Magnesium Citrate SAP

Magnesium to prevent deficiency

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. Magnesium deficiency can also contribute to symptoms such as migraines, PMS, dysmenorrhea, muscle cramping, fibromyalgia, constipation, and insomnia. This deficiency is also commonly seen in alcoholics and patients with diabetes mellitus.

ACTIVE INGREDIENTS

Each vegetable capsule contains:

Magnesium	
(from 850 mg magnesium citrate).	136 mg
2-Aminoethanesulfonic acid (taurine). . .	45 mg

This product is non-GMO.

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

Magnesium Citrate SAP contains 90 capsules per bottle.

DIRECTIONS FOR USE

Adolescents 14-18 years and adults: Take 1 capsule twice daily or as directed by your healthcare practitioner.

INDICATIONS

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

PURITY, CLEANLINESS, AND STABILITY

All ingredients listed for all **Magnesium Citrate 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

NFH®

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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] 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, 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 may present with subclinical chronic inflammation. Adipose tissue has been linked to the development of insulin resistance as it releases proinflammatory 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 postmenopausal women.[4]
- Serum magnesium and intramononuclear 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, as well as between SMg and 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.
- 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]

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.[10]

FIBROMYALGIA

In a study investigating the impact of magnesium levels in patients with fibromyalgia, researchers performed a controlled study on premenopausal women.[11] Patients were divided into three groups: group 1 received 300 mg magnesium citrate per day; group 2, 10 mg of amitriptyline per day; and group 3, a combination of both.[11] At baseline, researchers found serum and erythrocyte magnesium levels were significantly lower in patients with fibromyalgia versus the controls.[11] There was also a negative correlation between the magnesium levels and fibromyalgia.[11] After eight weeks of treatment, the groups were assessed on the number of tender points, tender point index, fibromyalgia impact questionnaire, Beck depression, and anxiety scores.[11] The magnesium group with amitriptyline had significant improvement on all parameters except numbness, whereas the magnesium-only group saw significant improvement in tender points and intensity of fibromyalgia.[11] Researchers concluded that low magnesium levels in the erythrocyte group might be a contributing factor to fibromyalgia symptoms.[11]

L-TAURINE

L-Taurine is one of the most abundant free amino acids, especially in excitable tissues, and has a wide range of physiological actions.[12] L-Taurine has the ability to counteract oxidative stress and to prevent experimental diabetic neuropathy and retinopathy.[13] Taurine has the capacity to prevent the suppression of membrane-bound Na^+/K^+ ATPase activity and prevent calcium overload.[13]

ABSORPTION AND BIOAVAILABILITY

Magnesium is absorbed by the intestines; under ideal basal conditions the small intestine absorbs 30–50% of its intake. This percentage declines with age and inflammatory bowel disease (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.[14] This increases the fluidity of the intraluminal contents and results in a laxative action.
- Oral magnesium citrate can act locally in the colon as an osmotic laxative and is a component in a precolonoscopy bowel preparation.[15, 16]

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