

MAGNESIUM VITAL FOR HEALTH

Very few people are aware of how vital magnesium is for overall health. After oxygen, water, and basic food, magnesium may be the most important element needed by our bodies, activating over 300 different biochemical reactions necessary for your body to function properly. The U.S. minimum RDA for magnesium is about 320 mg per day for women and more than 400 mg per day for men, while optimum daily amounts are closer to 500 to 700 mg per day - yet studies show that most people regularly take in about half of that and that over 8 out of 10 people do not take enough daily magnesium for even the minimum daily amounts recommended. Recent research has revealed that this lack of magnesium may put your heart - and your health - at significant risk.

Magnesium protects against heart disease and heart attacks, high blood pressure and stroke, type II diabetes and much, much more. It is more important than calcium, potassium or sodium and regulates all three of them. Contrary to popular misconceptions, it is magnesium that is actually most important in building strong bones and preventing bone loss.

Magnesium is a muscle relaxant, while calcium is a muscle constrictor. Low magnesium intake is associated with muscle spasm, tremors and convulsions. Most Americans, particularly women, have been advised to consume 1200-1500 milligrams of calcium daily. Virtually none of these women have been told that calcium in single doses that exceed 500 milligrams are not absorbed and that they only need an additional 400-600 milligrams of supplemental calcium since their diet already provides about 800 milligrams of this mineral. Since 99 percent of magnesium resides inside living cells, blood serum levels are not a good indicator of magnesium deficiency. Blood tests for magnesium are notoriously inaccurate. Only 1 percent of the total body magnesium pool exists outside of living cells. So blood serum levels are notoriously inaccurate. [*Clin Chem Lab Med* 37: 1011-33, 1999]. In other words, your doctor can't easily tell you by a blood test if your magnesium levels are low.

Most Americans, 8 in 10, do not consume enough magnesium. The countries that have the highest mortality rates in the world are the Scandinavian countries and New Zealand where more calcium is consumed from dairy products, while for comparison the lowest mortality rates in the world are in Portugal and Japan where calcium-rich dairy products are not consumed regularly. Americans consume about 800 milligrams of calcium daily (milk drinkers may get 1200-1500 mgs from their diet alone), but only consume about 275 milligrams of magnesium. Thus the dominance of calcium over magnesium produces symptoms of muscle spasm. Migraines, eyelid twitch, heart flutters, back aches, premenstrual tension, leg cramps and constipation are all linked to calcium overload. Excessive calcium may also result in kidney stones (1 in 11 Americans) and heart valve calcifications (mitral valve, 1 in 12 Americans). A significant percentage of American adults consume more than 2000 milligrams of daily calcium, the point where side effects of overdosage begin to be reported.

Magnesium has been called the "The Forgotten Mineral" and the "5-Cent Miracle Tablet" by medical researchers. Numerous researchers have reported that the provision of this mineral in the population at large would greatly diminish the incidence of kidney stones (1 in 11 Americans), calcified mitral heart valve (1 in 12 Americans), premenstrual tension, constipation, miscarriages, stillbirths, strokes, diabetes, thyroid failure, asthma, chronic eyelid twitch (blepharospasm), brittle bones, chronic migraines, muscle spasms and anxiety reactions. [*Pediatric Asthma, Allergy Immunology* 5: 273-79; *Journal Bone Mineral Research* 13: 749-58, 1998; *Magnesium* 5: 1-8, 1986; *Medical Hypotheses* 43: 187-92, 1994] That's a lot of health benefits for a nickel. Sufficient provision of magnesium in the American population would likely reduce health care costs by billions of dollars.

When we get too low on oxygen, water or food, the consequences are serious. Yet, we often don't realize the consequences of magnesium deficiency. The improper use of magnesium among health professionals and the population in general, is deeply responsible for many of the failures encountered daily in treating chronic health conditions nationwide. In addition to the ones listed above are:

- Insomnia
- Sleep-disorders
- Fatigue
- Body-tension
- Headaches
- Heart-disorders
- Low energy

High Blood Pressure
PMS
Muscle tension
Backaches
Constipation
Kidney stones
Osteoporosis
Accelerated aging
Depression
Irregular-heartbeat
Anxiety
Muscle cramps
Spasms Irritability

and the list goes on.... It is reported that 90-95% of us are deficient in magnesium, including many of those who already supplement it. Why? Due to the misleading information presented in common magnesium texts. As a result, magnesium remains largely misunderstood, largely misused and the problem goes on undetected.

Magnesium and the Heart - One Mineral Can Make Or Break Your Heart's Rhythm

Low blood levels of magnesium can significantly affect the way your heart pumps blood throughout your body. And even if you think you're living a healthy lifestyle, you may not be getting enough of it.

Magnesium May Prevent Sudden Death Heart Attacks

More than 300,000 sudden-death heart attacks are reported annually in the US (more than 80 per day) which are believed to be related to excessive calcium and a shortage of magnesium. Modern medicine's answer to the problem is to prescribe billions of dollars of calcium-blocker drugs. Magnesium is a natural calcium blocker, but this goes unrecognized by most physicians. Researchers warn that adults who consume excessive amounts of caffeine or alcohol, or who take water pills (diuretics), are prone to experience irregular heart beats and should consume more magnesium. The same is true for diabetics and people with low thyroid. Most Americans consume tap water that has been softened (sodium added) which worsens the problem. American adults need to supplement their diet with 200-400 milligrams of magnesium. The only side effect of too much magnesium is loose stool. Reducing dosage resolves this problem.

In the 1990s a preliminary report showed that intravenous magnesium reduced mortality rates following a heart attack. Unfortunately, this was apparently perceived as a threat to the sale of calcium-blocking drugs used for the same purpose. Medical researchers, financially backed by a pharmaceutical company that produces calcium-blocker drugs, deliberately chose to use an excessive dose of intravenous magnesium to prove it was of no value during the post-heart attack period. [Townsend Letter for Doctors, October 1998]

Magnesium is not limited to treating heart disease after a heart attack. A shortage of dietary magnesium has been repeatedly shown to be associated with an increased risk of sudden-death heart attack. Unequivocally, a shortage of magnesium from the American diet, in particular the absence or shortage of magnesium in drinking water, is directly related to sudden-death heart attack. [Epidemiology 10: 31-36, 1999; Heart 82: 455-60, 1999; American Journal Epidemiology 143: 456-62, 1996] Out of 750,000 heart attacks in the USA annually, an estimated 340,000 deaths occur within one hour of a heart attack. [Journal Nutrition Health Aging 5: 173-78, 2001]

One study showed the relative risk of sudden-death heart attack is more than 1.5 times higher among adults who consume on average 105 milligrams of magnesium a day compared to adults who consume 233 milligrams a day. [Magnesium Trace Element Research 9: 143-51, 1990]. In an animal experiment, no rodents experienced a sudden-death heart attack when magnesium levels were adequate, whereas 4 of 11 rodents with low magnesium levels experienced a sudden lethal heart muscle spasm. [Journal American Collage Cardiology 27: 1771-76, 1996]

Recently researchers reported on the effects of slowly withdrawing magnesium from the diet of postmenopausal women. Women began to exhibit abnormal heart rhythms as circulating magnesium levels declined. [American Journal

Clinical Nutrition 75: 550-54, 2002] Of the minerals removed during water softening, magnesium is the only mineral found to be deficient in the heart muscle of sudden-death heart attack victims. [*Science* 208: 198-200, 1980]

Magnesium and High Blood Pressure

Magnesium helps signal muscles to contract and relax. And when the muscles that line the major blood vessels contract, your blood pressure rises.

When researchers studied the diets of 40,000 nurses and 30,000 male health professionals, they found lower blood pressures in people who ate more magnesium.

Magnesium and Diabetes

Eating more magnesium-rich foods, like green leafy vegetables and nuts, may reduce the risk of type-2 diabetes, suggests a meta-analysis of observational studies.

The analysis of prospective cohort studies, by researchers at Stockholm's Karolinska Institutet, reports that for every 100 milligram increase in magnesium intake, the risk of developing type-2 diabetes decreased by 15 per cent. Larsson and Wolk identified seven studies looking at the link between magnesium intake from food or food plus supplements and the risk of type-2 diabetes. This gave the researchers a total of 286,668 participants and 10,912 cases of type-2 diabetes. Six of the studies showed a statistically significant inverse association, with every 100 mg per day increase in magnesium intake linked to a 15 per cent decrease in type-2 diabetes risk.

"The potential protective role of magnesium intake against type-2 diabetes may be due to improvement of insulin sensitivity," said the reviewers. "Studies in animals have demonstrated an adverse effect of magnesium deficiency on glucose-induced insulin secretion and insulin-mediated glucose uptake. In contrast, magnesium supplementation was shown to prevent fructose-induced insulin resistance and reduce the development of diabetes in a rat model of spontaneous type-2 diabetes."

They concluded that while it is too early to recommend magnesium supplements for type-2 diabetes prevention, increased consumption of magnesium-rich food "seems prudent."

While refusing to label the results of their meta-analysis definitive, authors Susanna Larsson and Alicia Wolk wrote in the *Journal of Internal Medicine* that the evidence that increased intake of magnesium may reduce the incidence of type-2 diabetes was "compelling."

Widespread Dietary Deficiency

Since the turn of last century, our depleted soils, processed foods and fast food diet lifestyles have led to a steady increase in mineral deficiencies. Nowhere is this more true than in Magnesium:

Progressive decline of dietary magnesium consumption

Magnesium intake in mg/day

1900-08 475-500

1909-13 415-435

1925-29 385-398

1935-39 360-375

1947-49 358-370

1957-59 340-360

1965-76 300-340

1978-85 225-318

1990-2002 175-225

[Magnesium Trace Elements 10: 162-28, 1997]

Dietary Sources of Magnesium by Standard Serving Size - Including Calories

Pumpkin and squash seed kernels, roasted - 1 oz contains 151 mg of magnesium and 148 calories
Brazil nuts - 1 oz contains 107 mg of magnesium and 186 calories
Bran ready-to-eat cereal (100%), - ~1 oz contains 103 mg of magnesium and 74 calories
Halibut, cooked - 3 oz contains 151 mg of magnesium and 148 calories
Quinoa, dry - 1/4 cup contains 89 mg of magnesium and 159 calories
Spinach, canned - 1/2 cup contains 81 mg of magnesium and 25 calories
Almonds - 1 oz contains 78 mg of magnesium and 164 calories
Spinach, cooked from fresh - 1/2 cup contains 78 mg of magnesium and 20 calories
Buckwheat flour - 1/4 cup contains 75 mg of magnesium and 101 calories
Cashews, dry roasted - 1 oz contains 74 mg of magnesium and 163 calories
Soybeans, mature, cooked - 1/2 cup contains 74 mg of magnesium and 149 calories
Pine nuts, dried - 1 oz contains 71 mg of magnesium and 191 calories
Mixed nuts, oil roasted, with peanuts - 1 oz contains 67 mg of magnesium and 175 calories
White beans, canned - 1/2 cup contains 67 mg of magnesium and 154 calories
Pollock, walleye, cooked - 3 oz contains 62 mg of magnesium and 96 calories
Black beans, cooked - 1/2 cup contains 60 mg of magnesium and 114 calories
Bulgur, dry - 1/4 cup contains 57 mg of magnesium and 120 calories
Oat bran, raw - 1/4 cup contains 55 mg of magnesium and 58 calories
Soybeans, green, cooked - 1/2 cup contains 54 mg of magnesium and 127 calories
Tuna, yellowfin, cooked - 3 oz contains 54 mg of magnesium and 118 calories
Artichokes (hearts), cooked - 1/2 cup contains 50 mg of magnesium and 42 calories
Peanuts, dry roasted - 1 oz contains 50 mg of magnesium and 166 calories
Lima beans, baby, cooked from frozen - 1/2 cup contains 50 mg of magnesium and 95 calories
Beet greens, cooked - 1/2 cup contains 49 mg of magnesium and 19 calories
Navy beans, cooked - 1/2 cup contains 48 mg of magnesium and 127 calories
Tofu, firm, prepared with nigaria (a) - 1/2 cup contains 47 mg of magnesium and 88 calories
Okra, cooked from frozen - 1/2 cup contains 47 mg of magnesium and 26 calories
Soy beverage - 1 cup contains 47 mg of magnesium and 127 calories
Cowpeas, cooked - 1/2 cup contains 46 mg of magnesium and 100 calories
Hazelnuts - 1 oz contains 46 mg of magnesium and 178 calories
Oat bran muffin - 1 oz contains 45 mg of magnesium and 77 calories
Great northern beans, cooked - 1/2 cup contains 44 mg of magnesium and 104 calories
Oat bran, cooked - 1/2 cup contains 44 mg of magnesium and 44 calories
Buckwheat groats, roasted, cooked - 1/2 cup contains 43 mg of magnesium and 78 calories
Brown rice, cooked - 1/2 cup contains 42 mg of magnesium and 108 calories
Haddock, cooked - 3 oz contains 42 mg of magnesium and 95 calories
Spirulina - 10 grams contains 40 mg of magnesium and 39 calories

(a) Calcium sulfate and magnesium chloride.

Source (with the exception of Spirulina): <http://www.hoptechno.com/bookfoodso...>

Note: It is healthier to consume as many of the items on the list as possible in raw form. The soy products are not recommended due to the widespread use of GMO soy and other health concerns related to soy.

Supplementation Advised

Although you can see from the above chart that a person might be able to obtain enough minimum RDA of magnesium and perhaps even optimum amounts of magnesium through a very carefully planned and managed daily diet, it would be a difficult task since much of the above list are no longer staple parts of our Western diets. When processed food is added to the diet it can safely be assumed that, while anyone should be able to increase the magnesium they get from wise diet choices, it is exceedingly difficult for the general public to consume enough magnesium through dietary sources alone.

Only supplementation is likely to make up for such a widespread deficiency in magnesium. Foods cannot easily be fortified with magnesium because it is a bulky mineral that would alter the consistency and taste of flour and foods. Magnesium cannot be added to tap water because it would erode piping. Either magnesium pills or magnesium added to bottled water would make up for this mineral deficiency. Currently, only 5 major brands of bottled water provide a desirable measure of more than 75 milligrams of magnesium per liter and only one brand has a ratio of magnesium that exceeds that of calcium.

Since the same problems with soil depletion and diet causes deficiencies in many other vital minerals, it would be a good idea to supplement for magnesium and to also supplement with a wide range of minerals. The very best source of mineral supplements are plant derived minerals, because they are more readily absorbed than mined rock minerals. For maximum absorption, bromelain can be added. Bromelain is an all natural compound found in the stem of the pineapple plant and is a powerful binder that increases the absorption of many things.

Until now it was thought that the best forms of supplemental magnesium were the ones chelated to an amino acid (magnesium glycinate, magnesium taurate) or a krebs cycle intermediate (magnesium malate, magnesium citrate, magnesium fumarate). But now we have magnesium oil, a magnesium chloride, that can be applied directly to the skin, so dosage levels can be brought up safely to high levels without diarrhea and problems with absorption. Magnesium orotate is considered to be a superior form of oral magnesium supplementation. The only side effect of too much magnesium is loose stool. Reducing the dosage or dividing daily doses into smaller amounts resolves the problem.

Note: For optimum health, magnesium and calcium intake needs to be at about a 1 to 2 ratio. So, if you supplement with 500 mg of magnesium, you should supplement with 1000 mg of calcium (or less if you get plenty of dietary calcium and little dietary magnesium).