

Low-Dose Lithium: A Review of Why It's Very Good For Us!

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When many of us—especially those who don't listen to *Green Medicine Radio* or read *Green Medicine Newsletter*—hear the word lithium, we know of it only as a possibly dangerous patent medicine prescribed in very high doses for bipolar disorder. But lithium isn't really actually a patent medicine at all...it's a naturally occurring mineral, closely related to sodium, potassium, rubidium, and cesium. Lithium is found in trace amounts in all living things. It's naturally in our food supply in low amounts, primarily in grains and vegetables.

For bipolar individuals, lithium is prescribed in very high amounts, 300 to 600 milligrams of lithium carbonate three times daily. Individuals using these very high doses must have blood levels of lithium checked at regular intervals to minimize the potential for sometimes serious adverse effects. But readers of *Green Medicine Newsletter* read in the January 2018 issue¹ about a research report that 400 micrograms (takes 1000 micrograms to make 1 milligram!) stopped cognitive decline! The researchers reported that three months after starting treatment, cognitive decline had stopped in the group given microdose lithium—and stayed stopped for the rest of the fifteen-month experiment—but cognitive decline continued to get steadily worse in the placebo group.

Green Medicine Newsletter (August 2018)¹ has also reported that lithium and vitamin C together can stop attacks of gout. The same issue also discussed preventing and effectively reversing adverse effects—without eliminating the useful effects—that can occur from taking the very high doses of lithium carbonate prescribed for “bipolar disorder”. *Green Medicine Newsletter* (July 2016)¹ reported and reviewed the book *Nutritional Lithium: A Cinderella Story* written by Clinical Professor of Psychiatry James Greenblatt and Kayla Grossman, R.N.

There are many, many other reasons—too many to discuss them all at length—to consider the use of low dose lithium. Lithium has been found to:

- cause the formation of new brain cells in adults
- reduce risk of or even prevent Alzheimer's disease
- protect brain cells against nearly any toxin

- increase a major brain protective protein (“bcl-2”)
- reduce brain cell death caused by ischemic stroke
- repair brain “signaling pathways”
- improve sense of direction (in experimental animals)
- helps eliminate seborrheic dermatitis
- reduce aggressive behavior in children
- reduce homicide, rape, burglary, suicide (not kidding)
- reduce depression and irritability in alcoholic women
- reduce aggressive behavior in alcoholic men
- reduce relapse in male and female alcoholics
- reduce mental health hospital admissions
- significantly reduce symptoms in fibromyalgia
- significantly reduce “cluster headaches”
- inhibit herpes simplex viruses (HSV1, HSV), adenovirus (common cold), cytomegalovirus, Epstein-Barr virus, measles
- successfully treat—along with iodine—serious hyperthyroidism (“Graves’ Disease”)

Further details about many of these uses for low-dose lithium are, as you know, outlined in the *Green Medicine Newsletter* Special Report titled “Halt Cognitive Decline with Micro-Doses of this Safe But Misunderstood Mineral”. This Special Report is always available for *GMN* subscribers to view in the member’s only area at www.greenmedicineneWSletter.com.

Lithium Promotes Longevity, And Other Effects

A Japanese researcher analyzed mortality data from 1,206,174 individuals living in the Oita prefecture and reported an inverse correlation between the death rate and varying levels of low-level lithium in the tap water. For the few who don’t know, inverse correlation in this report means the higher the lithium levels in the tap water, the less people died and the lower the lithium levels in the tap water the more people died.² The levels of lithium in the Oita prefecture were measurable but really low: 0.7 to 59 micrograms per liter. 59 micrograms per liter translates to 59 parts per *trillion!*

Before reading this next study, I didn’t know (and you likely didn’t either) that a type of “roundworm” (for the technically inclined, “*Caenorhabditis elegans*”) is a “model organism for anti-aging studies”. Previous work by other researchers with “higher than nutritional” quantities of lithium (5 millimoles per liter, still really small) had shown that lithium significantly extends the lifespan of this “model organism.”

In this study, the roundworms were exposed to tiny, tiny amounts of lithium, 10 micromoles per liter of water (1 micromole = .001 millimole), a tiny, tiny amount, but at the upper end of the

range of lithium found in various Oita prefecture tap waters. Even this tiny amount significantly extended the lifespan of the roundworm.

Other researchers found too little lithium in the diet to be associated with an increased risk of mortality in numerous studies conducted in animals from the 1970s to the 1990s. Rats and goats deprived of lithium in animal studies died earlier and developed changes in behavioral and reproductive traits.³

Confirming earlier observations about lithium and suicide reduction, other researchers examining Oita prefecture observed reduced risk of suicide when lithium was found in the drinking water, even at very low levels.⁴ As you may have read in 2003, other observational studies in humans have found a higher risk of violent and criminal behavior in communities in which lithium levels are low, including an increased likelihood of homicide and drug use and higher rates of suicide.⁵

Lithium also appears to be necessary for the proper gestational development of human infants. During the early months of pregnancy, lithium levels of embryos are particularly high. Evidence suggests it may be an essential nutrient, with a minimum intake of 1000 micrograms (1 milligram) a day necessary for proper physiologic function and development for the average 70-kg adult.³

Lithium, Mitochondria, And Cellular Energy

Mitochondria are the “energy engines” found in every cell in our bodies. Mitochondria make “ATP” (for the technically inclined, adenosine triphosphate) which provides over 90% of the total energy used by our cells. An exciting area of lithium research has been the discovery that lithium stimulates the not only the activity and total number of mitochondria, but also protects those mitochondria against toxicity.

In 2006, researchers reported that lithium stimulated the metabolic activity of goldfish liver cell mitochondria.⁶ In 2007, other researchers wrote that lithium increased “mitochondrial biogenesis” (in English, the production of new mitochondria) which resulted in increased ATP production in bovine aortic endothelial cells.⁷ Endothelial cells are the inner lining cells of every artery and vein in our bodies.

In 2009, one research report found that lithium stimulated mitochondrial “oxidative phosphorylation”—a process involved in the production of the energy molecule, ATP—in human brain cells.⁸ A second group of researchers reported that “chronic treatment with lithium...enhanced mitochondrial function” and that “long-term treatment with lithium...protected against methamphetamine-induced toxicity at the mitochondrial level.⁹ [For the technically inclined, several “mechanisms of action” were documented, including that lithium “prevented the methamphetamine-induced reduction of mitochondrial cytochrome c, the mitochondrial anti-apoptotic Bcl-2/Bax ratio, and mitochondrial cytochrome oxidase (COX) activity.”⁹]

As these lithium effects on mitochondria were found in goldfish liver, bovine endothelial cells, and human brain cells, it's very likely that this is a universal action of lithium on mitochondria everywhere they're found: in every human, animal and plant cell! As mitochondria are absolutely necessary to life, if this were lithium's *only* beneficial effect, instead of one of literally dozens, supplementation would already be worth considering.

Boosting Brainpower

Lithium can be used in low doses (up to 20 milligrams daily) as a dietary supplement in the form of lithium orotate or lithium aspartate. Many potential health benefits have been suggested for the use of these low doses of lithium. (For the record: one capsule of prescription lithium carbonate contains over 50 milligrams of lithium; those who take prescription lithium usually take one—and sometimes two—capsules of prescription lithium three times daily!) One of lithium's most important benefits may be its use as a tool for preventing or reducing risk of developing the neurodegenerative changes associated with dementia and Alzheimer's disease.

Individuals with cognitive decline are often found to have accumulated aluminum in the brain. Lithium orotate has the ability to pull aluminum out of the tissues so that it can be removed from the body. While aluminum's role in Alzheimer's disease is still unknown, many have speculated that aluminum toxicity is a factor in its development.

One of my favorite lithium research reports was published in a relatively prestigious medical journal in the year 2000 when *The Lancet* was the first to report¹⁰ an increase in brain "grey matter" caused by lithium. (Remember Hercule Poirot's "little grey cells"?). This study used MRI measurement of brain volume and found up to a 3% increase in just four weeks of lithium use, a significant improvement. (That's the research that got me started on low-dose lithium, as I can use all the new brain cells I can get!)

In 2009, many of the same researchers reported a four-week follow-up study which achieved similar significant increases in grey matter in the brains of bipolar patients.¹¹

Another significant study of lithium's effects on grey matter volume involved twenty-two individuals who had never been treated with lithium and had been off any patent medicines at least two months prior to the study. In this study, research volunteers were randomly assigned to be treated with either lithium or valproic acid (a patent medicine used to treat bipolar disorder and seizures).

They were given MRI brain scans at intervals throughout the 16 weeks of the research study. The brain volume increasing effects of lithium peaked at ten to twelve weeks of treatment and remained high until the end of the study.¹² Valproic acid caused no increase in brain volume at all.

Protecting Against Dementia And Alzheimer's

Taking lithium for even a short time seems to confer protective benefits for those at higher risk for dementia. In a ten-year Danish study, individuals with high risk for dementia who actually took the lithium prescribed for them had no more dementia at the end of ten years than the general Danish population after those 10 years. Another group of individuals with higher risk for dementia who took no lithium ended up with significantly more dementia than the population in general.¹³

Two years later, the same research group reported more data from that ten-year study. This time they looked at the actual occurrence of dementia among over 4000 sufferers from bipolar disorder. Almost exactly half had been treated with lithium, and the other half with other patent medicines, but no lithium. Among the half who took two or more lithium prescriptions, the incidence of dementia was significantly less than among the half who did not.¹⁴

In fact, there's so much evidence that lithium can reduce Alzheimer's risk that the following titles have appeared in medical journal articles^{15, 16, 17}:

- *"Lithium: a novel treatment for Alzheimer's disease?" (2007)*
- *"Lithium, a potential protective drug in Alzheimer's disease." (2008)*
- *"Does lithium prevent Alzheimer's Disease?" (2012)*

If you're not using low-dose lithium already as part of your anti-aging program, maybe it's time to think it over again. Reduction of Alzheimer's risk and very likely increased longevity are only two of the ever increasing, research-backed benefits of low dose lithium being reported. And there's practically no "opposing" research. Since low-dose lithium is safe, and means of keeping it even safer are known¹, maybe it's time to start?

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¹ [Microdose Lithium Stops Cognitive Decline \(January 2018\)](#), [Gout Attacks Eliminated with Lithium and Vitamin C \(August 2018\)](#), [Prevent and Reverse Lithium Toxicity with Essential Fatty Acids \(August 2018\)](#), [Nutritional \(Low-Dose\) Lithium \(July 2016\)](#)

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- ³ Schrauzer GN. *Lithium: occurrence, dietary intakes, nutritional essentiality*. J Am Coll Nutr. 2002;21(1):14-21.
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