

Magnesium SAP

Science-based magnesium bisglycinate for enhanced bioavailability

Magnesium deficiency is one of the most common mineral deficiencies in North America. It can contribute to a multitude of symptoms and long-term health concerns. Magnesium is an essential mineral for the optimal functioning of the cardiovascular, nervous, and musculoskeletal systems. It also plays a role in mood stabilization, and has been shown to be an effective treatment for major depression. Magnesium deficiency can also contribute to symptoms such as migraines, PMS, dysmenorrhea, muscle cramping, and insomnia. This deficiency is also commonly seen in alcoholics and patients with diabetes mellitus.

There are many different forms of magnesium, but magnesium bisglycinate found in **Magnesium SAP** has been demonstrated to be more readily absorbed and utilized by the body versus other ion forms.

ACTIVE INGREDIENTS

Each vegetable capsule contains:

Magnesium..... 150 mg
(from 833 mg magnesium bisglycinate)

Also contains: Vegetable magnesium stearate and silicon dioxide in a vegetable capsule composed of vegetable carbohydrate gum and purified water.

This product is non-GMO.

Contains no: Gluten, soy, wheat, corn, eggs, dairy, yeast, citrus, preservatives, artificial flavour or colour, starch, or sugar.

Magnesium SAP contains 90 or 180 capsules per bottle.

DIRECTIONS FOR USE

Adults: Take 1 capsule twice daily or as directed by your healthcare practitioner.

INDICATIONS

Magnesium SAP can be used to replenish deficiencies which can manifest as migraines, muscle cramping, cardiovascular disease, major depression, PMS, dysmenorrhea, preeclampsia, and insomnia.

INCREASED BIOAVAILABILITY

Magnesium SAP takes the mineral magnesium and naturally binds (chelates) it to two molecules of glycine. Because of the low molecular weight of glycine, it is readily absorbed across the intestinal membrane. It does not need to be digested and broken down to release the mineral like other magnesium ions. Once absorbed into the bloodstream, the mineral is released and can then be used by the body.

Magnesium SAP is supplied in a vegetable capsule for easy digestion.

PURITY, CLEANLINESS, AND STABILITY

All ingredients listed for all **Magnesium SAP** lot numbers have been tested by a third-party laboratory for identity, potency, and purity.



Scientific Advisory Panel (SAP):
adding nutraceutical research
to achieve optimum health



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Magnesium is the second most abundant intracellular cation, and is an electrolyte of great importance in metabolic function. Magnesium is a cofactor in more than 300 enzymatic reactions and is critically involved in energy metabolism, glucose utilization, protein synthesis, fatty acid synthesis and breakdown, and ATPase functions.^[1] It is also involved in hormonal reactions and is essential in both the central and peripheral nervous systems. It is a critical ion as it helps to maintain ionic balance of other minerals such as sodium, potassium and calcium.

Magnesium deficiency is most commonly caused by increased urinary output and reduced intestinal absorption. It should be of concern when considering the elderly and those with inflammatory bowel disease; hypomagnesemia must be suspected in any patient with alcoholism, chronic diarrhea or on diuretics.^[2] Magnesium deficiency is commonly found in chronic diseases leading to inflammation of various pathologies. Altered magnesium balance is seen in diabetes mellitus, chronic renal failure, nephrolithiasis, osteoporosis, and heart and vascular disease.^[3]

METABOLIC SYNDROME

Metabolic syndrome is a cluster of pathologies that includes hypertension, hyperinsulinemia of insulin resistance, dyslipidemia, Triglyceride/HDL cholesterol ratio >3, and increased visceral fat. These are also the risk factors for both cardiovascular disease and diabetes mellitus, both of which implicate subclinical chronic inflammation. Adipose tissue has been linked to the development of insulin resistance as it releases pro-inflammatory molecules. Magnesium is a natural calcium antagonist, and it is suggested that magnesium has an anti-inflammatory effect by altering intracellular calcium concentration.

- A magnesium-deficient diet has been shown to induce heart arrhythmias, impair glucose homeostasis, and alter cholesterol and oxidative metabolism in post menopausal women.^[4]
- Serum magnesium and intramammary magnesium level means were significantly lower in patients with metabolic syndrome than in controls: 1.80 ± 0.18 mg/dL v. 2.43 ± 0.43 mg/dL and 0.98 ± 0.55 µg/mg v. 1.67 ± 0.64 µg/mg of protein ($P < 0.001$).^[5]
- Inverse correlation was observed between SMg and MMg with BMI; SMg with systolic blood pressure and waist circumference in women.^[5]

CARDIOVASCULAR

- Supplementation of magnesium has been found to be beneficial in treating hypertension, congestive heart failure, arrhythmia, myocardial infarction, diabetes mellitus, and preeclampsia.^[1]
- Animal models show that magnesium deficiency releases substance P.^[6, 7] This initiates a cascade of inflammatory, oxidative and nitrosative events, which lead to cardiomyopathy and other CVD.^[6, 7, 8] The release of substance P consumes antioxidants and promotes the formation of lesions.
- Postmenopausal women show that high magnesium intake is associated with lower concentrations of certain markers of systemic inflammation (hs-CRP, IL6, sVCAM-1, TNF-α-R2) and endothelial dysfunction in postmenopausal women.^[9]
- Postmenopausal women exhibited atrial fibrillation and flutter that responded quickly to magnesium supplementation.^[4]

OSTEOPOROSIS

- Epidemiologic studies have linked magnesium deficiency to osteoporosis.^[6] Studies involving magnesium deficiency show low serum parathyroid hormone (PTH) and 1,25(OH)₂-vitamin D levels, which contribute to reduced bone formation.^[6]
- Magnesium deficiency resulted in inflammatory markers substance P, TNF-α and IL1β. Further research shows magnesium deficiency may alter bone mineral metabolism, increasing the risk of osteoporosis.^[6]

DEPRESSION AND PMS

Studies show low intracellular magnesium concentration in women with PMS, and improved symptoms with magnesium supplementation.^[10] Inflammatory PMS symptoms include altered moods (depression, anxiety and irritability), insomnia, headaches and migraines. Depression can be caused by magnesium deficiency, which can be further exacerbated by calcium excess and/or stress. Supplementation with magnesium glycinate show rapid recovery from major depression.^[11]

ABSORPTION, BIOAVAILABILITY AND LESS GASTRIC IRRITATION

Magnesium is absorbed by the intestines, and under ideal basal conditions the small intestine absorbs 30–50% of its intake. This percentage declines with age and IBD.

Magnesium repletion is difficult to accomplish because of the cathartic action of most oral magnesium supplements at therapeutic doses. A common use for high doses of oral magnesium supplementation is to treat constipation.

- Unabsorbed magnesium and sulfate ions exert an osmotic effect and cause water to be retained in the intestinal lumen.^[12] This increases the fluidity of the intraluminal contents and results in a laxative action.
- Oral magnesium citrate acts locally in the colon as an osmotic laxative and is a component in a precolonoscopy bowel preparation.^[13, 14] Studies show that it is not absorbed in any detectable quantities.

Magnesium bisglycinate is a stable compound and is readily absorbed across the intestinal membrane as a dipeptide. Therefore, the release of magnesium in the intestine is not required for absorption.

- Magnesium amino acid chelates have shown significantly higher bioavailability than magnesium oxide.^[15]
- Magnesium bisglycinate was 2× more readily absorbed than magnesium oxide in patients with severe impairment (ileal resection) of magnesium absorption (23.5% vs 11.8%).^[16]

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