Magnesium Complex

Stock #1859-8 (100 capsules)

Magnesium Complex offers two easily-absorbed and bioavailable (ready to be utilized by the body) forms of magnesium—magnesium citrate and magnesium malate. Magnesium Complex contains these two different forms of chelated magnesium to ensure optimal absorption, with each capsule providing 100mg of magnesium.

Magnesium is an essential mineral involved in nearly every function of the body. For example, magnesium is necessary for cardiac health, production of ATP (adenosine triphosphate, the molecule that provides energy for the cells), formation of bone and protein, healthy functioning of nerves and muscles, and the regulation of blood pressure and blood sugar levels—magnesium plays an important role in insulin secretion and function. Magnesium also helps maintain the acid-alkaline balance of the body and is necessary for calcium to function properly. Furthermore, magnesium is needed for healthy muscle, nerve and blood vessel tone and is thought to help prevent blood vessel spasms.[1-5]

Determining magnesium deficiency can often be difficult, as magnesium deficiency can present with many signs and symptoms. Symptoms of magnesium deficiency include anxiety, aggression, loss of appetite, convulsions/seizures, cramps, depression, fatigue, hearing loss, impotence, insomnia, muscle spasms, neuropsychiatric disturbances, nervousness, tremors and weakness. Animal studies have shown that magnesium deficiency also causes a significant increase in free radicals and subsequent tissue injury, decreases specific immune response, and accelerates the progressive degeneration of the thymus. In addition, magnesium deficiency can lead to cardiovascular disorders such as angina pectoris (chest pain caused by a lack of oxygen supply to the heart), cardiac arrhythmia (abnormal heart rhythm), hypertension (high blood pressure) and coronary artery disease (CAD)—a condition involving the progressive narrowing and hardening of the arteries, also known as atherosclerosis. In fact, cardiovascular diseases—cardiac arrhythmias, hypertension and heart failure—lead the list of disorders associated with hypomagnesemia (abnormally low blood levels of magnesium). Research shows that blood levels of magnesium are low in patients with coronary artery spasms (which deprive the heart muscle of blood flow and oxygen), myocardial ischemia (a heart condition caused by insufficient blood flow to the heart muscle), mitral valve prolapse (a type of heart disease in which the mitral valve fails to regulate blood flow between the left atrium and left ventricle of the heart), and cardiac tachyarrythmia (excessively rapid heartbeat accompanied by arrhythmia). Low tissue and blood levels of magnesium have also been documented in patients prior to, during and after myocardial infarction (heart attack). Plus, recent studies have implicated the lack of sufficient magnesium as a cause of hypertension and preeclampsia—a condition of hypertension occurring in pregnancy, accompanied by edema (fluid retention) and proteinuria (protein in the urine)—in pregnant women. A 2003 study involving 63 middle- to upper-income pregnant women confirmed that participants' intake of magnesium was suboptimal.[1-4,6-13]

Magnesium deficiency is common among individuals taking antibiotics, oral contraceptives, "potassium-depleting" prescription drugs (i.e. loop and thiazide-like diuretics), or too many laxatives. However, dietary magnesium intake among the general population is also often suboptimal—estimates indicate that as much as 60% of the U.S. population may be at risk for magnesium deficiency.[2,7,13]

Fortunately, magnesium supplementation has been used successfully to treat a wide range of medical problems, including asthma, chronic fatigue syndrome, migraines, heart disease and cardiac arrhythmias, and certain types of urinary incontinence. Magnesium therapy is rapid-acting, has a safe toxic-therapeutic ratio, and is easy to administer and monitor. Plus, clinical use of magnesium in preeclampsia and acute myocardial infarction confirms its safety and tolerability.[6,14,15]

Research has shown that magnesium levels are chronically low in asthmatics. Magnesium is necessary to help relax the bronchial tubes and smooth muscle of the esophagus, and evidence supports its use in severe asthma. A study of magnesium concentrations in 25 patients with bronchial asthma, compared to 9 age-matched healthy subjects, revealed magnesium deficiency in total body stores in 40% of asthmatic patients and only 11% of healthy participants. Findings from another study demonstrated a strong positive correlation between intracellular magnesium and the level of bronchial reactivity—intracellular magnesium concentrations in the group of patients with mild-to-moderate asthma were significantly lower than the non-asthmatic subjects.[16-20]

Magnesium also appears to play a significant role in the pathogenesis (origin and development) of migraines. According to research, as many as 50% of migraine sufferers are magnesium-deficient. In a 1996 German study of 81 migraine patients, 41.6% of participants taking oral magnesium experienced a reduction of both the duration and intensity of migraine attacks, as well as reduced their reliance on medications to control their migraines. In 2003, results from a randomized, double-blind, placebo-controlled, parallel-group trial involving 86 children (ages 3-17) were

published. The participating children all reported a 4-week history of at least weekly, moderate-to-severe headaches with a throbbing or pulsatile (beating) quality, associated anorexia/nausea, vomiting, photophobia (aversion to light), sonophobia (aversion to sound), or relief with sleep, but no fever or evidence of infection. Oral magnesium supplementation (9 mg/kg divided among 3 meals daily for 16 weeks) resulted in a statistically significant decrease over time in the frequency of headaches, with no decrease observed in the placebo group, as well as significantly lower headache severity relative to the placebo group. Two other double-blind studies also indicate that chronic oral magnesium supplementation may reduce the frequency of migraine headaches.[5,21-24]

In addition, magnesium demonstrates a protective effect against stress-induced physiologic damage. Research has shown a negative correlation between magnesium balance and oxidative stress—chronic stress or injury lowers magnesium levels while simultaneously increasing the intensity of oxidative stress upon the body. Both magnesium deficiency and oxidative stress have been identified as pathogenic factors in aging and in several age-related diseases, such as stress-induced cardiovascular damage. When magnesium deficiency exists, stress paradoxically increases the risk of cardiovascular damage, including arrhythmias, hypertension, cerebrovascular and coronary constriction and occlusion (tightening and closure/obstruction of the blood vessels of the brain and arteries that supply the heart), and sudden cardiac death (death resulting from an unexpected and abrupt loss of heart function). Thus, stress, whether physical (i.e. cold, heat, burns, accidental/surgical trauma, or physical exertion) or emotional (i.e. anxiety, pain, excitement or depression), as well as stress resulting from dyspnea (difficulty of breathing) as in asthma, increases the need for magnesium. However, magnesium therapy has been shown to significantly increase intracellular magnesium levels, compared with placebo, to reduce stress-induced oxidative damage. For example, a 6-month randomized, double-blind, placebo-controlled trial of 187 patients with coronary artery disease (CAD) found that magnesium supplementation (365mg of magnesium citrate per day) significantly increased exercise duration time (exercise tolerance) compared to placebo, and lessened exercise-induced chest pain. Quality-of-life parameters also significantly improved in the magnesium group.[25-31]

Magnesium deficiency is also common among patients with renal (kidney) stones. Research has shown a clear inverse correlation between magnesium concentration and the formation of calcium oxalate crystals, which grow in the urinary tract to form more than 70% of kidney stones. A multicenter clinical investigation involving postmenopausal women identified 1,179 cases of kidney stones, with one of the three primary risk factors for the occurrence of kidney stones being a low dietary intake of magnesium. Studies have shown that magnesium acts as an inhibitor of calcium oxalate crystallization—magnesium helps increase the solubility of calcium oxalate crystals and increases urinary calcium excretion by inhibiting renal calcium reabsorption. Thus, magnesium supplementation is suggested in order to prevent deficiency and the recurrence of stone formation.[32-42]

The best forms of supplemental magnesium appear to be those chelated to an amino acid or a Krebs cycle intermediate such as citrate or malate. Krebs cycle intermediates are compounds utilized in the Krebs cycle (also known as the citric acid cycle), the metabolic process that produces energy within the cells. These forms of supplemental magnesium appear to be better utilized, absorbed and assimilated than inorganic mineral forms (i.e. carbonates, chlorides, oxides).In fact, research has shown that magnesium citrate is more soluble and more bioavailable, with respects to gastrointestinal absorbability, than magnesium oxide.[38,43-46]

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