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In this issue

Life Extension Update Exclusive:

Multinutrient supplement extends lifespan in mouse model of aging

Protocol:

Prevention

Featured Products:

Life Extension Mix Capsules

Mitochondrial Energy Optimizer

Life Extension Update Exclusive

Multinutrient supplement extends lifespan in mouse model of aging

Researchers at McMaster University in Ontario, Canada, reported in the March 2005 issue of the *Journals of Gerontology Series A—Biological Sciences and Medical Sciences* (<http://biomed.gerontologyjournals.org/>) that a complex dietary supplement extended lifespan and prevented or delayed some of the signs of aging in mice bred to experience accelerated aging.

Jennifer Lemon of McMaster's department of biology and her colleagues used mice bred to overexpress growth hormone. Overexpression of growth hormone had been found in previous research with mice to accelerate aging and reduce lifespan. One hundred twenty of these transgenic mice were supplemented beginning at the age of 2 months with a formula designed to address key factors of aging by reducing oxidative stress and inflammation, promoting membrane and mitochondrial integrity and increasing insulin sensitivity. The formula consisted of vitamins B1, B3, B6, B12, C, D and E, acetyl-L-carnitine, alpha-lipoic acid, acetylsalicylic acid, beta-carotene, bioflavonoids, chromium picolinate, cod liver oil, coenzyme Q10, DHEA, flax seed oil, folic acid, garlic, ginger, ginkgo, ginseng, green tea extracts, L-glutathione, magnesium, melatonin, N-acetyl-cysteine, potassium, rutin, selenium and zinc. Two hundred five of the transgenic mice served as controls. The supplement was also given to 25 normal mice who did not overexpress growth hormone, while 75 normal mice did not receive the supplement.

The researchers found that the supplemented transgenic mice had increased survivorship at all ages compared to transgenic mice who did not receive the formula, and that they experienced a 28 percent increase in mean longevity compared to untreated mice. Twenty percent of untreated mice died before any of the supplemented transgenic mice had expired. When the normal mice were compared, the supplemented group also lived longer than those who did not receive the supplement, with an 11 percent increase in mean longevity found in treated compared to untreated mice.

When the mice were evaluated at 12 months of age, 14 percent of the untreated transgenic mice and 6 percent of the normal untreated mice had cataracts, while none of the supplemented transgenic mice and only 4 percent of the normal supplemented mice had the condition. The loss of body weight that normally occurs at this age was completely absent in the normal supplemented mice compared to 10.9 percent of the unsupplemented normal mice, and was also lower in the supplemented transgenic mice than in those that were not supplemented. Arthritis was also significantly reduced and coat quality improved in supplemented mice. The main cause of death of the mice in all groups was determined to be kidney and liver degeneration, which was apparently delayed in the supplemented mice.

The authors write that "Simultaneous treatment for multiple processes contributing to aging may benefit strongly by acting synergistically on these interdependent processes. Our results confirm that complex formulations can indeed obtain remarkable results."

Protocol

Prevention

The premise of taking actions to maintain youthful health and vigor is based on findings from peer-reviewed scientific studies that identify specific factors that cause us to develop degenerative disease. These studies suggest that the consumption of certain foods, food extracts, hormones, or drugs will help to prevent common diseases that are associated with normal aging.

Therefore, the concept of disease prevention can be defined as the incorporation of findings from published scientific studies into a logical daily regimen that enables an individual to attain optimal health and longevity.

The National Academy of Sciences published three reports showing that the effects of aging may be partially reversible with a combination of acetyl-L-carnitine and lipoic acid (Hagen et al. 2002). One of these studies showed that supplementation with these two nutrients resulted in a partial reversal of the decline of mitochondrial membrane function while consumption of oxygen significantly increased. This study demonstrated that the combination of acetyl-L-carnitine and lipoic acid improved ambulatory activity, with a significantly greater degree of improvement in the old rats compared to the young ones. Human aging is characterized by lethargy, infirmity, and weakness. There is now evidence that supplementation with two over-the-counter supplements can produce a measurable antiaging effect.

The second study published by the National Academy of Sciences showed that supplementation with acetyl-L-carnitine and lipoic acid resulted in improved memory in old rats. Electron microscopic studies in the hippocampus region of the brain showed that acetyl-L-carnitine and lipoic acid reversed age-associated mitochondrial structural decay. In the third National Academy of Sciences study, scientists tested acetyl-L-carnitine and lipoic acid to see if an enzyme used by the mitochondria as biologic fuel could be restored in old rats. After 7 weeks of supplementation with acetyl-L-carnitine and lipoic acid, levels of this enzyme (carnitine acetyl-transferase) were significantly restored in the aged rats. Supplementation also inhibited free radical-induced lipid peroxidation, which enhanced the activity of the energy-producing enzyme in the mitochondria. The scientists concluded that feeding old rats acetyl-L-carnitine and lipoic acid can ameliorate oxidative damage, along with mitochondrial dysfunction.

<http://www.lef.org/protocols/prtcl-131.shtml>

Featured Products

Life Extension Mix Capsules

Life Extension Mix is one of the most complete multi-nutrient formulas on the market. This formula saves time and money by combining the most popular nutrient supplements into one product, eliminating the need to take separate bottles of B-complex, vitamins C and E, mineral supplements, and much more that would be required to achieve the same effects.

Life Extension Mix is the cornerstone of a comprehensive supplement program because it provides so many well-studied nutrients.

<http://www.lef.org/newshop/items/item00764.html>

Mitochondrial Energy Optimizer with SODzyme

Mitochondrial Energy Optimizer formula helps restore mitochondrial respiratory control by lowering natural antioxidant leakage and boosting cellular levels of R-lipoic acid, acetyl-L-carnitine, and endogenous antioxidant enzymes.

This product also provides a powerful new antioxidant called SODzyme, a blend of soy, corn, and wheat sprouts; carnosine, a guard against glycation; benfotiamine; vitamin B1 to protect cells against glucose toxicity; rhodiola, an herb shown to support mental well being, short-term memory, and concentration; and luteolin, a flavonoid shown to lower proinflammatory agents.

<http://www.lef.org/newshop/items/item00768.html>

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