

## The Moss Nutrition Digest

### Timely Tidbits to Support Your Practice

July, 2022

#### Magtein® — Brain Focused Magnesium

In the functional medicine community, the value of magnesium as a “master mineral” is well known. A co-factor in more than 300 enzymatic reactions, magnesium participates in protein synthesis, energy metabolism, blood sugar and electrolyte balance, stress and relaxation—the list goes on. Structurally, it is critical for healthy bones. Helping to maintain proper cardiovascular function, muscle function, nervous system function and cognitive ability are a few of the arenas where magnesium plays an integral role.

Depending on how and where we want it to work, different forms of supplemental magnesium may be preferred. Magnesium as it occurs naturally, as carbonate or oxide for instance, exhibits a poorer rate of absorption than magnesium provided in chelated forms such as magnesium citrate, ascorbate, glycinate or malate. As a rule, the more poorly absorbed the form of magnesium, the greater its laxative effect will be per milligram dose. Many people, in fact, take magnesium expressly for the purpose of promoting bowel activity. In such cases, magnesium citrate is considered to be the Goldilocks ideal—neither too gentle, nor too strong. Dosing generally begins with 100-300 mg at bedtime, increasing by one capsule each evening until desired effects are produced, and then tapering down to attain individual maintenance dose.

Doctors accustomed to prescribing magnesium for cardiovascular and metabolic health often choose one of the even better absorbed, albeit more costly forms of chelated magnesium. These can be taken at higher doses prior to eliciting gastrointestinal effects. Magnesium glycinate is perhaps the best known form for such use. Magnesium malate is another. Made with malic acid, a compound often recommended for people with chronic muscle pain, magnesium malate provides the added benefit of promoting deep muscle relaxation, concurrently helping to support sleep and stress reduction. Either of these forms, alone or in a combination product, is a fine choice when higher dose magnesium supplementation is appropriate.

In recent years, an important role for magnesium supplementation in cognitive and brain health has emerged, following the development of a new magnesium chelate with the unusual ability to cross the blood brain barrier. Made by binding elemental magnesium to threonic acid, this exciting compound is referred to in the literature in multiple ways: magnesium-L-threonate, L-Threonic Acid Magnesium Salt (L-TAMS), MMFS-01 or Magtein®, a patented form. By any name, it is the only form of magnesium shown to effectively increase magnesium levels in the brain.

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## Magtein® — Brain Focused Magnesium, ctd.

Magnesium-L-threonate has been shown to increase synaptic density and plasticity in both the hippocampus and prefrontal cortex regions of the brain. Animal and human studies suggest it may help enhance focus, learning ability, working memory, and short- and long-term memory in people with attention deficit disorder, Alzheimer's Disease, and normal age-related memory loss. Anecdotally, many "ordinary" older adults have reported increased focus and sharpness after only a few days of Magtein® supplementation at the recommended dose of 2,000 mg per day (generally 3 capsules, providing 144 mg magnesium).

Some of the most exciting research on magnesium-L-threonate includes a 2016 randomized, double-blind, placebo-controlled trial examining 44 older adults with cognitive impairment. Over the course of 12 weeks, four distinct indices of cognitive ability were examined: working memory, episodic memory, attention, and executive function. Subjects in the treatment group were given either 1.5 or 2 grams of magnesium-L-threonate per day, depending on their body weight (50-70 kg or 70-100 kg). By halfway through the study, patients in the treatment group experienced a significant increase in overall cognitive ability, most notably in the domains of executive function and working memory. Results were even more pronounced after 12 weeks, particularly in the domain of episodic memory. The authors concluded magnesium-L-threonate supplementation improved multiple individual cognitive domains, effectively reversing the equivalent of 9 years of brain aging on average; some subjects attained a remarkable 30 to 40 year reversal in brain aging.

### REFERENCES

1. Gröber U, Schmidt J, et al. Magnesium in Prevention and Therapy. *Nutrients*. 2015 Sep; 7(9): 8199–8226.
2. Slutsky I, Abumaria N, et al. Enhancement of learning and memory by elevating brain magnesium. *Neuron*. 2010 Jan 28;65(2):165-77. doi: 10.1016/j.neuron.2009.12.026.
3. Liu G, Weinger JG, et al. Efficacy and Safety of MMFS-01, a Synapse Density Enhancer, for Treating Cognitive Impairment in Older Adults: A Randomized, Double-Blind, Placebo-Controlled Trial. *J Alzheimers Dis*. 2016;49(4):971-90.
4. Magtein® is protected under a family of patents, pending patents, and is protected worldwide. Magtein® is a registered trademark of Magceutics®, Inc. and is distributed exclusively by AIDP, Inc.

Moss Nutrition offers a range of magnesium products designed to address a variety of individual patient needs.

[Magnesium Citrate](#) provides 120 mg of elemental magnesium per capsule. Available in bottles of 90 or 180 vegetarian capsules.

[Magnesium Select](#)® contains a blend of fully chelated Albion™ Di-Magnesium Malate and TRAACS™ Magnesium Bisglycinate Chelate. Each capsule provides 150 mg of elemental magnesium. Available in two sizes, 100 or 250 vegetarian capsules.

Our new [Magtein](#)® provides 144 mg magnesium from 2,000 mg of magnesium-L-threonate in three capsules, the identical dose to that used in the above study wherein reversal of brain aging was observed. [Magtein](#)® is sold in bottles of 90 vegetarian capsules, a 30-day supply.