

Nourishing Your Internal Antioxidant System

When considering the numerous systems that make up our body, we may be more familiar with the ones that allow us to do things such as breathe, run a marathon, or complete a Sudoku puzzle. We may not, on the other hand, be familiar with our *internal antioxidant system*—a vital system that provides us with protection from pollution, microbes, and many of the chronic diseases we see today.

When it comes to keeping your antioxidant system in tiptop shape, I'll let you in on a little secret. It doesn't include purchasing pricy antioxidant supplements found in the marketplace. Yet, before we learn what this system needs to thrive, let's first understand how it works and why.

Oxidation: Nature Taking Its Course

Through everyday life activities, our body naturally undergoes oxidation. To better visualize what oxidation is, picture an apple that has been sliced but left out on the counter. As its delicate flesh is exposed to oxygen, the decay process is initiated. This natural process is called *oxidation*.

Our bodies undergo the same course. We need oxygen to carry out the many amazing functions our body performs daily. However, through the natural interaction between our cells and oxygen, damage is incurred as well as cell death. Although our body is very efficient at healing itself from the negative effects of oxidation, sometimes the damage cannot be repaired, leading to the formation of *free radicals*.

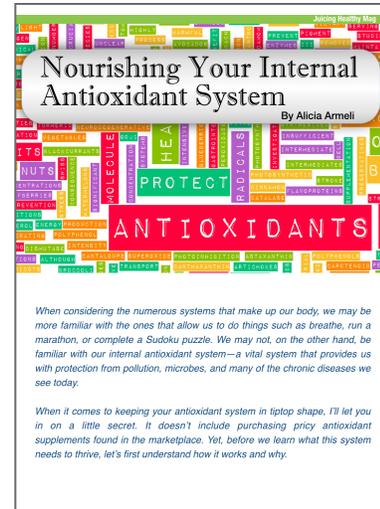
What Are Free Radicals?

I'm guessing this is not the first time the term "free radical" has crossed your path. Although familiar with the words, many are confused by the concept. Let's try and simplify this process to give you a better understanding of what is occurring inside your body.

Our body is made up of countless cells. These cells are comprised of molecules. For example, proteins, fats, and carbohydrates are all molecules. Molecules, simply put, are groups of smaller units called atoms. Within an atom, tiny charged particles called electrons, that are vital to its function, orbit around the center.

Not unlike the entire body itself, atoms like to stay in balance and therefore prefer to keep electrons in pairs. Yet sometimes, an imbalance occurs causing an atom to lose an electron. *This atom is now called a free radical.*

When this occurs, these newly formed free radicals become greedy and will do anything they can to regain balance, including stealing electrons from other atoms that belong to



adjacent cells and tissues. As free radicals are scrambling to find partners, this creates even more free radicals, injuring other cells in the process and damaging our DNA—otherwise described as our cellular genetic blueprint.

Once the DNA blueprints have been manipulated, mutated cells result and do not act in the best interest of our body. They can no longer carry out healthy daily functions but they do continue to multiply and give rise to more abnormal cells. This process can manifest in devastating ways such as cancer, neurodegenerative diseases, cardiovascular break down, cataracts, and many of the age-related conditions we see today.

The exposure to certain substances can expedite the formation of free radicals leading to more cellular damage. Substances such as smog, chemicals, drugs, radiation, excessive alcohol intake, and cigarette smoke can cause free radicals to multiply at an exponential rate, damaging cells and wreaking havoc on the body.

Since oxidation is a natural process that can also be worsened by unavoidable substances found in our environment, you may be wondering how anyone could possibly stand a chance! This is a valid point to be made. Living in a polluted environment, there is no way to completely avoid everything that causes damage. Luckily, our body is equipped with an internal repair system, or antioxidant system, that helps to eliminate these free radicals naturally.

Our Internal Antioxidant System

In order to combat the everyday natural oxidation and damage that occurs, our body needs an in-house reliable rescue protocol. Remember how free radicals are atoms that have reached a state of imbalance and will do anything to regain balance—even harm other cells in the process. With this in mind, the million-dollar question remains. How can we halt this potential domino effect?

By providing our body with antioxidant nutrients, we are helping to build a strong antioxidant system, thereby inhibiting the negative effects of oxidation.

Our antioxidant system is made up of enzymes that work in coordination with antioxidant nutrients *to quench free radicals by providing them with the electrons they are missing*. In order for these enzymes to do their job, our diet must be nutrient-rich.

The following table provides a short list of antioxidant nutrients that can easily be found in our everyday meals and snacks.

Antioxidant Nutrients	Food Sources
Vitamin C	papaya, citrus fruits, cantaloupe, broccoli, brussels sprouts, green peppers, strawberries
Vitamin E	nuts, vegetable oils (i.e., olive), wheat germ, whole grains
Carotenoids (beta-carotene)	sweet potatoes, carrots, spinach, butternut squash, greens, broccoli, cantaloupe
Zinc	legumes, sesame seeds, pumpkin seeds, oysters, beef, eggs
Copper	cocoa, nuts, seeds, legumes, oysters, liver,
Manganese	whole grains, nuts, legumes, vegetables, root vegetables
Selenium	fish (i.e., salmon, sardines), poultry, Brazil nuts, seeds, legumes, shiitake
Sulforaphane	cruciferous vegetables (i.e., cabbage, broccoli, kale), onions, garlic, leeks
Ubiquinol	avocados, spinach, olive oil, sardines

Keeping Our Antioxidant System in Check

Once an antioxidant nutrient donates an electron, it is imperative that these nutrients are regenerated in order for our antioxidant system to continue ongoing defense against free radicals. When an antioxidant nutrient provides part of itself to neutralize a free radical, other antioxidant nutrients step up and donate to their fellow nutrients.

By constantly recycling antioxidant nutrients, our means of defense stay strong and intact. Eating a variety of fresh fruits, vegetables, nuts, seeds, lean proteins, and whole grains on a daily basis will provide ongoing nutrient support that keeps our antioxidant system replenished with the necessary vitamins and minerals.

In a Nutshell...

Everyday we are bombarded with advertisements that encourage us to buy expensive antioxidant powders, pills, and potions. Being a dead ringer for devil's advocate, I'm going to discourage you from dropping serious coin on these extracts and instead consider using your money to invest in actual good old-fashioned food.

When we consume minimally processed foods in their most natural form, we receive all of their inherent nutrient goodness. Together, these nutrients work in perfect synchronicity providing us with the opportunity for optimal health and wellness with every bite we take.

Morning Strawberry Mocha Antioxidant Replenishing Smoothie

Instead of grabbing a sugar-laden coffee beverage before work, I like whipping up this antioxidant packed smoothie. Full of healthy fats, protein (and yes, carbs!) this smoothie will deliciously fill you up and give you the energy you need to take on your day.

Makes: 1 serving

Approximate prep time: 5 minutes

Ingredients

- 5-6 frozen strawberries
- ¼ teaspoon pure vanilla extract
- Pinch of ground cinnamon
- 1 cup almond milk
- ¼ cup full fat unsweetened coconut milk
- 1 teaspoon maple syrup
- 1 tablespoon unsweetened cocoa powder
- ½ cup packed fresh baby spinach leaves
- ½ tablespoon almond butter
- ½ teaspoon tahini
- ½ teaspoon ground flax seed
- ½ teaspoon ground espresso beans

Procedure

Place all ingredients in a blender and blend until smooth. Enjoy your smoothie (and your day!) immediately.

Nutrition Facts per Serving: 244 calories, 19g carbohydrates, 18g fat, 6g protein, 233mg sodium, 9g sugar

References

Gropper, S. S., Smith, J. L., & Groff, J. L. (2009). *Advanced nutrition and human metabolism* (5th ed.). Belmont, CA: Wadsworth Cengage Learning.

Khalid, H., Hanif, M., Hashmi, M. A., Mahmood, T., Ayub, K., & Monim-Ul-Mehboob, M. (2013). Copper complexes of bioactive ligands with superoxide dismutase activity. *Mini-Reviews in Medicinal Chemistry*, 13(13), 1944-1956.

Ubiquinol.org. (2014). Ubiquinol Content in Common Foods. Retrieved September 22, 2014, from <https://ubiquinol.org/foods-with-ubiquinol>