

Brain Magnesium with Magtein®

**Doctor's
BEST**

Science-Based Nutrition™



compounds (Mg²⁺ is the most abundant divalent cation, or positively charged ion, in living cells) and developed two new preparations, one of which was MgT. Of the six forms studied, only two had higher bioavailability—and of those two, only MgT was able to enhance memory.¹

Supports memory and learning*

Dietary intake of magnesium is known to affect learning and memory. One interesting example is a study of Taiwanese adolescent girls.⁶ Hair samples from 148 female students were analyzed as a method of determining consumption of trace elements; the data showed that higher learning performance (as measured by academic records of the students) was associated with higher magnesium and zinc levels in their hair.

The brain's hippocampus region is known to be essential for memory and learning processes. Ageing-related decline in memory and learning capacity of the hippocampus may be related to a magnesium deficit.⁷

Promotes stability and adaptability of synapses*

Magnesium is a cofactor for numerous enzymes that control nerve cell functions and synapse integrity. Synapses are the points where nerve cells make close contact with each other via their cell membranes to exchange information. The movements of ions such as Mg²⁺ across the nerve cell membranes can change as we age, adversely affecting cellular excitability, chemical transmitter release, and synaptic plasticity (synapse adaptability).

INGREDIENTS

Doctor's Best Brain Magnesium features the proprietary Magtein® magnesium-L-threonate (MgT), a compound of magnesium, which is a dietary essential mineral. Magnesium from MgT was found in an animal model to be better absorbed when directly compared against magnesium chloride, magnesium glycinate, and magnesium citrate.¹ MgT is also well tolerated, in contrast to the gastrointestinal side effects that can occur with other forms of magnesium supplementation.² Magnesium L-threonate is a magnesium salt of L-threonic acid, a normal metabolic constituent found in the human body—most likely as a breakdown product of vitamin C.³

Magnesium is involved in over 300 metabolic actions as an enzyme cofactor, and helps to maintain cardiovascular health, normal muscle and nerve function, a steady heartbeat, strong bones, blood sugar and energy metabolism, and a healthy immune system.⁴ Lesser known are its contributions towards cognitive and brain health. According to data posted by the USDA Agricultural Research Service, as of 2009 only 32% of Americans meet the Dietary Reference Intakes for magnesium.⁵

BENEFITS

- Unique delivery of magnesium into the brain*
- Supports memory and learning*
- Promotes stability and adaptability of synapses*
- Supports mood and other aspects of cognitive health*

EXTENDED BENEFITS

Unique delivery of magnesium into the brain*

The Magtein® magnesium-L-threonate (MgT) in Doctor's Best Brain Magnesium, in contrast to other magnesium compounds, has been shown to effectively raise magnesium levels in the brain, according to animal research carried out with MgT. The researchers who discovered the advantages of increased brain magnesium on memory in rats first had to figure out which oral form of magnesium would best be able to elevate brain magnesium. They used four commercially available Mg²⁺

Supplement Facts

Serving Size 3 Veggie Capsules
Servings Per Container 30

	Amount Per Serving	%Daily Value
Magnesium	150 mg	35%
(from 2085mg Magtein® Magnesium L-Threonate)		

† Daily Value not established.

Other Ingredients: Modified cellulose (vegetarian capsule), rice flour, magnesium stearate (vegetable source).

Suggested Adult Use: Take 1 capsule in the morning and 2 capsules two hours before bedtime, or as recommended by a nutritionally-informed physician.

Warning: Consult your physician if taking prescription drugs with Magtein®. Not recommended for children or women who are pregnant or breastfeeding.

Non-GMO / Gluten Free / Soy Free / Vegan

Store in a cool dry place.

Do not use if safety seal is damaged or missing.

* These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.

The ability to store new information in nerve cell networks depends on the density and strength of the synapses, and their capacity to adapt to changing information inputs (synaptic plasticity). Additionally, loss of synapse density is correlated with age-dependent memory decline in rats. Numerous animal trials have been performed to measure the effect of magnesium-L-threonate on cognitive outcomes. In a recent investigation, feeding MgT to raise brain magnesium led to significant enhancement of spatial and associative memory in both young and old rats.¹ From the results of this study, which also incorporated experiments with cultured nerve cells, the researchers concluded that increasing the concentrations of brain magnesium induces permanent enhancement of synaptic plasticity in networks of hippocampal neurons.

Fear is a basic survival mechanism that in modern times often causes more distress than is useful to us. Progress has been made in understanding the plasticity of brain circuits involved in lessening fear ("fear extinction"), and how magnesium—particularly magnesium-L-threonate—can be a part of the process. In a 2011 study, Magtein® was administered to rats for 4 weeks to elevate brain magnesium either before or after fear exposure.⁸ When given before fear extinction learning, Magtein® enhanced the retention of fear extinction without altering the original fear memory (this is usually considered beneficial; fear extinction is the lessening of a conditioned fear response). The researchers had previously demonstrated that it took about 2 weeks to elevate brain magnesium levels and enhance memory by MgT.

Memory and learning decline with age, yet magnesium-L-threonate has been shown to slow this decline in mice.⁹ At the cellular level, MgT supported the integrity of synapses in the hippocampus, frontal cortex, and other regions of the brain. Magnesium-L-threonate hasn't yet completed a clinical trial, but human studies have evaluated the effects of magnesium on human memory performance. For example, in a study of 71 men and women higher blood levels of magnesium were associated with superior cognitive function, as measured by clinical ratings and scales.¹⁰

Supports mood and other aspects of cognitive health*

Cognitive health encompasses more than just thinking, learning, memorizing, and recalling events. It also entails diverse elements of mind health such as stress, sleep, and levels of nervous tension. Magnesium is involved in several of these cognitive areas. Just as dietary magnesium intake is known to affect learning and memory functions, so too can its restriction have mental implications, such as increased nervous tension in mice. A study of Chemistry students in Spain looked at biochemical markers such as calcium and magnesium, and reported that increased nervous tension due to exams was associated with more urinary magnesium excretion and partial magnesium depletion.¹¹

According to clinical research, magnesium supplementation can support mood in certain segments of the population, especially in individuals with low magnesium status.¹² In a study of case histories, magnesium was also seen to support mood; the authors suggested that higher magnesium intake could benefit many people because many US populations have insufficient dietary intake of this mineral.¹³ They note that before 1905, adequate magnesium (over 400 mg daily) was more likely in the diet since grains were commonly not refined, but that nowadays refining removes some 84% of the magnesium from wheat flour. In support of findings in humans, magnesium depletion in mice has been shown to alter mood and levels of nervous tension.¹

SAFETY

Magtein® magnesium-L-threonate achieved GRAS (Generally Recognized As Safe) self-affirmation, meaning that a consensus on safety was reached by an independent expert panel of qualified scientists who carried out an extensive review of all available scientific safety data on this ingredient.



SCIENTIFIC REFERENCES

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