Magnesium Glycinate Complex

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Chelated Magnesium Bisglycinate

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Magnesium Glycinate features magnesium bisgylcinate chelate, a highly absorbable form of elemental magnesium.* The buffered combination of magnesium bisgylcinate chelate and magnesium oxide helps to promote the bioavailability of magnesium and helps to support a healthy magnesium status.* Each 2-capsule serving provides 300 mg of magnesium as magnesium bisglycinate buffered chelate. Owing to a unique patented process that forms a very stable chelate between each magnesium ion and two molecules of the amino acid glycine, this formula may not cause any of the unfavorable gastrointestinal (GI) complaints that are sometimes associated with magnesium supplementation, such as loose stools or upset stomach.* One of the best absorbed forms of magnesium is a stable chelate with glycine that bypasses normal modes of absorption in the intestine; this avoids competition that occurs between minerals for absorption.*

Benefits*

- Supports metabolism and energy production
- Promotes muscle function and bone health
- May promote physical and mental relaxation
- Promotes heart health and healthy blood vessel function
- May support magnesium status in individuals with compromised digestive function

Formula Highlights

- Provides 300 mg of magnesium (as TRAACS® magnesium bisglycinate buffered with magnesium oxide) per 2-capsule serving
- Highly absorbable and bioavailable form of elemental magnesium
- Gluten-free, dairy-free, and soy-free
- Non-GMO

Supplement Facts

Serving Size 2 capsules
Servings Per Container 120

Amount Per Serving		% Daily Value
Magnesium (as TRAACS® Magnesium Bisglycinate Chelate Buffered - from Magnesium Bisglycinate Chelate and Magnesium Oxide)	300 mg	71%

Other Ingredients: Cellulose (capsule), vegetable stearate.

According to epidemiological studies, magnesium (Mg) intake in the U.S. has significantly decreased from 500 mg to a range of 175 mg to 225 mg per day.[1] Individuals who follow a Western-style diet consume less than 30% to 50% of the Recommended Daily Allowance (RDA) for magnesium, which is 320 mg to 420 mg per day for adults.[1] Magnesium insufficiency is common in the U.S. due to the wide use of demineralized water and soil and the increased consumption of processed foods.[1] Magnesium is also depleted by stress, excessive alcohol consumption, gastrointestinal disorders, diabetes, and certain medications.[1,2] Dietary magnesium intake is inversely related to the incidence of diabetes, hypertension, heart disease, and metabolic syndrome.[3]

Magnesium is an essential mineral that serves as an enzyme cofactor for more than 300 biochemical reactions in the body, including glycolysis, which is the first step in harnessing energy from carbohydrates. It is a structural component of the hydroxyapatite mineral matrix of bone, a natural calcium channel blocker, a muscle relaxant, a facilitator of calming effects upon the nervous system, and a required element for electrolyte balance and the proper functioning of sodium-potassium pumps. It plays a crucial role in supporting physical strength and mobility, smooth muscle relaxation, neurological health, cardiac function, and psychological balance. Magnesium is required for DNA, RNA, glutathione, and protein synthesis, and it assists in blood glucose control and blood pressure regulation.[4] It is also a cofactor for vitamin D biosynthesis, transport, and activation.[5] The role of magnesium as an enzyme cofactor for processes that generate adenosine triphosphate (ATP) underlies its importance for maintaining energy levels and metabolic efficiency.[4]

Magnesium Glycinate Absorption and Bioavailability

Magnesium glycinate is a uniquely buffered combination of Mg bisglycinate chelate (80%) and Mg oxide (20%) that may help to promote the bioavailability of magnesium and help support a healthy magnesium status.* The Mg amino acid chelate in this product is absorbed through dipeptide channels, bypassing the usual active transport and passive diffusion routes for intestinal ion absorption, in which Mg would otherwise compete with other minerals. This delivery method allows larger amounts of Mg to be absorbed more quickly, as they are better retained by the body when compared to many other forms.[6,7] Moreover, breaking the bonds between Mg and glycine allows the body to use both the mineral and amino acids, potentially making this a more physiologically and nutritionally beneficial process.* The magnesium-glycine complex protects magnesium from binding to dietary phytates and tannins, reducing absorption interference and enhancing bioavailability.[6]

Magnesium for Compromised Digestive Function

This unique form of Mg has been shown to be effective for individuals with the greatest impairments in Mg absorption, such as those with inflammatory bowel diseases (IBD), among whom the prevalence of overt Mg deficiency may be as high as 86%.[8,9] Patients who have been on long-term proton pump inhibitors (PPIs) or other stomach acid-reducing medications may benefit from extra Mg, as hypochlorhydria may prevent adequate liberation of minerals from their food bases, including Mg.* Continued use of PPIs (and other drugs) have been shown to inhibit proper absorption of oral Mg leading to overt hypomagnesemia.[10,11] In human and mice studies of Crohn's disease and colitis, Mg supplementation is suggested to help minimize intestinal inflammatory damage and help restore mucosal integrity.[12,13]

Magnesium and Brain Health

Magnesium is essential for brain energy homeostasis and plays a key role in regulating cerebral glucose levels and neuronal activity.[14,15] One function of magnesium is inhibiting calcium influx in neurons by competing with it on the N-methyl-D-aspartate (NMDA) receptors, which may play a role in supporting those with migraines.[15,16]

Human studies have found that patients with cluster headaches or migraines, especially menstrual migraines, have low levels of magnesium.[16] A clinical trial of 81 patients (aged 18 to 65 years) with migraine headaches were administered a placebo or 600 mg of magnesium daily for 12 weeks. During weeks 9 through 12, migraine frequency attacks were reduced by 41.6% in the magnesium group and by 15.8% in the placebo group compared to baseline.[16]

Magnesium and Heart Health

Due to its role in muscle contraction, relaxation, and nerve conduction, Mg may help support healthy cardiovascular function and normal blood pressure.* Serum Mg concentration was found to be inversely correlated with the risk of developing heart failure, atrial fibrillation, and microvascular complications (chronic kidney disease, foot complications, and diabetic retinopathy) in patients with type 2 diabetes.[17] Magnesium deficiency may increase angiotensin II–mediated aldosterone synthesis and the production of thromboxane and vasoconstrictor prostaglandins. A meta-analysis concluded that the groups with patients who supplemented with magnesium in the range of 120 mg to 973 mg of magnesium per day experienced a lowering of both systolic and diastolic blood pressure readings. These effects were more pronounced for higher magnesium intakes at 370 mg per day.[16]

In vitro, animal models, and human studies reveal that magnesium may support overall cardiovascular support by enhancing endothelium-dependent vasodilation, improving lipid metabolism, reducing inflammation, and inhibiting platelet function.[1,18,19] A systematic review and meta-analysis found an association between higher levels of serum magnesium and reduced cardiovascular disease risk and found that a dietary magnesium intake higher than 250 mg was associated with a lower risk of ischemic heart disease.[19] Furthermore, recent studies suggest that magnesium may play a role in glucose and insulin metabolism by regulating tyrosine kinase activity on insulin receptors and glucose transporter type 4 (GLUT4), which may be clinically relevant for those with type 2 diabetes or insulin resistance.[16]

In a systematic review and meta-analysis of double-blind, randomized controlled trials investigating the effects of oral Mg on glucose and insulin-sensitivity parameters in subjects with diabetes or at high risk of diabetes, groups of individuals who supplemented with various forms of Mg (ranging from 36.5 mg to 637 mg per day) experienced significantly improved fasting plasma glucose levels after a 2-hour glucose tolerance test, along with demonstrated improvements in insulin sensitivity markers compared to a placebo.[20]

A meta-analysis of randomized controlled trials indicated that the groups of pregnant women who supplemented with various forms of Mg ranging from 29.2 mg to 38.9 mg of elemental Mg per day significantly reduced the risk of preeclampsia for high-risk pregnant women.[21] Among 1,000 women with polycystic ovary syndrome, those in the higher quartile of serum Mg concentrations had significantly lower fasting glucose, Homeostatic Model Assessment for Insulin Resistance (HOMA-IR), and testosterone. Multiple linear regressions demonstrated that serum Mg was independently negatively associated with insulin, glucose, HOMA-IR, and testosterone, and positively associated with QUICKI (quantitative insulin-sensitivity check index).[22]

A meta-analysis and systematic review of randomized controlled trials of a subgroup analysis showed that patients supplemented with various forms of oral Mg (ranging from 342 mg to 600 mg per day for >6 months) experienced significantly improved flow-mediated dilation in unhealthy subjects, those older than 50 years of age, or in individuals with body mass indexes ≥25 kg/m^2, suggesting potential support of endothelial function in unhealthy, older, or overweight patients.[23] Results from seven randomized controlled trials with 306 participants showed that individuals who supplemented with Mg ranging from 98.6 mg to 730 mg per day experienced significantly increased flow-mediated dilation without affecting carotid intima-media thickness.[24]

Magnesium and Bone and Muscle Health

Magnesium also plays a role in bone formation by stimulating osteoblast proliferation. Magnesium deficiencies can lead to abnormal hydroxyapatite crystals, a major bone component, and an increase in pro-inflammatory cytokines that stimulate osteoclast activity and lower PTH and vitamin D markers.[25,26] A systematic review and a meta-analysis found a positive correlation between magnesium intake and hip and femoral neck bone mineral density.[25] Low serum Mg concentrations and dietary intake are common in aging populations and they are associated with osteoporosis, vascular calcification, endothelial dysfunction, sarcopenia, and other age-related disorders.[27,28] Supplementation with various forms of Mg ranging from 250 mg to 1,800 mg per day has been shown to benefit the cross-talk between the cardiovascular–sarcopenia–osteoporosis triad in aging humans.[27]

A review of 28 eligible studies evaluating the relationship between Mg status and bone health demonstrated that lower Mg levels are associated with osteoporosis, and 30% to 40% of participants had hypomagnesemia; most of the participants were menopausal women, and those who consumed less than the RDA for Mg had lower bone mineral density (BMD) and higher risk of fracture.[29] In all studies examined in the review, groups supplemented with various forms of Mg ranging from 250 mg to 1,800 mg per day experienced benefits to BMD and lower risk of fractures.[29] A randomized controlled trial of healthy pregnant women who reported having leg cramps at least twice per week indicated that 300 mg of oral Mg bisglycinate chelate per day for four weeks reduced cramp frequency and intensity by 50% compared to the placebo group, with no significant differences in side effects between the groups.[30]

Recommended Use: Take 2 capsules per day or as directed by your health-care practitioner.

For a list of references cited in this document, please visit:

https://www.designsforhealth.com/api/library-assets/literature-reference---magnesium-glycinate-complex-tech-sheet-references

Dosing recommendations are given for typical use based on an average 150 pound healthy adult. Healthcare practitioners are encouraged to use clinical judgement with case-specific dosing based on intended goals, subject body weight, medical history, and concomitant medication and supplement usage.

***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.**

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