidants, whether produced by the body or not, are vital for your health, because they help control how fast you age by fighting and protecting against free radicals, and by helping prevent or delay some types of cell damage.[5] Antioxidants can also reinvigorate damaged molecules.

Unfortunately, your body's antioxidant production declines as you age. Because of this, it is recommended to increase your intake of not just one, but multiple types of antioxidants to enhance your health and well-being. Examples of notable antioxidants that you may know more about that I will be discussing in the next few pages include:[6]

1. Glutathione
2. Resveratrol
3. Coenzyme Q10 or CoQ10
4. Beta-carotene
5. Lutein
6. Lycopene
7. Vitamin A
8. Vitamin C

What Are the Health Benefits of Antioxidants?

Antioxidants' main health benefit is geared towards eradicating free radicals, or unstable and highly reactive atoms or groups of atoms with an unpaired electron. To understand the benefits of antioxidants, you should know what free radicals are, and how they wreak havoc on your body.[7]

What Are Free Radicals?

In 1954, a biogerontologist named Denham Harman discovered free radicals while conducting research regarding the aging process.

Free radicals are highly reactive metabolites that are naturally produced by the body as a result of normal metabolism and energy production. They are your body's natural biological response to environmental toxins like cigarette smoke, sunlight, chemicals, and cosmic and manmade radiation. Free radicals can be produced when you exercise and have inflammation anywhere in your body, and are even a key feature of pharmaceutical drugs.

As mentioned earlier, free radicals have an unpaired electron (usually missing one or more electrons) that's responsible for biological oxidation.

These incomplete molecules aggressively attack other molecules to replace the missing parts, in what's known as "oxidation" reactions. Oxidation is also sometimes called "biological rusting," because it's caused by the presence of too much oxygen in your tissues.

Free radicals wreak havoc on your body by stealing electrons from the proteins. This badly damages your DNA and other cell structures and leads to a harmful snowball effect. As molecules steal from one another, each one becomes a new free radical and leaves a trail of biological carnage.

Unfortunately, free radicals tend to collect in cell membranes in what's known as lipid peroxidation, making the cells prone to oxidative damage. When lipid peroxidation occurs, the cell membrane becomes brittle and leaky and causes the cell to eventually fall apart and die.

If excessive production of these free radicals isn't properly addressed, they can severely affect DNA duplication, interfere with DNA maintenance and break open or alter its structure by reacting with DNA bases. Free radicals have also been linked to poor cell performance and tissue degradation, as well as over 60 different diseases, including cancer, cataracts, Parkinson's disease, Alzheimer's disease and atherosclerosis.

Antioxidants' Role in Combatting Free Radicals

Antioxidants act as electron donors that help combat free radicals. Antioxidants "break" the free radical chain reaction in your body by sacrificing their own electrons to "feed" free radicals, without turning into free radicals themselves.

Antioxidants are nature's way of providing your cells with a defense or "shield effect" against attacks by reactive oxygen species (ROS). If your body has substantial amounts of antioxidants, it may resist aging triggered by everyday exposure to pollutants and other free radical-triggering substances.

Failure to have an adequate supply of antioxidants can lead to a higher risk of oxidative stress that can cause accelerated tissue and organ damage.

Antioxidants Have Other Health Benefits Too

Aside from combatting free radicals, antioxidants have other health benefits too, such as:

- **Helping slow down the aging process:** This can result in immense effects on your skin health.
- **Repairing damaged molecules:** There are types of antioxidants that can repair damaged electrons by donating a hydrogen atom. This can be important if the molecule is critical, such as your DNA.
- **Blocking metal radical production:** Some antioxidants have a chelating effect, meaning they can grab toxic metals like mercury and arsenic, which can cause free radical formation, and "hug" or bind to them so strongly to inhibit the development of chemical reactions. Water-soluble chelating agents can also escort toxic metals out of your body through your urine.
- **Stimulating gene expression and endogenous antioxidant production:** Antioxidants may stimulate your body's genes and increase your body's natural defenses.
- **Promoting cancer cells to commit "suicide:"** Some antioxidants may provide anticancer chemicals that may stop cancer growth and force cancer cells to self-destruct or undergo apoptosis or cell death.

Different Types of Antioxidants

Antioxidants can be quite complex because each type has its own function. This may cause confusion among people on which types they should be taking. To make it easier for you to distinguish antioxidants, there are classifications you can take note of.

Hydrophobic and Hydrophilic Antioxidants

Hydrophobic or lipid-soluble antioxidants reside in your cell membranes and protect them from lipid peroxidation. Examples of lipid-soluble antioxidants include vitamins A and E, carotenoids and lipoic acid.

Meanwhile, **hydrophilic or water-soluble antioxidants** are found in aqueous fluids, such as your blood, and the fluids within and around your cells (cytosol or cytoplasmic matrix). Vitamin C, polyphenols and glutathione are water-soluble antioxidants.

Your body requires fat and water to protect your cells, because the cells' interior and the fluid between them are composed of water, while cell membranes are mostly made of fat. As such, your body needs both hydrophobic and hydrophilic antioxidants to ensure full protection from oxidative damage, as free radicals can target either the watery cell contents or the fatty cellular membrane.

Enzymatic and Non-Enzymatic Antioxidants

Enzymatic antioxidants break down and eliminate free radicals. They flush out dangerous oxidative products by converting them first into hydrogen peroxide and then into water, in a multi-step process requiring numerous trace metal cofactors such as zinc, copper, manganese and iron.

Enzymatic antioxidants are produced in your body, and can't be found in supplements. Some of the main enzymatic antioxidants include:

- **Superoxide dismutase (SOD):** Found in almost all aerobic cells and extracellular fluids, SOD can break down superoxide into hydrogen peroxide and oxygen with the help of copper, zinc, manganese and iron.

- **Catalase (CAT):** This converts hydrogen peroxide into water and oxygen using iron and manganese cofactors. Eventually, CAT finishes the detoxification process started by SOD.

- **Glutathione peroxidase (GSHpx) and glutathione reductase:** These are selenium-containing enzymes that help break down hydrogen peroxide and organic peroxides into alcohols. Both antioxidants are most abundant in your liver.

On the other hand, **non-enzymatic antioxidants** play a major role in interrupting free radical chain reactions. Most antioxidants in supplements and foods are non-enzymatic, and these provide support to enzymatic antioxidants by doing a "first sweep" and disarming the free radicals.

This action helps prevent your body's enzymatic antioxidant stores from being depleted. Carotenoids, vitamins C and E, plant polyphenols and glutathione (GSH) are examples of non-enzymatic antioxidants.

Small-Molecule and Large-Protein Antioxidants

Small-molecule antioxidants work by mopping up or "scavenging" reactive oxygen species (ROS) and driving them away through chemical neutralization. Prime examples of small-molecule antioxidants include vitamins C and E, glutathione, lipoic acid, carotenoids and CoQ10.

On the other hand, **large-protein antioxidants** tend to be the enzymatic antioxidants mentioned earlier. Large-protein antioxidants are considered "sacrificial proteins" that absorb ROS and stop them from attacking essential proteins. An example of a large-protein antioxidant is albumin, which often "takes the bullet" for crucial enzymes and DNA.

Do Not Skip These Vital Antioxidants

It's crucial that you don't stick to just one type of antioxidant. Incorporating a wide array of antioxidants is vital in providing you with optimal benefits.

Antioxidants That Naturally Occur in Your Body

Some antioxidants can be found and produced by your body, namely:

1. **Glutathione**

   This tripeptide found in every cell of the body is known as the most powerful antioxidant. Glutathione is called the "master antioxidant" because it's intracellular and possesses the ability of maximizing the performance of other antioxidants, including vitamins C and E, CoQ10 and alpha-lipoic acid, as well as fresh vegetables and fruits you consume.

   Glutathione's primary function is to protect your cells and mitochondria from oxidative and peroxidative damage. This antioxidant is also needed for detoxification, energy utilization, reduction of aging-associated diseases, elimination of toxins from the cells, and protection from the damaging effects of radiation, chemicals and environmental pollutants.

   Take note that your body's ability to produce glutathione decreases as you age. You can combat this by eating foods that promote glutathione production, such as organic and pasteurized eggs, grass fed meats and curcumin.

2. **Alpha-lipoic acid (ALA)**

   What makes ALA special is that it's the only antioxidant that can be easily transported into your brain. This offers benefits for people with brain diseases such as Alzheimer's disease.

   Plus, ALA may also regenerate other antioxidants like vitamins C and E and glutathione, meaning that if your body has used up these antioxidants, ALA can help regenerate them. Other known benefits of ALA include:

   - Helping scavenge free radicals
   - Helping modify gene expression to reduce inflammation
   - Acting as a very potent heavy metal chelator
   - Enhancing insulin sensitivity

3. **CoQ10 (Ubiquinone)**

   An antioxidant used by every cell in your body and found in the inner membranes of your mitochondria,[8] CoQ10 or ubiquinone is converted into its reduced (and arguably far more effective) form, called ubiquinol, in order to maximize its benefits.

The conversion of CoQ10 into ubiquinol occurs thousands of times every second inside the mitochondria. This plays a crucial role in allowing your body to transform the food that you eat into energy.

Other health benefits of CoQ10, aside from naturally protecting the body against free radicals, include:

- Assisting with increased energy production for your cells
- Providing support for heart health, immune system and nervous system
- Helping reduce the signs of normal aging
- Helping with maintenance of blood pressure levels within the normal range

If you're below 25 years old, your body can convert CoQ10 into ubiquinol without difficulty. Unfortunately, your body produces less CoQ10 and finds it more challenging to transform oxidized CoQ10 into ubiquinol as you age. Therefore you may need to take a ubiquinol supplement instead.[9]

Antioxidants That You Can Find in Foods and Supplements

There are antioxidants that may not be manufactured inside your body, and have to be obtained from antioxidant-rich foods or supplements. These are:

1. **Resveratrol**

This can cross the blood-brain barrier and provide protection for your brain and nervous system. Resveratrol was found to be very effective at warding off aging-related diseases, so much so that it was dubbed the "fountain of youth." Resveratrol is also linked to positive health impacts like:

Providing protection against free radicals	Combatting the development of cancer, especially prostate cancer
Lowering blood pressure levels	Maintaining heart health
Improving elasticity of blood vessels	Normalizing anti-inflammatory response
Combatting Alzheimer's disease	

Resveratrol is typically found in grapes, berries, certain vegetables, cocoa and red wine. However, if you want to boost your resveratrol consumption, I recommend that you stick to sources like whole grape skins, raspberries and mulberries.

If you're struggling with insulin resistance, however, do not consume grapes in excessive amounts because they contain high amounts of potentially harmful fructose.

Meanwhile, it can be challenging to rely on raw cocoa and dark chocolate for resveratrol, as it can be difficult to get a therapeutic dose from these foods since they are best eaten in moderation.

A resveratrol supplement is an option. Look for one that's made from a whole food complex that includes muscadine grape skin and seeds, which is where resveratrol is often concentrated.

2. **Carotenoids**

These are a class of naturally occurring pigments with powerful antioxidant properties that are responsible for giving certain foods their vibrant color. Over 700 naturally occurring carotenoids exist, and right now you may have at least 10 different kinds of carotenoids circulating through your bloodstream. Carotenoids are divided into two groups:

- **Carotenes:** Carotenes don't contain any oxygen atoms. Examples of carotenes include lycopene found in red tomatoes, and beta-carotene found in orange carrots, which is eventually converted into vitamin A by your body.

- **Xanthophylls:** You can find oxygen atoms in these antioxidants. Xanthophylls include lutein, cantaxanthin (considered the "gold" in chanterelle mushrooms), astaxanthin and zeaxanthin. In particular, zeaxanthin is said to be the most naturally occurring carotenoid in nature.

3. **Astaxanthin**

Although astaxanthin is technically a carotenoid, this antioxidant deserves its own special mention because of its superb nutritional advantage. Astaxanthin is a marine carotenoid produced by the microalgae Haematococcus pluvialis once its water supply dries up, in order to give itself protection from ultraviolet radiation.

I believe that astaxanthin is the most powerful carotenoid when it comes to free radical scavenging. To put into perspective: Astaxanthin is 65 times more powerful than vitamin C, 54 times more powerful than beta-carotene and 14 times more powerful than vitamin E.

Just like resveratrol, astaxanthin can cross the blood-brain barrier. But it can cross the blood-retinal barrier too, which is something both beta-carotene and lycopene cannot do. Plus, compared to other carotenoids, astaxanthin is more effective at "singlet oxygen quenching," a type of oxidation triggered by sunlight and various organic materials.

It's said that astaxanthin is 550 times powerful than vitamin E and 11 times more powerful than beta-carotene at neutralizing singlet oxygen. This antioxidant has been associated with helping to provide the following benefits:

Supporting immune system function	Improving cardiovascular health by reducing C-reactive proteins (CRP) and triglycerides, and increasing good HDL cholesterol levels
Protecting the eyes from cataracts, macular degeneration and blindness	Protecting the brain from dementia and Alzheimer's disease
Reducing your risk for different types of cancer	Promoting recovery from injuries related to the spinal cord and other organs in the central nervous system
Decreasing inflammation from all causes, including asthma and arthritis	Enhancing endurance, workout performance and recovery
Relieving indigestion and reflux	Helping stabilize blood sugar levels, thereby protecting your kidneys
Increasing sperm strength and sperm count in men	Improving fertility
Helping reduce sunburn risk and protecting you from damaging radiation effects	Decreasing oxidative damage to your DNA
Reducing symptoms of diseases such as: • Pancreatitis • Multiple sclerosis • Carpal tunnel syndrome • Rheumatoid arthritis • Lou Gehrig's disease • Parkinson's disease • Neurodegenerative diseases	

4. **Vitamin C**

Vitamin C can provide a wide range of benefits. Hailed as the "grandfather" of traditional antioxidants, vitamin C may help:

- Fight oxidation by acting as a major electron donor
- Maintain optimal electron flow in your cells
- Protect proteins, lipids and other vital molecular elements in your body

This antioxidant is also essential for collagen synthesis, an important structural component of your bones, blood vessels, tendons and ligaments.

Vitamin C can be obtained from raw, organic vegetables and fruits, but you can also take it as a supplement or have it administered intravenously (IV). If you plan on taking a vitamin C supplement, opt for one that's made with liposomal technology, which makes the nutrient more absorbable to your cells.

5. **Vitamin E**

Natural vitamin E is a family of eight different compounds: four tocopherols (alpha, beta, gamma and delta) and four tocotrienols (alpha, beta, gamma and delta). Some of vitamin E's health benefits as a fat-soluble and antioxidant include:[10]

- Helping combat damaging free radicals
- Playing a role in red blood cell production
- Helping the body use vitamin K, which is important for heart health

Ideally, you should obtain these vitamin E compounds from a balanced diet of fresh and wholesome foods, especially vitamin E-rich foods like:

- Leafy greens
- High-fat foods like nuts, seeds and fatty fish and seafood
- Oil-rich/high-fat plants like olives and avocados

Avoid taking synthetic vitamin E supplements, because there's a chance that you'll only get one of the eight vitamin E compounds, which won't do much for your health.

Furthermore, synthetic vitamin E supplements were shown to lead to toxic effects in higher amounts and/or over the long term. I suggest looking for a vitamin E supplement that is well-balanced and all-natural.

Food Sources Rich in Antioxidants

Consuming antioxidant-rich foods is one of the best ways to increase your body's antioxidant stores. In fact, foods must be your primary source for these nutrients. A diet full of high-quality and raw organic foods allows your body to acquire the essential antioxidants it needs to achieve and/or maintain optimal health. Here are some of your best choices.

1. **Fresh and organic vegetables**

   Most of the vegetables that you eat, especially leafy greens, are loaded with phytochemicals or plant compounds that act as antioxidants. In the long run, phytochemicals may reduce inflammation and eliminate harmful carcinogens.

   Sprouts, which are younger versions of vegetables that may be harvested within a few days or a week of growth, are a powerful source of antioxidants, minerals, vitamins and enzymes that promote optimal health. Pea and sunflower sprouts are two of my favorites, because they can provide you with the highest-quality protein that you can eat.

   Make sure that the vegetables you eat are fresh, organically grown and GMO-free, and haven't been sprayed with pesticides that may lead to destructive health impacts.

2. **Fresh and organic fruits**

   Blueberries, blackberries, cranberries and raspberries contain powerful phytochemicals that directly prevent the DNA binding of certain carcinogens. Berries are also great sources of vitamin C, carotenes and carotenoids, and nutrients like zinc, potassium, iron, calcium and magnesium.

   However, always consume fruits in moderation, because these contain fructose, which can be detrimental to your health if eaten in large amounts. Just like with vegetables, make sure that you buy fruits that are fresh, organically grown and GMO-free.

3. **Nuts**

   Adding pecans, walnuts and hazelnuts to your diet may be beneficial, because these are excellent foods that may boost your heart health and overall health. Other good nut options include macadamia nuts, almonds and Brazil nuts, but these must be eaten in moderation. Look for nuts that are organic and raw, and are not irradiated or pasteurized.

   I don't recommend consuming peanuts in general. Peanuts are actually legumes, and these tend to be pesticide-laden and may be contaminated with a carcinogenic mold called aflatoxin.

4. **Herbs and spices**

   It's no secret that adding herbs and spices to your diet can be beneficial for your health, because both have been used for thousands of years not just to flavor food, but also address illnesses.

Herbs and spices are an abundant source of antioxidants, and have potential anticancer benefits too. You can differentiate herbs and spices by the source: Herbs come from the plant's leaves, while spices are from the bark, stem and seeds.

Ground cloves, ground cinnamon, oregano, turmeric, ginger and garlic are some of your best choices for high antioxidant activity. I advise that you only opt for fresh herbs and spices because these are healthier and have higher antioxidant levels than processed and/or powdered versions.

5. **Organic green tea**

Organic green tea is an antioxidant-rich drink that contains a catechin polyphenol called epigallocatechin-3-gallate (EGCG). EGCG is one of the most powerful antioxidants today, and it is said to help lower your risk for heart attack and stroke, glaucoma, high cholesterol levels and more.

Studies also showed that EGCG may improve your exercise performance, increase fat oxidation and help reduce your risk for obesity because of its regulatory effect on fat metabolism.

Unfortunately, not all green teas are created equal. Some processed green tea brands may contain very little to no EGCG at all. There are also tea bags that may be contaminated with fluoride or hazardous plastics that can leach into your tea when brewing.

To ensure that you're drinking high-quality green tea, I advise buying only organic and loose leaf tea from a reputable source. Organic matcha tea is my top choice.

6. **High-quality grass fed whey protein**

High-quality whey protein is known to contain all the essential amino acids for producing glutathione, namely cysteine, glycine and glutamate. It's also home to a unique cysteine residue called glutamylcysteine, which is highly bioactive in its affinity for converting to glutathione.

When buying whey protein, purchase high-quality cold-pressed whey protein derived from grass fed cows that's low in carbohydrates and without added hormones, sugar and chemicals.

Whey protein must be highly digestible as well, so check if it has medium-chain fatty acids (MCFAs) and not long-chain fatty acids (LCFAs). Lastly, high-quality whey protein must be whey protein concentrate (WPC) and not whey protein isolates (WPIs).

Not All Foods Contain the Same Amounts of Antioxidants

To take the guesswork out of analyzing a particular food's antioxidant content right before buying it, scientists at the U.S. Department of Agriculture (USDA) created a scale for measuring the food's or supplement's ability to neutralize free radicals. This is known as the Oxygen Radical Absorbance Capacity (ORAC) score.

A higher ORAC score means that the food is more potent and powerful when it comes to combatting age-related degeneration and disease.

If you're interested in learning about the ORAC scores of the foods that you eat or supplements that you take, you can go to the ORAC values database. However, be warned that some manufacturers are using deceptive practices to misrepresent ORAC values and deceive consumers.

Are Antioxidant Supplements Worth It?

Ideally, I don't recommend relying solely on supplements, simply because these can't replace the nutrients and benefits you can get from organic whole foods. Supplements, as their name implies, should be only taken to complement your diet and not to completely replace the nutrients.

However, because of today's fast-paced and busy lifestyle, many people are now neglecting the importance of consuming whole and organic foods. Since they don't have the time to cook and prepare wholesome meals, they miss out on essential nutrients, including antioxidants.

In this case, taking a high-quality antioxidant supplement may be an option. Some of my personal recommendations include:

Astaxanthin with ALA	Krill Oil	Resveratrol	Acai berry
Vitamin E	Liposomal vitamin C	CoQ10 or ubiquinol	

Before taking supplements, consult your doctor first to know the amount that's ideal for your condition. Avoid overloading or excessively taking antioxidant supplements because this may lead to negative effects on your health. Because it can be possible to overdose when taking antioxidant supplements, keep the Goldilocks equation in mind: not too many, but not too few.

Lifestyle Changes to Help Maximize Antioxidant Intake

No matter how much antioxidants you add to your diet, they won't work to your advantage if you don't make changes to your lifestyle.

Unhealthy habits may promote free radical formation. If you don't stop these negative habits, free radicals in your body can rise to dangerous levels and increase your risk for inflammation and other diseases. Take note of these following lifestyle tips:

1. **Reduce and eliminate sugar (especially fructose) and grains from your diet.**

   I advise against consuming processed foods, especially soda, because these typically contain high amounts of fructose.

   According to Dr. Robert Lustig, a professor of pediatrics in the Division of Endocrinology at the University of California, San Francisco, fructose undergoes a Maillard reaction with proteins, causing superoxide free radicals to form in your body. These damaging free radicals may trigger liver inflammation similar to that caused by alcohol.

   Decreasing the amount of sugar and grains (which convert into sugar in your body) in your diet may help decrease antioxidant stress, meaning your body will need to get less amounts of antioxidants for proper body function. Furthermore, the antioxidants you have may work better and last longer.

2. **Exercise regularly.**

   Exercise may boost the body's antioxidant production, but in a paradoxical way, because it creates oxidative stress. When done properly and in moderation, exercise can help improve your body's capacity to produce antioxidants.

   Arguably the best exercises you can try for your health include high-intensity interval training (HIIT) exercises like Peak Fitness. However, techniques like the Nitric Oxide (NO) Dump, which don't require weights or equipment, is now my top choice.

   The NO Dump is an even easier way to reap most, if not all, of the same benefits of a more elaborate HIIT workout, and can be done by just about anyone regardless of current fitness level or age. It only requires three minutes of your time, two or three times daily, with at least two hours in between sessions.

   If you're trying out the Nitric Oxide Dump, start first at 10 repetitions and gradually work your way up to 20 reps. Make sure you're breathing through your nose and not your mouth. Your nose regulates more than 30 physical processes, including the release of NO and serving as a filter of the air you breathe.

   Avoid doing the NO Dump more than every two hours, because it takes that long for the NO to be generated from a substance called endothelial nitric oxide synthase (eNOS).

Apart from exercising your body's muscles, the NO Dump is associated with important health benefits too. NO happens to be an extremely important component of biochemical regulation. Understanding and controlling NO's formation has the potential for inducing profound influences towards your health. Most notably, NO may:

- Help protect the heart by relaxing blood vessels and lowering blood pressure
- Stimulate your brain
- Eliminate bacteria and defend against tumor cells
- Assist with maintaining homeostasis in your body

Lastly, avoid prolonged cardio like marathon running, since it puts excessive stress on your heart.

3. **Consider non-exercise movement.**

Before putting together a regular exercise program, I advise making a mental note of how much you move throughout the day. If you work out frequently but sit down during work and travel and then spend most of the evening on the couch, it's time to rethink these habits.

More than 10,000 studies have shown that prolonged sitting can take a significant toll on your health, even if you regularly exercise. An hour or two of exercise per week isn't enough to outweigh the damage caused by sitting down for 10 hours or more each day. Nowadays, non-exercise movement is recognized as a foundational piece for optimal health.

Ideally, practice non-exercise movement and exercise, but if you're currently sedentary, start by sitting less first. Fitness trackers can be a helpful tool for this. When starting out, I recommend that you get at least 7,000 to 10,000 steps daily, while limiting your sitting time to less than three hours.

4. **Manage stress effectively.**

Stress can worsen inflammation and poor immune function caused by free radical formation. Different studies have discovered significant links between acute and/or chronic emotional and psychological stress and numerous health issues.

To manage stress effectively, I recommend using energy psychology tools such as the Emotional Freedom Techniques (EFT). EFT is a form of psychological acupuncture based on the same energy meridians used in traditional acupuncture.

The difference is, EFT doesn't involve using needles. Instead, practitioners stimulate the different energy meridian points in the body by tapping them with fingertips, and simultaneously using custom-made verbal affirmations. In the long run, EFT may help you correct emotional short circuiting that contributes to chronic stress.

5. **Avoid smoking.**

   Smoking forms free radicals in your body, accelerating the aging process. Even if you don't smoke, being around smokers can negatively affect your health.

   Smoking is known to damage the microcapillaries in your skin, limiting its ability to absorb nutrients and leading to accelerated wrinkling and aging. Lastly, smoking can also contribute to the pathobiology of numerous diseases, with the most well-known being lung cancer.

6. **Get enough high-quality sleep.**

   High-quality sleep is a cornerstone of good health, and science has established that sleep deficiencies may have severe far-reaching effects on your health.

   As highlighted in an analysis of available research by the American Academy of Sleep Medicine and the Sleep Research Society, evidence suggests that adults need somewhere between seven and nine hours of sleep per night for optimal health.[11] If you're having sleeping problems, I recommend that you read my "33 Tips for a Good Night's Sleep" article to help solve these.

7. **Try grounding or earthing.**

   Grounding or earthing, which is the act of waking barefoot on the earth, has a potent antioxidant effect that may help alleviate inflammation in the body. This can be an effective antioxidant because there's a constant flow of energy between our bodies and the earth, which has a greater negative charge. Walking barefoot on the earth may help you large absorb large amounts of negative electrons through the soles of your feet.

   Arguably one of the best ways to incorporate grounding into your lifestyle is by exercising barefoot outdoors, such as on the beach or in your yard.

Make Sure to Get Enough Antioxidants to Boost Your Health

Free radical production and cell damage cannot be entirely prevented, especially as you age or expose yourself to elements such as dust and pollution. However, increasing intake of antioxidants can be beneficial in combatting these and more. This is why I highly recommend adding some form of antioxidants from foods and/or supplements.

What's great about antioxidants is there are various types to choose from. Most antioxidants today, such as glutathione, beta-carotene, CoQ10 and vitamin C can work in some way or another for people of different ages.

While the health benefits antioxidants can provide are certainly worth praising, I advise that you shouldn't rely solely on antioxidants, especially those in supplement form, to improve your health.

Ideally, complement your antioxidant intake with a healthy diet rich in fresh, organic and non-GMO fruits and vegetables, grass fed meats and protein and healthy fats from sources like avocados, coconuts and coconut oil, and raw nuts like macadamias and pecans.

Improving your lifestyle is also a must if you're aiming to have higher amounts of antioxidants in your body. Exercising constantly and consistently, reducing consumption of sugar and highly processed foods, and getting enough sleep at night are some of the most important changes you should consider to maximize antioxidants' benefits.

I hope that this guide has given you a clearer, better idea of how extremely vital these substances are for your optimal wellness. It's never too late to increase your antioxidant intake and be on the path to better health.

Sources and References

[1] Treat Concussion, TBI, And PTSD with Vitamins and Antioxidants, December 17, 2015
[2] Journal of Biological Chemistry, June 14, 2002
[3] Profiles of Drug Substances, Excipients and Related Methodology, Volume 40, June 5, 2015
[4] Cardax, "Astaxanthin History and Background"
[5] National Center for Complementary and Integrative Health, November 2013
[6] MedlinePlus, "Antioxidants"
[7] The International Dermal Institute, What Is A Free Radical?
[8] University of Maryland Medical Center, January 2, 2015
[9] Healthline, October 10, 2016
[10] University of Maryland Medical Center, February 4, 2016
[11] CNN, September 27, 2017

https://articles.mercola.com/antioxidants.aspx
https://articles.mercola.com/herbs-spices.aspx
https://articles.mercola.com/smoking-side-effects.aspx
https://articles.mercola.com/vitamins-supplements/coq10.aspx
https://articles.mercola.com/vitamins-supplements/whey-protein.aspx
https://articles.mercola.com/sites/articles/archive/2010/04/10/can-you-use-food-to-increase-glutathione-instead-of-supplements.aspx
https://articles.mercola.com/sites/articles/archive/2010/05/27/resveratrol-boosts-brain-blood-flow.aspx
https://articles.mercola.com/sites/articles/archive/2011/05/16/all-about-antioxidants.aspx
https://articles.mercola.com/sites/articles/archive/2011/05/25/sunscreen-and-wrinkle-prevention-in-a-pill.aspx
https://articles.mercola.com/sites/articles/archive/2011/07/23/this-antioxidant-dramatically-inhibits-alzheimers-disease-progression.aspx
https://articles.mercola.com/sites/articles/archive/2013/01/28/berries-reduce-heart-attack-risk.aspx
https://articles.mercola.com/sites/articles/archive/2013/04/25/eft-relieves-stress.aspx
https://articles.mercola.com/sites/articles/archive/2013/07/03/green-tea-benefits.aspx
https://articles.mercola.com/sites/articles/archive/2015/01/15/eft-tapping-anxiety.aspx
https://articles.mercola.com/sites/articles/archive/2015/09/28/resveratrol-alzheimers-disease.aspx
https://articles.mercola.com/sites/articles/archive/2015/10/19/best-nuts-seeds.aspx
https://articles.mercola.com/sites/articles/archive/2016/03/21/benefits-eating-nuts.aspx
https://articles.mercola.com/sites/articles/archive/2016/04/10/how-stress-affects-body.aspx
https://articles.mercola.com/sites/articles/archive/2016/08/08/vitamin-e-deficiency.aspx
https://articles.mercola.com/sites/articles/archive/2016/12/19/nuts-proven-healthy.aspx
https://articles.mercola.com/sites/articles/archive/2017/02/25/grounding-recharge-immune-system-slow-aging.aspx
https://articles.mercola.com/sites/articles/archive/2017/03/13/swapping-lettuce-for-sprouts-microgreens.aspx
https://articles.mercola.com/sites/articles/archive/2017/07/01/quit-smoking.aspx
https://articles.mercola.com/sites/articles/archive/2017/09/07/steep-cost-of-sleep-deprivation.aspx
http://fitness.mercola.com/sites/fitness/archive/2017/02/17/intermittent-fasting-promotes-health-longevity.aspx
https://fitness.mercola.com/sites/fitness/archive/2017/08/11/fitness-plan-2017-updates.aspx