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Life Extension Update Exclusive

Animals on calorie restricted diets stay fit longer

The October issue of *Journals of Gerontology Series A: Biological Sciences and Medical Sciences* reported the discovery of researchers at the State University of New York at Buffalo that restricting calories, a technique long proven to extend the life span of laboratory animals, enabled rats to maintain their physical fitness into their later years.

UB School of Public Health and Health Professions assistant professor of exercise and nutrition sciences Tongjian You, PhD, and associates evaluated 18, 24 and 29 month old male rats, equivalent in age to humans 50 to 70 years old. The animals had been divided to eat as much as they wanted from birth or to receive diets that contained 40 percent fewer calories than the normal amount. The rats were tested for grip, swimming speed, muscle tone and stamina, and data was obtained on whole body mass, lean body mass, fat mass, proinflammatory cytokine levels, and C-reactive protein, a marker of inflammation.

Rats that received the restricted diets had significantly higher physical performance scores than animals on normal diets, less body and visceral fat and a reduced fat to lean ratio. The animals also experience lower adipose secretion of the proinflammatory cytokine interleukin-6 (IL-6) and decreased circulating C-reactive protein.

Reduced levels of interleukin-6 may be the mechanism through which the benefits associated with calorie restriction in this study occurred. Inflammation can cause chronic disease and reduce physical performance.

"This is the first study to report that caloric restriction reduced production in visceral fat of the inflammatory cytokine IL-6 and enhanced performance on overall physical function assessments," Dr You announced. "In addition, rats that ate a normal diet lost a significant amount of lean muscle mass and acquired more fat, while calorie-restricted rats maintained lean muscle mass as they aged."

"Based on an average of 2,000 calories per day for adult women and 2,500 for men, cutting by 40 percent would mean surviving on 1,200 and 1,500 calories per day, respectively," Dr You observed. "It's very difficult for people to maintain that type of diet for short periods of time, and it would be nearly impossible over a lifetime, while staying healthy."

Dr You suggested restricting calories by 8 percent as a more practical goal. "Preclinical testing of this 8-percent regimen could be informative and beneficial in translating to humans," he noted.

Health Concern

Caloric restriction

It appears that caloric restriction works by slowing biological aging in many ways, including decreasing reactive oxygen species (ROS) damage to cells, limiting inflammation, enhancing insulin sensitivity, and repairing damaged cells. Certain nutrients have demonstrated similar effects, leading one group of researchers (Lemon JA et al 2005) to attempt to mimic calorie restriction with optimal nutrition (CRON) with a formula containing 31 ingredients that included a wide range of antioxidants and nutrients that have been extensively studied in humans (such as vitamin E, vitamin C, coenzyme Q10, glutathione precursors, and essential fatty acids).

This formula was given to normal mice and mice that over-expressed growth hormone. The mice that over-expressed growth hormone were larger and had a shorter life span than the normal ones, presumably because they aged faster.

The results were dramatic. Supplementation extended the life span of the growth hormone mice by 28 percent, to 431 days. In normal mice, supplementation extended life span by 11 percent on average, from 688 days to 765 days (Lemon JA et al 2005).

How does this 11 percent increase in longevity in normal mice compare to caloric restriction? Although a CRON group was not included in the study described above, other investigators have reported that 40 percent restriction in calories increased survival in the same strain of mice about 19 percent (Forster MJ et al 2003). Thus, supplementation yielded about half as much longevity as caloric restriction.

http://www.lef.org/protocols/lifestyle_longevity/caloric_restriction_01.htm

Featured Products

Enhanced Fiber Food Powder

Enhanced Fiber Food Powder provides natural, bulk-producing soluble fiber. By taking these kinds of soluble fibers before meals, one can often achieve earlier satiety, thereby reducing one's calorie intake.

The unique blend of soluble fiber binds with cholesterol released into the intestines, helping to carry excess cholesterol out of the body. Calcium is added to enhance the properties of the fat-binding of the fiber to carry excess fat out of the body, assisting in weight loss regimens by reducing calorie intake via fat.

<http://www.lef.org/newshop/items/item00907.html>



Resveratrol Capsules

Findings from published scientific literature indicate that resveratrol may be the most effective plant extract for maintaining optimal health. Resveratrol, a constituent of red wine and possessing diverse biochemical and physiological actions, including estrogenic, anti-platelet, and anti-inflammatory properties, has long been suspected to have cardioprotective effects.

<http://www.lef.org/newshop/items/item00970.html>



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<http://www.LEVacations.com>

If you have questions or comments concerning this issue or past issues of *Life Extension Update*, send them to ddye@lifeextension.com or call 954 202 7716.

For longer life,



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