CALORIE RESTRICTION

Benefits of Calorie Restriction in Autoimmunity

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Long known to increase longevity, calorie restriction has recently been found to prevent autoimmune disease and improve health.

Calorie Restriction Protocol

Calorie restriction, a dietary regimen that has long been known to increase longevity, has recently been found to prevent autoimmune disease and slow down immune system aging. Calorie restriction with adequate nutrition improves immunity by increasing the T-cell population, lowering levels of the cytokine interleukin-6 (IL-6) and reducing levels of triiodothyronine (T3). The link between calorie restriction and longevity may be a consequence of more efficient immunity, which causes reduced susceptibility to disease.

Calorie restriction refers to the habit of limiting dietary energy intake (calories) to amounts 25-60 percent lower than control groups while following a diet that provides adequate lean protein and micronutrients (calorie restriction with optimal nutrition). The beneficial effects of calorie restriction were first demonstrated in 1934 by researchers at Cornell University who showed that laboratory rats that followed a reduced calorie diet had life spans twice as long as expected.

Aging

Recent findings suggest that there are a few molecular pathways that influence the aging process. Calorie restriction appears to enhance immunity and inhibit these pathways, interfering with the aging process. The reduction of protein turnover seen in a calorie restricted regimen may help by reducing the accumulation of these potentially harmful proteins and by reducing glycation (the linking of sugar and protein molecules that contributes to aging).

Benefits of Calorie Restriction

The benefits of calorie restriction include: lowered systolic blood pressure, improved immune system function, improved thyroid function, improved cardiovascular health, increased levels of the hormone DHEA, reduced risk of autoimmune disease, and reduced incidence of lymphoma, kidney disease and certain cancers. Benefits were not found in patients with amyotrophic lateral sclerosis (ALS) although age-associated declines in psychomotor and spatial memory tasks were reduced.

Studies with Mice
Subjects studied for the effects of calorie restriction ate foods with a high nutrient to energy ratio such as vegetables, fruits, nuts, dairy products, egg whites, wheat, soy and meat while avoiding processed foods, foods rich in refined carbohydrates, free sugars, and partially hydrogenated oils. In studies, mice with known genetic traits conferring susceptibility to autoimmune disease kept on a calorie restriction diet remained free of autoimmune disease.

Studies also showed lower T3/FT3 levels and unchanged TSH and FT4 levels in subjects following calorie restriction even though body fat remained lower. The lowering of T3 is thought to be involved in the reduced aging and heightened immunity similar to that seen in the "euthyroid sick syndrome" in which thyroid hormone levels change in bedridden patients to conserve the body's energy requirements.

**Resources:**

Calorie Restriction Society.


Fontana, Luigi, Klein, Samuel, et al, Effect of Long-Term Restriction with Adequate Protein and Micronutrients on Thyroid Hormones.

Tran, Cathy, Calorie Restriction Slows Down Immune Aging, The Scientist, December 5, 2006.

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