

Subclinical Zinc Deficiency in Alzheimer's Disease and Parkinson's Disease

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FROM ABSTRACT

To evaluate zinc status in Alzheimer's disease and Parkinson's disease, 29 patients with Alzheimer's disease, 30 patients with Parkinson's disease, and 29 age- and sex-matched controls were studied. All patients and controls were older than age 50, and all zinc and copper supplements were prohibited beginning 30 days prior to study. Patients were diagnosed by standard criteria.

Blood zinc and urine zinc were measured.

Results showed significantly lower blood zinc in patients with Alzheimer's and patients with Parkinson's than in controls.

These patients are probably zinc deficient because of nutritional inadequacy.

KEY POINTS FROM THIS ARTICLE:

- 1) Zinc is very important in brain function.
- 2) Alzheimer's disease (AD) and Parkinson's disease (PD) are diseases of aging.
- 3) Elderly people often have zinc deficiency.
- 4) "Unexpected significantly low serum zinc concentrations were found in patients with Alzheimer's disease and Parkinson's disease compared to age-matched controls."
- 5) Patients with Alzheimer's and Parkinson's statistically have significant lower mean serum zinc levels.
- 6) In 1992, a study of zinc supplementation in Alzheimer's reported cognitive improvement in 80% of participants in 3 to 6 months.
- 7) The hippocampus is heavily involved in short-term memory and severely affected in Alzheimer's, and contains one of the highest levels of zinc in the brain.
- 8) "Zinc in the hippocampus plays an important role as a synaptic neurotransmitter that modulates N-methyl-D-aspartic acid (NMDA) receptor activity that limits neuroexcitation." [This means that zinc is neuroprotective from

excitotoxic neuron death. The two classic excitotoxins include glutamate and aspartate. Both glutamate and aspartate are amino acids that function as excitatory neurotransmitters, and are consequently often added to foods to enhance taste. In excess, they literally excite neurons to death. Glutamate is ubiquitous in packaged foods. Glutamate is often found in its salt form monosodium glutamate or MSG. Glutamate is often hidden in foods by dozens of names, including hydrolyzed vegetable protein, etc. Aspartate is half of the molecule aspartame, commonly used in diet sodas and foods].

- 9) Zinc is a key component to numerous neuroprotective enzymes, including those responsible for degradation of Alzheimer's amyloid B.
- 10) Patients with Alzheimer's have a significantly lower level of zinc in their cerebral spinal fluid.
- 11) The NMDA-receptor antagonism and the neuroprotective enzymes probably explain the benefit of zinc supplementation in Parkinson's disease.
- 12) Zinc deficiency is common in elderly participants, which may present as a risk factor for developing both Alzheimer's and Parkinson's.
- 13) In these Alzheimer's and Parkinson's patients, it appeared that their zinc deficiency is being caused by inadequate nutrition.
- 14) Meat is the best source of readily available zinc. Elderly people who do not eat much meat are at risk for zinc deficiency.
- 15) Bringing zinc levels up to normal in zinc deficient people is best done with zinc supplementation.
- 16) Zinc adequacy is very important in brain functions and many other physiologic functions.
- 17) Zinc adequacy is also important in neuronal health, and that zinc therapy would be therapeutically useful in Alzheimer's and Parkinson's in correcting zinc inadequacy.
- 18) Zinc deficiency is also noted in age-related macular degeneration and is significantly benefited by zinc therapy.
- 19) Adequate zinc levels are important in protecting key retinal functions and retinal cellular health.

COMMENT FROM DAN MURPHY

A number of studies suggest a therapeutic dose of supplemental zinc is 15-25 mg/day. Taking too much zinc may produce a deficiency of copper.