

Delay aging process - Antioxidants and Free radicals

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Some basic knowledge we should know before understanding antioxidants and free radicals : Our cells are composed of many molecules. Molecules consist of one or more atoms of one or more elements joined by chemical bonds.

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What are Antioxidants?

Antioxidants are dietary substance that protect body cells from the damage caused by oxidation from free radicals (free oxygen radicals).

{bot_wrgoogle}Antioxidants neutralize free radicals by donating one of their own electrons, breaking the electron stealing chain reaction. The antioxidant themselves do not become free radicals by donating an electron because they are stable in either form. Antioxidants act like scavengers, preventing cell damage.

"Antioxidant, the natural cleanser for our body."

What are free radicals?

Free radicals are atoms with unpaired number of electrons, and then their chemical structures are very unstable. To gain stability, free radicals react quickly with other molecules by attacking the nearest stable molecule and stealing its electron. When the "attacked" molecule loses its electron, it becomes a free radical itself, these highly reactive radicals beginning a chain reaction, like dominoes. Once the process is started, it can cascade, finally causing cell damage. Cell disruption from free radicals contribute to aging and many chronic disease.

Where free radicals come from?

When oxygen is metabolised (called oxidation), it creates free radicals.

Free radicals are naturally produced. Oxidation happens everyday in our normal metabolic processes and our exposure to environment like tobacco, smoke and radiation. Breathing, eating, going out in the sun all contribute to the process of oxidation.

Oxidation can be accelerated by stress, cigarette smoking, sunlight, pollution things that people put into their bodies such as alcohol, unhealthy foods and other factors.

Free radicals are very unstable molecules that can freely react with and destroy healthy cells, leading to cell dysfunction. Free radicals are believed to play a role in cancer, heart, eye, neurological and other diseases because they can bind to and alter the structure of DNA (genetic material) thus leading to mutations and eventually to cancer.

The effects of free radicals

Some of the degenerative conditions caused by free radicals include:

speeding up of the ageing process

various forms of cancers

Increased risk of heart disease, since free radicals encourage low density lipoprotein cholesterol (LDL – bad cholesterol) to adhere to artery walls.

Damage to nerve cells in the brain like Alzheimer’s or Parkinson’s disease,

decline of the immune system

Deterioration of the eye lens, cataracts which lead to blindness (Age-related macular degeneration - AMD)

Inflammation of the joints (arthritis)

Etc.

Benefits of antioxidants

Preventing oxidation process, we will live longer healthily and look younger. Antioxidants help reduce or eliminate the risk of certain illnesses, lower risk for infection, cancer and also improve our immune body system.

Sources of antioxidants

Because oxidation happens naturally by our metabolism and environmental exposure, consumption of antioxidants must to maintain health. Our body has some defense mechanism to against free radicals oxidation. The body can produce some antioxidants like glutathione, lipoic acid, and CoQ10 in a small extent and these antioxidants level decline with age and studies found that these our own antioxidants become less and less effective with aging. Our body does not manufacture antioxidants much, we can have antioxidants only in the diet.

Antioxidants are found in certain foods. These include fruits and vegetables, nuts, grains, and some meats, poultry and fish. The most common antioxidants are the vitamins A, C, E and beta-carotene. These nutrients are commonly found in fruits and vegetables, those with the strong colors being healthier such as pumpkin, mangoes, carrots, orange tomatoes and spinach. Additional antioxidants are found in grapes, wine, selenium, minerals copper and zinc. Flavonoids consist of a large family of antioxidant compounds found in fruits and vegetables such as catechins from green tea, genistein from soy, anthocyanins from cranberries etc.

Eating raw fruits and raw vegetables rather than cooked, gives us the highest concentration and best absorption of antioxidants. (Note: except for carrot and tomatoes, both cooked will give more benefits than raw) Dietary supplements are another solution for those do not consume enough antioxidant-producing foods.

A recent review of current literature suggests that fruits and vegetables in combination have synergistic effects on antioxidant activities leading to greater reduction in risk of chronic disease, specifically for cancer and heart disease.

the American Cancer Society suggests five daily serves of fruit and vegetables. One serve is a medium-sized piece of fruit or a half-cup of vegetables.

Vitamin E : d-alpha tocopherol. A fat soluble vitamin found in nuts, seeds, vegetable and fish oils, whole grains especially. wheat germ, fortified cereals, and apricots.

Vitamin C : ascorbic acid. A water soluble vitamin foundt in citrus fruits, green peppers, cabbage, spinach, broccoli, kale, cantaloupe, kiwi, and strawberries.

Beta-carotene : a precursor to vitamin A (retinol) found in egg yolk, milk, butter, spinach, carrots, squash, broccoli, tomato, cantaloupe, peaches, and grains. Beta-carotene is converted to vitamin A within the body.

EGCG in green tea, the most powerful antioxidant - yet discovered. EGCG is at least 100 times more effective than vitamin C and 25 times than vitamin E.

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