OPEN ACCESS Freely available online

Pediatrics & Therapeutics

Editorial

What are Antioxidants

Anika Cohen*

Department of Pediatrics, Summerfield Healthcare, United States

Antioxidants are compounds that reduce or inhibit cellular damage through their ability to neutralize molecules called free radicals.

Free radicals are molecules that have one or more unpaired electrons in their outer orbit, making them unstable and highly reactive. The body creates them through normal endogenous metabolic processes, including energy production.

The body also produces them in response to environmental and lifestyle factors, such as sun exposure, smoking, alcohol consumption, and more.

Antioxidants inhibit a process called oxidation, which generates free radicals that leads to cellular damage. Antioxidants safely interact with free radicals, neutralizing them before they can cause damage to proteins, lipids, and DNA.

Oxidative stress occurs when there are too many free radicals in the body. This imbalance can occur due to increased production of free radicals or decreased antioxidant defenses.

Free radicals play an important role in the normal physiological functioning of the body and contribute to a person's health. However, when the body produces an excess of free radicals, it can increase a person's disease risk.

For example, many chronic diseases, including heart disease and cancer, have links to progressive damage from free radicals.

Antioxidant defense systems

Cells have antioxidant defense systems that help keep free radical production in check.

For example, cells contain antioxidant enzymes that help reduce free radical levels. The primary antioxidant enzymes in the cells include superoxide dismutase (SOD), catalase (CAT), glutathione peroxidase (GPx), and glutathione reductase (GRx). These antioxidant enzymes are known as first-line defense antioxidants. They help regulate free radical levels by neutralizing both free radicals and other molecules that have the potential to become free radicals.

The body also produces metabolic antioxidants through metabolism. These include lipoic acid, glutathione, coenzyme Q10, melatonin, uric acid, L-arginine, metal-chelating proteins, bilirubin, and transferrin.

However, there are some antioxidants that the body cannot produce, which means a person must consume them through food or by taking dietary supplements. These nutrient antioxidants include carotenoids, antioxidant vitamins, including vitamins C and E, selenium, manganese, zinc, flavonoids, and omega-3 and omega-6 fats.

Dietary and supplemental antioxidants tend to receive the most attention within the nutrition world because consuming a diet rich in antioxidants can help boost the body's antioxidant defenses.

Antioxidants in food vs. supplements

Unraveling the intricacies of dietary antioxidants can be challenging and confusing. Many antioxidants occur naturally in food, and countless other compounds that claim to boost the body's antioxidant defenses are available as dietary supplements.

Foods such as fruits, vegetables, spices, and nuts contain thousands of different compounds that act as antioxidants.

For example, grapes, apples, pears, cherries, and berries contain a group of plant chemicals called polyphenol antioxidants. There are over 8,000 different polyphenol antioxidants in nature.

Brightly colored fruits and vegetables also contain high concentrations of carotenoids, another class of antioxidants.

Correspondence: Anika Cohen, Department of Pediatrics, Summerfield Healthcare, United States

Received date: June 02, 2021; **Accepted date:** June 16, 2021; **Published date**: June 23, 2021

Citation: Anika Cohen (2021) What are Antioxidants. Pediatr Ther. 11:e371