High Absorption Magnesium

100% Chelated with Albion Minerals

INGREDIENTS

High Absorption Magnesium contains elemental magnesium chelated with the amino acids lysine/glycine. As an essential dietary mineral, magnesium plays many important roles, including: helping cells produce metabolic energy, supporting optimum nerve function, helping muscles relax properly and maintaining a healthy heartbeat. Glycine is an efficient carrier for minerals, facilitating absorption. Glycine is used by the body to form collagen, a key protein in cartilage and connective tissue. Lysine is an essential amino acid that assists gastric function.

Magnesium Lysinate Glycinate Chelate (MLGC) Benefits*

- Better absorbability1,2,3,4
  - 2.3x greater than magnesium carbonate
  - 3.6x greater than magnesium sulfate
  - 6.0x greater than magnesium oxide
  - Chelated magnesium is absorbed faster and at a higher rate than ionic salts
- Helps promote high magnesium retention in the body
- Better tolerated, minimizes laxative effect — even at therapeutic doses1,5,6
- TRAACS® (The Real Amino Acid Chelate System), not a synthetic chelate (e.g., EDTA)
- Magnesium helps promote calmness allowing better sleep and reduced insomnia
- Water soluble

Maximizing Absorption: Why Magnesium Lysinate Glycinate Chelate Magnesium is Best, Explained

Mineral absorption occurs mainly in the small intestine. Like any mineral, magnesium may be absorbed as an ion, a mineral in its elemental state carrying a charge. Mineral ions cross the intestinal membrane either by simple diffusion or through active transport by a protein carrier in cells lining the intestine. Magnesium in mineral salts is absorbed in ionic form. However, ionic mineral absorption can be compromised in several ways.

Supplement Facts

<table>
<thead>
<tr>
<th>Magnesium 120T</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Serving Facts</strong></td>
</tr>
<tr>
<td><strong>Serving Size</strong></td>
</tr>
<tr>
<td><strong>Serving Per Container</strong></td>
</tr>
<tr>
<td><strong>Amount Per Serving</strong></td>
</tr>
<tr>
<td><strong>% Daily Value</strong></td>
</tr>
<tr>
<td>Magnesium</td>
</tr>
<tr>
<td>(from 2,000 mg magnesium lysinate glycinate chelate)</td>
</tr>
</tbody>
</table>

Other Ingredients: Microcrystalline cellulose, croscarmellose sodium, magnesium stearate (vegetable source), stearic acid, coating (hypromellose, hydroxypropyl cellulose).

Suggested Adult Use: Take 2 tablets twice daily, or as recommended by a nutritionally-informed physician.

Non-GMO / Gluten Free / Soy Free / Vegan Store in a cool dry place.

Supplement Facts

<table>
<thead>
<tr>
<th>Magnesium 240T</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Serving Facts</strong></td>
</tr>
<tr>
<td><strong>Serving Size</strong></td>
</tr>
<tr>
<td><strong>Serving Per Container</strong></td>
</tr>
<tr>
<td><strong>Amount Per Serving</strong></td>
</tr>
<tr>
<td><strong>% Daily Value</strong></td>
</tr>
<tr>
<td>Magnesium</td>
</tr>
<tr>
<td>(from 2,000 mg magnesium lysinate glycinate chelate)</td>
</tr>
</tbody>
</table>

Other Ingredients: Microcrystalline cellulose, croscarmellose sodium, magnesium stearate (vegetable source), stearic acid, coating (hypromellose, hydroxypropyl cellulose).

Suggested Adult Use: Take 2 tablets twice daily, or as recommended by a nutritionally-informed physician.

Non-GMO / Gluten Free / Soy Free / Vegan Store in a cool dry place.

* 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.
Magnesium Health Benefits
An essential dietary mineral, magnesium plays many important roles, including:

- Important for over 80% of human metabolic functions.¹
- assists energy production in cells.²
- Supports a healthy metabolic profile.³
- Supports nerve and muscle function.⁴
- Helps maintain a normal, regular heartbeat.⁵
- Supports bone density.⁶
- Helps maintain muscle mass, strength and physical performance.⁷
- Magnesium’s calming effect supports quality sleep.⁸

Magnesium is a dietary mineral that participates in hundreds of life-essential processes that occur both inside and outside cells of the body. Magnesium deficiency impacts normal physiologic function on many levels. Adequate magnesium is a fundamental requirement for optimal function of the cardiovascular system, the nervous system, skeletal muscle, the digestive tract, and the uterus. Inadequate magnesium not only affects the heart, blood vessels, and bones, but may also impact blood sugar balance as well.⁹,¹⁰

Magnesium — Important for Everyone, Deficient in Many
An abundance of data collected from the last three decades shows a consistent pattern of low magnesium intake in a majority of the U.S. population, with estimates running as high as 75% of Americans not meeting the Recommended Daily Allowance (RDA).¹¹ This pattern cuts a wide swath across age, gender ethnic groups. A recent large-scale report on the magnesium status of Americans aged 20 years or older evaluated data from the National Health and Nutrition Examination Survey (NHANES) 1999–2000. The authors conclude that a substantial number of U.S. adults consume diets insufficient for meeting recommended standards of magnesium intake.¹² Loss of magnesium

A second absorption mechanism has been discovered for minerals. Experiments show that minerals chemically bonded to amino acids (building blocks of protein) are absorbed differently from mineral ions. This has given rise to “chelated” minerals as dietary supplements. Mineral amino acid chelates consist of a single atom of elemental mineral surrounded by two or more amino acid molecules in a stable, ring-like structure.

Unlike mineral salts, which must be digested by stomach acid before the desired mineral portion can be released and absorbed, mineral chelates are not broken down in the stomach or intestines. Instead, chelates cross the intestinal wall intact, carrying the mineral within the amino acid ring. The mineral is then released in the bloodstream for use by the body. Research indicates the best-absorbed chelates consist of one mineral atom chelated with two amino acids. This form of chelate, compared to other chelates, has the ideal chemical attributes for optimum absorption.⁹ Dipeptide chelates demonstrate superior absorption compared to mineral salts. For example, a magnesium dipeptide chelate was shown to be four times better absorbed than magnesium oxide.⁹

Consumer Alert!
Not All “Amino Acid Chelates” Are True Chelates
For a mineral supplement to qualify as a genuine chelate, it must be carefully processed to ensure the mineral is chemically bonded to amino acids in a stable molecule with the right characteristics. The magnesium lysinate/glycinate in High Absorption Magnesium is a genuine dipeptide chelate. It has a molecular weight of 324 Daltons, considerably lower than the upper limit of 800 Daltons stated in the definition of “mineral amino acid chelates” adopted by the National Nutritional Foods Association (now known as the Natural Products Association) in 1996.¹³

Supplement Facts

<table>
<thead>
<tr>
<th>Magnesium Powder (Peach Flavored)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnesium Powder</td>
</tr>
<tr>
<td><strong>Supplement Facts</strong></td>
</tr>
<tr>
<td><strong>Serving Size:</strong> 1 scoop (~2 grams)</td>
</tr>
<tr>
<td><strong>Servings Per Container:</strong> Approximately 100</td>
</tr>
<tr>
<td><strong>Amount Per Serving</strong></td>
</tr>
<tr>
<td>Magnesium</td>
</tr>
<tr>
<td>(from 2,000 mg magnesium lysinate glycinate chelate)</td>
</tr>
</tbody>
</table>

| Other Ingredients: None |

<table>
<thead>
<tr>
<th>Suggested Adult Use:</th>
<th>Mix 1 level scoop with 8-oz. fruit juice or beverage of your choice twice daily, or as recommended by a nutritionally-informed physician.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-GMO / Gluten Free / Vegan</td>
<td></td>
</tr>
<tr>
<td>Store in a cool dry place.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Magnesium Powder (Peach Flavored)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnesium Powder</td>
</tr>
<tr>
<td><strong>Supplement Facts</strong></td>
</tr>
<tr>
<td><strong>Serving Size:</strong> 1 scoop (~4 grams)</td>
</tr>
<tr>
<td><strong>Servings Per Container:</strong> about 87</td>
</tr>
<tr>
<td><strong>Amount Per Serving</strong></td>
</tr>
<tr>
<td>Magnesium</td>
</tr>
<tr>
<td>(from 2,000 mg magnesium lysinate glycinate chelate)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other Ingredients:</th>
<th>Citric acid, natural flavor, malic acid, silicon dioxide, stevia extract, beta-carotene.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suggested Adult Use:</td>
<td>Mix 1 level scoop with 8-oz. of water twice daily, or as recommended by a nutritionally informed physician.</td>
</tr>
<tr>
<td>NOTE:</td>
<td>Some settling of contents may occur, which may cause slight variations in number of servings.</td>
</tr>
<tr>
<td>Gluten Free / Vegan</td>
<td></td>
</tr>
<tr>
<td>Store in a cool dry place.</td>
<td></td>
</tr>
</tbody>
</table>

* 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.
during food processing and low magnesium content in commonly eaten foods partially explain inadequate dietary magnesium.\(^{17,18}\)

Of particular note, magnesium intake tends to decrease with age. Older people may be susceptible to magnesium deficiency for a variety of reasons, including inadequate magnesium intake, poor absorption due to impaired gastrointestinal function, and use of drugs such as diuretics that deplete magnesium from the body.\(^{19}\) It has been theorized that magnesium deficiency may contribute to accelerated aging through effects on the cardiovascular and nervous systems, as well as on muscles and the kidneys.\(^{20}\)

Women who take both synthetic estrogen and calcium supplements may be at risk for low blood levels of magnesium.\(^{21}\) Estrogen promotes the transfer of magnesium from blood to soft tissues. Low blood magnesium may result if the ratio of calcium to magnesium intake exceeds 4 to 1. Magnesium supplementation is thus advisable for women taking estrogen or calcium.

Young adults are not immune to magnesium deficiency. The University of California’s Bogalusa Heart Study collected nutritional data from a cross-sectional sample of 504 young adults between the ages of 19 and 28 years.\(^{22}\) A review of studies on human magnesium status reported that average magnesium intake, along with several other minerals and vitamins, was below the RDA.\(^{23}\)

Unfortunately, a low magnesium status may often not be recognized (both in the doctor’s office and in research studies) when blood concentrations are examined, and many people who could benefit from supplementation go without it.\(^{24}\)

The average adult body contains anywhere from about 21 to 28 grams of magnesium. Approximately 60 percent of the body’s magnesium supply is stored in bone. Soft tissue, such as skeletal muscle, contains 38%, leaving only about 1–2% of the total body magnesium content in blood plasma and red blood cells. Magnesium in the body may be bound either to proteins or anions (negatively-charged substances). About 55% of the body’s magnesium content is in the ionic form, which means it carries an electrical charge. Magnesium ions are cations, ions that carry a positive charge. In its charged state, magnesium functions as one of the mineral electrolytes.

Magnesium works as a co-factor for over 300 enzymatic reactions in the body. Metabolism uses a phosphate-containing molecule called ATP as its energy source. Magnesium is required for all reactions involving ATP.\(^{25}\) ATP supplies the energy for physical activity by releasing energy stored in phosphate bonds. Skeletal and heart muscle use up large amounts of ATP. The energy for muscle contraction is released when one of ATP’s phosphate bonds is broken, in a reaction that produces ADP. Phosphate is added back to ADP, reforming ATP. ATP also powers the cellular calcium pump, which allows muscle cells to relax. Because it participates in these ATP-controlled processes, magnesium is vitally important for muscle contraction and relaxation. By controlling the flow of sodium, potassium and calcium in and out of cells, magnesium regulates the function of nerves as well as muscles.\(^{25}\)

**Helps maintain a healthy metabolic profile**

One study attempted to determine the efficacy of oral magnesium supplementation for metabolic profile improvements in metabolically-obese, normal-weight (MONW) individuals. A total of 47 MONW individuals with hypomagnesemia were enrolled in a clinical randomized, double-blind, placebo-controlled trial. Intervention group received 30 mL of MgCl\(_2\) 5% solution (equivalent to 382 mg of magnesium) and individuals in control group 30 mL of placebo solution, once daily for 4 months. Initially there were no significant differences between groups. At follow-up, HOMA-IR index, fasting glucose and triglyceride levels were significantly lower in subjects who received MgCl\(_2\) compared with control group. The researchers concluded that oral magnesium supplementation improves metabolic profile of MONW individuals.\(^{26}\)

A similar study examined the effects of oral magnesium supplementation on metabolic biomarkers and global genomic and proteomic profiling in overweight individuals. In a randomized, crossover pilot trial, 14 healthy, overweight volunteers were randomly assigned to receive magnesium citrate (500 mg elemental Mg/d) or a placebo for 4 weeks with a 1-month washout period. Fasting blood and urine specimens were collected. Biochemical assays were conducted on blood specimens. Magnesium treatment significantly decreased fasting C-peptide concentrations and appeared to decrease fasting insulin concentrations. Gene expression profiling revealed up-regulation of 24 genes and down-regulation of 36 genes, including genes related to metabolic and inflammatory pathways. The researchers concluded that magnesium supplementation for 4 weeks in overweight individuals led to distinct changes in gene expression and proteomic profiling consistent with favorable effects on several metabolic pathways.\(^{27}\)

**Helps maintain a normal, regular heartbeat**

**Supports overall cardiovascular health**

Magnesium’s importance for heart health is widely recognized. The heart is the only muscle in the body that generates its own electrical impulses. Through its influence on the heart’s electrical conduction system, magnesium is essential for maintenance of a smooth, regular heartbeat.\(^{28}\) Magnesium appears to help the heart resist the effects of systemic stress, and magnesium supplementation has been found to promote heart health even in the absence of an actual magnesium deficit in the body.\(^{29}\) From 1925 to the present day, researchers have been conducting studies to investigate the link between magnesium and a healthy blood pressure. Evidence from these studies has led to recommendations in European, American, Canadian, and International guidelines about maintaining an adequate magnesium intake to promote a healthy blood pressure.\(^{30}\)

In a Harvard study that followed 39,633 men for 12 years, the investigators noticed a modest positive relationship between magnesium and heart health in the subjects.\(^{31}\) In a recent study of women aged 47–75, higher magnesium intake was not only associated with a healthy heart rate, it was also associated with blood sugar balance, healthy cholesterol levels, and more efficient cellular metabolism.\(^{31}\)

A recent review of magnesium’s relationship with markers of cardiovascular health and overall metabolic health cited several studies that demonstrated beneficial effects of adequate magnesium intake.\(^{32}\) One such study provided 5 weeks of oral magnesium supplementation and resulted in significantly favorable C-reactive protein (CRP) blood levels over subjects taking placebo.\(^{33}\) CRP is a general maker of inflammation in the body—so lower CRP levels are desirable. Another study found a representative sample of U.S. adults consuming magnesium at levels higher than the RDA had lower levels of CRP than those consuming less than half the RDA. In an assessment of over 11,000 subjects from the Women’s Health Study, magnesium intake was inversely associated with CRP.\(^{34}\) One explanation of how suboptimal magnesium status may adversely affect cardiovascular health is through its impact on oxidative stress: supplementation with magnesium has shown improved blood antioxidant status.

**Supports Bone Density**

Magnesium intake is tied to skeletal bone health through several
pathways. Under normal physiologic conditions, parathyroid hormone (PTH) secretion is low when magnesium intake is not adequate. Additionally, PTH resistance can develop. Adequate magnesium intake can support the normal function of PTH. Low magnesium intake is further associated with a disturbance in blood levels of the active metabolite of vitamin D, as well as an increase in cytokines, both of which may impact bone health.

Numerous studies, large and small, have examined the relationship between magnesium and bone health. The dietary intakes of magnesium, potassium, fruits and vegetables are associated with increased bone density in older people. In a study of 217 elderly subjects of both genders, a decrease in bone mineral density was associated with lower blood magnesium levels. Research also suggests magnesium may help support bone mineral density in females across all ages. In a pilot study that followed 50 girls (ages 8–14) who were assessed as having low dietary magnesium, girls receiving supplementation for 12 months saw higher bone mineral content of the hip than those taking placebo. In a two-year, open, controlled trial, 22 out of a group of 31 older women who took daily magnesium supplements showed gains in bone density, while a control group of 23 women not taking the supplements had decreases in bone density.

Helps Maintain Muscle Mass, Muscle Power and Physical Performance*

Skeletal muscle mass and strength loss are risk factors for sarcopenia, osteoporosis, falls, fractures, frailty, and mortality. Magnesium (Mg) could play a role in prevention of age-related loss of skeletal muscle mass, power, and strength directly through physiological mechanisms or indirectly through an impact on chronic low-grade inflammation. A cross-sectional study of 2570 women age 18–79 years examined associations between Mg intake and muscle mass, leg explosive power (LEP), and grip strength. Significant, positive associations were found between higher Mg and indices of skeletal muscle mass and LEP. The results suggest that dietary magnesium may aid conservation of age-related loss of skeletal muscle mass and power in women of all ages.

Magnesium was also found to improve physical performance in a separate, randomized, controlled trial of 124 healthy women (mean age: 71.5) attending a mild fitness program and randomly allocated to treatment group (300 mg Mg/d; n = 53) or control group (no placebo or intervention; n = 71). After baseline assessment and at 12 weeks, the primary outcome was a change in Short Physical Performance Battery (SPPB). The researchers concluded that daily magnesium oxide supplementation for 12 weeks seems to improve physical performance in healthy, elderly women. These findings suggest a role for magnesium supplementation in preventing or delaying age-related decline in physical performance.

Another study tested whether magnesium influences physical performance of volleyball players. Twenty-five professional male volleyball players were assigned randomly to experimental (350 mg Mg/day for 4 weeks) and control groups (500 mg maltodextrin/day for 4 weeks). Significant decreases in lactate production and significant increases (of up to 3 cm) in countermovement jump and countermovement jump with arm swing were detected in experimental group following magnesium supplementation, but not in control group at T1. The study concluded that magnesium supplementation improved alactic anaerobic metabolism, even though the players were not magnesium-deficient.

* 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.


* 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.

© Doctor’s Best, Inc.
phone: 800-333-6977 • fax: 949-498-3952 • www.drbvités.com