

ANTIOXIDANTS IN AUTOIMMUNE DISEASE

The Benefits Found in Food and Supplements

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Oxidative stress is a major factor contributing to autoimmune disease. Learn about the role of antioxidant supplements in reducing the effects of stress.

Understanding Oxidative Stress

Oxidative stress may occur as a result of the aging process, nutrient deficiencies, psychological and physical stressors, and as a result of exposure to environmental toxins and environmental triggers. In oxidative stress, free radicals are formed. It's long been known that these molecules are detrimental to cell health and survival.

In addition, cell mitochondria, which are the energy reservoirs within cells, are damaged by oxidative stress. Researchers have recently found that preserving mitochondrial health is critically important for preventing disease and promoting good health.

Cell Mitochondria

Mitochondria are tiny cellular organelles that contain their own DNA. The human body contains trillions of mitochondria that are scattered within the body's cells. Mitochondria produce energy in the form of adenosine triphosphate or ATP. This energy is essential for life and optimal health.

Antioxidants

Antioxidants include a number of different plant and chemical molecules that quench or mop up these free radicals. Antioxidants used to counter the effects of autoimmune disease include alpha lipoic acid, acetyl-L-carnitine, carnosine, Coenzyme Q10, benfotiamine, luteolin, plant enzymes, and rhodiola.

Therapeutic Effects

Besides promoting mitochondrial health, these antioxidants protect brain cells from accumulating plaque, restore hearing loss in patients with autoimmune hearing disorders, and they restore the body's energy.

In clinical trials conducted at the Imperial College University in London, acetyl-L-carnitine showed good effects in patients with Alzheimer's disease and other forms of dementia. Carnitine has previously been reported to reduce the effects of hyperthyroidism in patients with Graves' disease. Many of these symptoms are a direct result of oxidative stress.

Alpha lipoic acid has recently been shown to improve neuromuscular function in patients with multiple sclerosis. Another antioxidant, the hormone vitamin D, has also been used with good results in patients with MS. Researchers at Italy's National Cancer Research Institute have demonstrated the ability of alpha lipoic acid to prevent and reverse the course of MS and other neurological disorders and prevented the onset of demyelination. Alpha lipoic acid is also known to improve the antioxidant properties of other antioxidants such as vitamin C, vitamin E and glutathione. Both acetyl carnitine and alpha lipoic acid are routinely used to prevent neuropathy and muscle wasting in patients with acquired immune deficiency syndrome (AIDS).

The antioxidant carnosine prevents the glycation process in which sugar and protein molecules combine. Glycation is one of the primary causes of aging and contributes greatly to the disease process in musculoskeletal and neurologic disorders. Advanced glycation processes promote inflammation and brain cell destruction (neurotoxicity).

The antioxidant benfotiamine, which is an altered form of the B vitamin thiamine is particularly effective for patients with diabetes. Used in Germany for the neuropathy that can occur in diabetes for more than a decade, benfotiamine is able to block chemical pathways that promote nerve damage. It is also reported to block activate of various pro-inflammatory factors produced during the immune response. These factors or cytokines contribute to disease in all autoimmune diseases.

The herb Rhodiola is another antioxidant that acts as an adaptogen or immunogen, restoring immune system health and helping provide resistance to oxidative stress. Rhodiola is very beneficial for fatigue associated with autoimmune disorders and chronic fatigue syndrome, and it is also reported to improve performance in endurance exercise.

The plant flavinoid luteolin is known to neutralize free radicals and inhibit the destructive effects of cytokines. Luteolin has been used in autoimmune asthma to reduce the inflammatory process that constricts airways.

Wheat corn and soy sprout enzymes are also being used for their antioxidant properties to reduce symptoms of joint pain in rheumatoid arthritis and Sjogren's syndrome and to relieve pain and fatigue in chronic fatigue syndrome. In holistic veterinary medicine, wheat sprout enzymes are used to reduce pain and improve neuromuscular function in dogs with hip dysplasia.

Studies show low antioxidant levels, particularly low glutathione and superoxide dismutase levels, in patients with rheumatoid arthritis and other autoimmune rheumatic disorders. Dietary intake of these antioxidants was also found to be lower in these subjects. In studies of patients with MS, changes in altitude associated with lower vitamin D levels were associated with a higher disease prevalence.

Natural and synthetic antioxidants are an important factor in successful aging and disease prevention. Their role in the prevention and amelioration of symptoms in autoimmune disease is currently being studied at various universities worldwide.

Resource: Promoting Mitochondrial Health, Dale Kiefer, Life Extension Foundation Journal, February 2005.