

Antioxidants in Vegetable Crops

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Antioxidants are naturally occurring plant or chemical substances that protect the body from damage caused by harmful molecules known as free radicals. Antioxidants prevent oxidation, which can cause damage to cells and may contribute to aging. This helps in improving immune function and also lowers the risk for infection, cardiovascular disease, and cancer. Antioxidants exist as vitamins, minerals and other compounds in foods. A diet containing plenty of fruits and vegetables, whole grains and nuts can supply all the antioxidants to the body. Diets rich in antioxidants can be very beneficial.

Antioxidants include carotenoids (a form of vitamin A) — the substance that gives fruits and vegetables their deep rich colors. Apricots, broccoli, pumpkin, cantaloupes, spinach and sweet potatoes are good choices. Foods containing vitamins C and E are also good sources of antioxidants, as well as selenium and zinc.



Antioxidants in Foods

Antioxidants tend to work best in combination with other nutrients, plant chemicals, and even other antioxidants. Epidemiological prospective studies show that higher intakes of antioxidant-rich fruits, vegetables, and legumes are associated with a lower risk of chronic oxidative stress-related diseases like cardiovascular diseases, cancer, and deaths from all causes. A plant-based diet is believed to protect against chronic oxidative stress-related diseases. The following are the most commonly known antioxidants & their food sources:



- **Vitamin C:** Broccoli, Brussels sprouts, cantaloupe, cauliflower, grapefruit, leafy greens (turnip, mustard, beet, collards), honeydew, kale, kiwi, lemon, orange, papaya, snow peas, strawberries, sweet potato, tomatoes, and bell peppers (all colors)
- **Vitamin E:** Almonds, avocado, Swiss chard, leafy greens (beet, mustard, turnip), peanuts, red peppers, spinach (boiled), and sunflower seeds
- **Carotenoids including beta-carotene and lycopene:** Apricots, asparagus, beets, broccoli, cantaloupe, carrots, bell peppers, kale, mangos, turnip and collard greens, oranges, peaches, pink grapefruit, pumpkin, winter squash, spinach, sweet potato, tangerines, tomatoes, and watermelon
- **Selenium:** Brazil nuts, fish, shellfish, beef, poultry, barley, brown rice
- **Zinc:** Beef, poultry, oysters, shrimp, sesame seeds, pumpkin seeds, chickpeas, lentils, cashews, fortified cereals
- **Phenolic compounds:** Quercetin (apples, red wine, onions), catechins (tea, cocoa, berries), resveratrol (red and white wine, grapes, peanuts, berries), coumaric acid (spices, berries), anthocyanins (blueberries, strawberries).

Health Benefits of Antioxidants

- ❖ The American Heart Association recommends a diet high in fruits, vegetables and other foods that contain antioxidants to help fight cardiovascular disease.
- ❖ Lycopene is concentrated in tomato soups, sauces, tomato paste and other tomato products, and is also available in smaller amounts in fresh tomatoes, watermelon and pink grapefruit. Cancers of the mouth, pharynx, esophagus, stomach, colon and rectum can be prevented by lycopene and lutein may help in lowering the risk of macular degeneration.
- ❖ Vitamin C's ability to reduce the severity of the common cold is indicative of its effect on the immune system. Most fruits and vegetables provide some Vitamin C. Citrus fruits, kiwi, tomatoes and sweet peppers are particularly good sources.

- ❖ Antioxidants protect against some of the degenerative effects on the body of age-related diseases that can lead to early death. A diet high in antioxidants, especially those found in blueberries, strawberries and spinach may also help fight the loss of brain function associated with aging.
- ❖ The protective effect of antioxidants continues to be studied around the world. For instance, men who eat plenty of the antioxidant lycopene (found in tomatoes) may be less likely than other men to develop prostate cancer.

Conclusion

Eating a diet that includes a variety of fresh, deeply colored fruits and vegetables, such as broccoli, spinach, tomatoes, sweet peppers, carrots, mangoes, kiwi, berries and cantaloupe and other plant foods, such as grains, legumes (beans, lentils, and split peas) and nuts, is the safest and most effective way to boost your antioxidant supply and reap the health benefits these substances may convey.

