

# Lithium Supports Brain Health

"Lithium is a "Cinderella" nutrient in terms of brain health. It's hard to believe that one nutrient can have such a profound effect on the way we experience life."

After reading Dr. Greenblatt's and Kayla Grossman's 2016 book, Nutritional Lithium: A Cinderella Story, it sounds like lithium IS a "Cinderella" nutrient especially in terms of brain health. It's hard to believe that one nutrient can have such a profound effect on the way we experience life. Lithium: modulates dopamine, optimizes serotonin, reduces excess glutamate, decreases inflammation, and suppresses pro-inflammatory cytokines. It also increases concentrations of a key chemical messenger N-acetyl-aspartate (NAA) in the human brain.

Studies have shown that higher levels of NAA are predictive of better long term cognitive function. Lithium protects the brain against free radicals, helps with B12 and folate metabolism. It also reduces excess arachidonic acid while bolstering the DHA.

The brain has a class of growth factors called neurotrophic factors. These proteins signal particular cells in the brain to survive, differentiate, or grow. Lithium stimulates the circulation of at least 2 of them: Brain Derived Neuro-



trophic Factor (BDNF) and Neurotrophin-3 (NT-3).

The brain has a unique way of cleaning up debris from dead or damaged cells called autophagy. Lithium stimulates autophagy and has been shown to remove unwanted amyloid beta and tau proteins, which have been associated with Alzheimer's and dementia. While it helps manage the healthy clearing of unwanted cells, it also assures that excess cellular destruction or unchecked apoptosis does not take place. And if that is not enough, MRIs have documented that lithium has been shown to increase the size of grey matter in the brain.

As you know, grey matter in the brain is responsible for processing information, acquiring knowledge, judgment, problem solving, and decision making, even language. Other studies have shown lithium to increase the part of the brain associated with emotion and memory, the hippocampus. But of all the neurotrophic factors, the most intriguing came from a study that assessed what happened to an isolated nerve cell when it was bathed in a lithium solution. Remarkably, this lone cell began to regenerate and grow when exposed to lithium. Dramatic changes were seen in the number and length of the dendrites of the neuron.

Other studies have revealed that tissue exposed to lithium show a striking increase in the proliferation of progenitor cells, the stem-cell like precursor cells that rapidly divide to create new tissues.

There are two ways to use lithium, pharmaceutically and nutritionally as food. The prescription product lithium carbonate is a salt. 100 mg of the total salt yields 18.6 mg of elemental lithium. Long-term dosing of lithium carbonate is usually 600-1800 mg of the total salt a day, which comes to 113-344 mg of lithium per day. On the other hand, 100 mg of lithium orotate contains 3.83 mg of elemental lithium. As you can see, based on the salt that is used, elemental levels of lithium will be different.

Biotics uses an entirely different food based delivery system. Their unique vegetable culture process allows lithium to be integrated into the plant as part of the growing process. The organic food based tablet not only contains the desired mineral, it contains the enzyme, mineral, and antioxidant cofactors that are naturally found in plants.

Li-Zyme contains 50 mcg of elemental lithium per tablet, whereas, Li-Zyme Forte contains 150 mcg of elemental lithium per tablet. Li-Zyme is a smaller tablet and can be used with children.

Many doctors use a loading dose of 2 tablets per waking hour for 10 days, then 2 tid. This may seem like a big dose. However, 2 tablets only yields 300 mcg. So, in a 16-hour day, a patient will receive 4.8 mg of food based elemental lithium.

Dr. Greenblatt goes into multiple mechanisms for the use of lithium for Lyme disease, Alzheimer's, Parkinson's, and even shares how lithium is important in shaping our genes. He has three criteria that he uses for recommending lithium therapeutically. And if any one of three is present, he suggests a clinical trial of lithium. First, from an objective laboratory perspective, he performs a trace mineral analysis using hair as tissue on every patient. Because serum levels will maintain homeostasis even when cellular levels are depleted, he feels a hair tissue sample is a better indicator. Next, is there a possibility of a genetic weakness seen by a family member who has experienced mental illness? Finally, subjectively if patients complain of irritability as one of their complaints in their initial intake, he suggests a clinical trial.

Lithium has some other alkalizing and electromagnetic properties that make it invaluable in physical conditions as well. So, we'll come back to visit lithium on another day, but for now, if you sense any patient is emotionally overwhelmed, has a trace mineral analysis lithium level that is low, consider a trial of Li-Zyme Forte for 60 days.

I've mentioned on occasion that one of the pioneers in functional medicine, Dr. Jonathon Wright, has been taking it for years prophylactically to increase the grey matter in his brain. Based on his personal commitment to taking it and Dr. Greenblatt's new book, I consider lithium to be one of the unsung mineral heroes when it comes to a healthy brain.

Thanks for reading this week's Tuesday Minute edition. I'll see you next week.