Anti-Age Your Mitochondria

by Margy Squires

Research in the past three decades suggests that mitochondria may be the keys to unlock the doors leading to aging. It appears that the health of mitochondria affect the lifespan for the whole organism, according to cell and animal models. Keep mitochondria healthy; live longer.

Three possible mitochondria (MT) mechanisms are suggested: 1) oxidative damage to MT DNA resulting in mutations that replicate, 2) MT dysfunction due to nutrient deficiencies and 3) shortening of MT telomere length. Although debate exists over which contributes the most effect, collectively they add up to cell decline and/or demise.

Mitochondria are double-membrane organelles within each cell that generate energy to sustain function of the entire body. This article is too short to explain details but essentially two (ATP) energy producing cycles operate within the MT double membrane. The process requires using oxygen which creates free radicals. If oxidative (free radical) damage occurs to the membrane, the enzyme reactions within are challenged. Secondly, mitochondria are unique in that they have DNA separate from the cell's DNA (genetic code) but they lack a defense system against oxidation. They also cannot repair themselves if damaged. Genetic DNA are protected in chromosome "packages", sealed with telomere "caps" If the telomeres are destroyed, the DNA are left vulnerable and potentially cell replication could cease and the cell die, compromising whole organ systems.

If that weren't complicated enough, numerous nutrients to provide fuel build enzyme complexes and complete the two cycle energy process may be missing in action. You're probably thinking, this is way too confusing! I can make it simpler. Here's a partial list of the nutrients needed for the two cycle process: acetyl L-carnitine, magnesium, alpha lipoic acid, vitamin C, several B vitamins, niacin, CoQ10 and tryptophan. Antioxidant protection is provided by glutathione, alpha lipoic, vitamins C and E. Nutrients shown to support telomere length are daily multivitamin, antioxidants, omega 3 and vitamin D. Telomere length decreases with smoking, stress and age.

The take home message is that your body requires energy to live. Heart cells have thousands of MT for its high energy needs; other cells only dozens. MT dysfunction is implicated in aging but also in disease. Anti-aging scientists have added nutrients that support mitochondria to aged and diseased heart, liver, nerve, cancer and brain cells; and slowed the disease process by rejuvenating MT. Age markers like osteoporosis, baldness, slow movement and dementia are decreased. L-carnitine, alpha lipoic and magnesium are three nutrients being researched specifically. Human studies are in progress. Time will tell if mitochondria truly are the fountain of youth.

To find out more about individual nutrients, visit our Health Library at www.e-tyh.com or call 800-801-1406

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