magnificent magnesium

Find out why this mineral is essential for bone formation, heart health, and more

By Jack Challem

THE BASICS: Magnesium is the most versatile of all dietary minerals. More than 60 percent of the body’s magnesium is found in bone, where it works with calcium to provide structural support. The rest plays roles in more than 300 chemical reactions, including energy production, bone formation, and heart rhythm. The mineral also helps transport calcium and potassium across cell membranes, and it is involved in the transmission of nerve signals and the contraction and relaxation of muscles, including the heart. Foods rich in magnesium include Swiss chard, spinach, halibut, kelp, basil, and most seeds.

ALIAS: Magnesium is never consumed as a pure mineral. It is always taken as a compound, such as magnesium citrate, magnesium aspartate, magnesium sulfate, magnesium glycinate, etc.

HOW MAGNESIUM WORKS: Because of its diverse roles, magnesium works in a variety of ways. It is needed for the production of nucleic acids and proteins, enzymes involved in making carbohydrates and fats, and the antioxidant glutathione. In the form of magnesium adenosine triphosphate (MgATP), magnesium provides energy for cells. It also influences the production of some neurotransmitters, so it can have a positive effect on mood.

HEALTH BENEFITS: Because of magnesium’s diverse biochemical roles, it can benefit many different health problems.

• Antiaging. A recent cell study found that magnesium influences the rate of aging, with deficiencies accelerating the aging process. The research, conducted by Bruce Ames, Ph.D., and colleagues found that magnesium-deficient cells had a shortening of their telomeres, which are DNA sequences that protect the tips of chromosomes. Shortened telomeres are strongly associated with rapid aging. The lack of magnesium also caused other genetic damage related to aging. The findings are particularly significant because more than two-thirds of Americans do not consume the recommended amounts of magnesium.

• Asthma. A study of 37 children and teenagers found that supplements of 300 mg magnesium glycinate daily led to a 30 percent decrease in bronchial reactivity. The subjects became more resistant to asthmatic triggers (e.g., cold air and allergens), and they decreased their use of medications by almost 40 percent, according to a report in the European Journal of Clinical Nutrition.

• Bone. Researchers at Yale University asked 120 girls, ages 8 to 14 years, to take either 150 mg of magnesium or placebos twice daily for one year. By the end of the study, the girls who took magnesium had greater bone-mineral density. A separate study, in the Journal of the American Geriatrics Society, found that high intake of magnesium, from either food or supplements, was associated with greater bone-mineral density throughout the body.

• Muscle function. In a study of more than 1,100 men and women, age 65 or older, researchers found that their blood levels of magnesium were related to muscle strength. People with the highest levels of magnesium had the greatest grip strength, lower-leg muscle power, knee-extension torque, and ankle strength. Conversely, low magnesium levels were related to poor muscle function and strength.

• Heart rhythm. The heart is a muscle, and although research is not consistent, magnesium may help prevent erratic and dangerous heartbeats called arrhythmias. Intravenous magnesium sulfate is sometimes administered after heart surgery and in emergency rooms to reduce the risk of arrhythmias. Tip: Consider combining magnesium supplements with omega-3 fish oils.

Product Examples (shown from left to right)

Solaray Calcium and Magnesium packs a full range of amino acid chelates in a special herb base, chelated with whole rice concentrate for seven times more amino acid content than ordinary rice-based supplements.

Doctor’s Best High Absorption Magnesium contains elemental magnesium chelated with the amino acids glycine and lysine to support the heart, nervous system, and cellular energy.

Rainbow Light Calcium “+” (with 1,000 mg Magnesium) provides comprehensive bone and muscle support with bio-available mineral forms to balance calcium-dominant diets with additional magnesium.
• Headaches. Magnesium supplements may reduce the frequency and severity of migraine headaches. In a study from the journal *Headache*, all 15 patients who received magnesium improved. In comparison, only one of 15 patients receiving placebos got better. Magnesium might also benefit women with tension headaches—in a separate study, researchers reported that low magnesium levels were strongly associated with migraine headaches during menstrual periods.

• Mood. Magnesium supplements often produce a calming and relaxing effect, particularly in hyperactive children. The mineral stimulates production of gamma amino butyric acid (GABA), a neurotransmitter with a calming effect. Magnesium is also one of many nutrients involved in the body’s production of dopamine, noradrenaline, and adrenaline.

BACKGROUND CHECK: Taking large amounts of zinc can interfere with magnesium activity, whereas magnesium absorption seems to increase when more protein is eaten.

GLEANINGS: Muscle spasms, charley horses, and restless-leg syndrome are common signs of magnesium deficiency, according to Carolyn Dean, MD, author of *The Miracle of Magnesium*.

HEADS UP: Taking more than 400 mg of magnesium at once can loosen stools and cause diarrhea. Split that amount into smaller doses.

WHAT SHOULD YOU TAKE: Magnesium citrate, magnesium taurate, and magnesium glycinate appear to offer the best compromise between absorption and price. It is better absorbed than most other forms. Strive for 200 mg to 300 mg two to four times daily.

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**Easing Asthma and Hyperactivity**

Andy, age 13, was a little hyperactive and also suffered from asthma attacks. His mother, Kate, knew about the many side risks associated with the steroid drugs commonly prescribed to reduce asthma attacks. So Kate scoured medical and nutrition books looking for a safe alternative.

When Kate read that magnesium could reduce asthma attacks, she began giving Andy 300 mg daily of magnesium citrate. His asthma attacks decreased, and so did the amount of medication he needed. The magnesium also had an important side benefit. It had a calming effect on Andy, so he was less restless and jittery.

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