Metallothionein: Forgotten Antioxidant: Missing Puzzle Piece F...
Metallothionein is a powerful cysteine-rich, zinc-powered antioxidant, protective of brain cells, binds to a variety of toxic metals, including mercury and copper (zinc and copper are also antagonistic), the toxicity of which are strongly implicated in Alzheimer's disease. A deficiency of metallothionein leads to an inability to scavenge toxic mercury, cadmium, copper and other metals. Metals accumulate in tissues. End of story? Nope.

APOE Gene Mutations & Metallothionein

APOE gene mutations are considered a major risk factor for the development of Alzheimer's disease. APOE (apolipoprotein E) are mediators of cholesterol metabolism. According to research, carriers of APOE4 double mutations have 10-30X higher risk of developing Alzheimer's. However, these projections don't always play out in reality. At current estimates, 1/3rd of Alzheimer's patients don't have APOE4 mutations.

Most of the recent research on APOE4 has centered around the accumulation of oxidized cholesterol in the brain, contributing to the build-up of beta amyloid plaque. However, there is dissenting opinions as to whether the cholesterol theory of Alzheimer's has merit. Stephanie, Seneff, PhD, an MIT scientist has reason to believe based upon literature that statins, (cholesterol-lowering drugs) actually cause Alzheimer's.

University of Kentucky retired chemist Boyd Hayley, PhD has been very vocal on APOE4 mutations and Alzheimer's. He believes that carriers of APOE4 mutations are susceptible to Alzheimer's because of APOE4's "lack of a cysteine" amino acid, and consequently, the inability for APOE4 (a "housekeeping, protective protein") to scavenge mercury from the brain. Whereas APOE2 bears cysteine, and is considered protective of mercury.

Remember that cysteine is a critically important sulfur-bearing amino acid in glutathione synthesis, as well as in metallothionein synthesis.

Amazingly, recent research directly links APOE-3 and APOE-4 gene mutations with a decreased expression of metallothionein!

Pay close attention to future research that explores the relationship between APOE and metallothionein, as well as therapies that may help to promote the synthesis and expression of important antioxidants like MT.

Metallothionein Promotion Therapy

Preliminary trials are underway. The man leading the charge in the realm of metallothionein promotion therapy is William J. Walsh, Phd. A longtime research scientist of brain biochemistry and advanced nutrient therapies, Dr. Walsh has reported very positive initial success with metallothionein nutrient therapy among an Alzheimer's group.

There is no doubt that future research in this field is needed critically. Bringing attention and recognition to metallothionein as an important, functional antioxidant is highly warranted.

Michael and Julie offer a variety of Health and Nutrition consulting services. Click Here to find out how you can benefit from a private consultation.

If you would like to speak with Michael and Julie regarding your health & nutrition needs, or to schedule a private consultation, please contact us here.

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Sources

Sources:


(4) Boyd Hayley, Phd

Hijova, E: Institute of Experimental Medicine, Faculty of Medicine, Slovakia: 'Metallothioneins and zinc: their functions and interactions', 2004
