

# The Dirt on Magnesium Deficiency

by Channing Dallstream

**A**s we exhaust our soils of essential minerals like magnesium, calcium and potassium, we degrade the quality of our food supply and consequently our health.

Plants can not absorb soil nutrients that are not there, and the human body can not make minerals. The estimated number of Americans low in magnesium alone increased more than 20% in the past 10 years. A combination of factors—poor food quality, effects of acid rain, compromised drinking water sources, and increased prescription use—play a part. The World Health Organization recognizes a *world wide* magnesium deficiency. These data coincide with an increase in reported health conditions: osteoporosis and osteopenia; heart disease and stroke; surge in Type II (adult onset) diabetes; even mood and memory issues. Interestingly all conditions improve with magnesium.



## Magnesium Rich Foods

Food	Mg/1 Tablespoon
Almonds	27
Brewer's yeast	23.1
Cashews	26.7
Kelp	76
Molasses	25.8
Wheat bran	49
Wheat germ	33.6

Source: *The Magnesium Miracle*

## You are what you eat

Magnesium activates enzymes that control digestion, absorption and utilization of protein, fats and carbohydrates. It helps synthesize protein, transmit nerve signals and much more. “Dietary magnesium deficiency is endemic in developed countries where acid rain reduces the magnesium content of crops...”<sup>1</sup> Neurological diseases are high in regions that have tested the soil to be high in aluminum and low in magnesium and calcium.<sup>2</sup> It is not common practice to enrich soils with magnesium rich fertilizers, and the overuse of inexpensive phosphate-based fertilizers further depletes magnesium. Organic farming methods retain more available soil nutrients for plants however this does not guarantee magnesium-rich produce. Improper cooking and regularly consuming prepared foods further reduce the amount of magnesium we get from dietary sources.<sup>3</sup> Top that off with digestive issues like Celiac, Crohn's, IBS, or food allergies and you see why it is challenging to get your recommended daily intake from food alone.

## What's in your water?

It is common for city water to be treated with chlorine and fluoride, but both actually deplete any magnesium available in the original hard water. Be aware that filtration systems further remove both contaminants and minerals. Well water, or ‘hard water’, naturally contains dissolved minerals and can be a good source of magnesium. Many bottled mineral waters tested very low in magnesium. If you drink more than seven alcoholic beverages a week, three servings of caffeine a day or smoke, your lifestyle choices contribute to the problem.

## Doctor, I'll have a contraindication with my prescription

Prescription medicine use is up 71% since 1992.<sup>4</sup> The University of Maryland Medical Center lists medications that deplete magnesium on its website, such as antacids and commonly prescribed inhalant corticosteroids (prednisone and hydrocortisone). Several diuretics and calcium channel blockers used to lower blood pressure have been shown to compromise magnesium, as have common antibiotics like neomycin and gentamicin.<sup>5</sup> Even oral contraceptives and many anti-inflammatories reduce the body's supply of this mineral.<sup>6</sup>



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## The Dirt on Magnesium...

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### No bones about it

“Recommendations for postmenopausal women to increase calcium intake can lead to an unfavorable calcium-to-magnesium ratio unless magnesium intake is increased accordingly; the optimum ratio of calcium to magnesium is believed to be 2:1, though extra magnesium may be needed to protect against atherosclerosis.”<sup>7</sup> The two minerals, along with vitamins D and K, work together to rebuild the bone matrix, and the NIH states that “some evidence suggests that magnesium deficiency may be an additional risk factor for postmenopausal osteoporosis. Evidence is mounting that the increased calcium prescribed for bone health may be causing the increase in heart disease in women.”<sup>8</sup> A USDA study found that a diet providing at least 300 mg of magnesium daily halted heart rhythm changes in women.<sup>9</sup>

### Diabetes & other disorders

“Magnesium plays a pivotal role in the secretion and function of insulin; without it, diabetes is inevitable,” writes naturopath Carolyn Dean, author of *The Magnesium Miracle*. Type II diabetics tend to be overweight, between 50 to 70 years old and are not insulin dependent but recently diabetes in 30-year olds has increased 70%. Dr. Dean notes three facts you need to know about magnesium and diabetes: “1)

Magnesium deficiency may be an independent predictor of diabetes; 2) diabetics both need more magnesium and lose more than most people (due in part to frequent urination); and 3) magnesium is necessary for the production, function and transport of insulin.”<sup>10</sup>



Current studies report the risk of depressive mood disorders (anxiety and depression) is significantly lowered in women with adequate

magnesium levels.<sup>11</sup> Though exact workings is unknown, another study ties low serum levels of calcium, magnesium and zinc during pregnancy as a possible cause of pre-eclampsia, the “most common medical complication of pregnancy associated with increased maternal and infant mortality and morbidity.”<sup>12</sup> Mild to moderate asthma sufferers “experienced significant improvement in lung activity and the ability to move air in and out of their lungs” with magnesium supplementation.<sup>13</sup> A magnesium deficiency exists in fibromyalgia, an amplified pain disorder, as noted in 1994 by Thomas Romano, M.D. (see citation in Cellular Magnesium Testing box).

### Should you supplement?

Consider asking your doctor to order the cellular magnesium blood test at your next annual physical (*see next page*). Should your results indicate a low level, particularly if you have digestive or food allergies, you may want to supplement. Not all supplements are equal though. Magnesium oxide costs little but only about 7% of the supplement is absorbed into your system and may cause GI upset. As with any mineral, better choices are chelated forms – the process of breaking down the inorganic rocks into tiny bits easily used by your body – like magnesium glycinate or citrate. If you are low, it can take up to eight months to replenish low cellular magnesium levels.

Magnesium supplements are best in divided doses throughout the day. The body efficiently uses 200 mg at a time. Current adult recommended daily value is 310-320 mg/day for women, and 400-420 mg/day for men. Excessively high or toxic levels are considered rare. Diarrhea and intestinal cramping are signs that you are taking too much or taking a poor quality magnesium form (like oxide).

Food is the most important chemical you put in your body, and we have to tend our own garden. Healthy people, like healthy plants, are naturally more disease resistant. We need to build strong bodies with quality food and water to grow and thrive. Increase consumption of magnesium rich foods like nuts and dark leafy greens. Supplement missing nutrients as needed. Reduce use of artificial chemicals like prescriptions and medications. Food quality, effects of acid rain, drinking water, and the side effects of prescription use can all be improved with magnesium.



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## Symptoms of Moderate Magnesium Deficiency

- ◆ anxiety
- ◆ asthma
- ◆ chronic fatigue
- ◆ depression
- ◆ diabetes
- ◆ digestive problems including constipation
- ◆ fibromyalgia
- ◆ food cravings
- ◆ heart disease
- ◆ high blood pressure
- ◆ infertility
- ◆ insomnia
- ◆ migraines
- ◆ osteoporosis
- ◆ PMS
- ◆ restless leg syndrome

## The Dirt on Magnesium...

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*Warning: those with kidney disorders should never supplement magnesium without direct medical supervision.*

References are available upon request.

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For more information on magnesium's benefits, visit our online Health Library at [www.e-tyh.com](http://www.e-tyh.com) and the following TyH Publications.

- ◆ Energy Connection Part I (The Fibro-Care Story)
- ◆ FIBRO Diet: Minding Magnesium for Metabolism
- ◆ Magnesium & its Relationship to Painful Conditions
- ◆ Magnesium, Malic Acid & Energy
- ◆ Minerals: Q & A on Albion Chelates



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## Cellular Magnesium Testing (Red Blood Cell Magnesium)

### Know your magnesium level

Magnesium (Mg) is responsible for more than 325 enzyme reactions within a cell, including energy production. When cellular magnesium is low, these necessary chemical reactions are adversely affected. Adequate Mg levels can help protect your body from\*\*:

- ◆ Diabetes
- ◆ Fatigue & Muscle Pain
- ◆ Fibromyalgia
- ◆ Fuzzy Memory & Thinking
- ◆ Heart Disease
- ◆ Irritable Bowel
- ◆ Low Energy
- ◆ Obesity
- ◆ Vascular Disorders

A Magnesium Red Blood Cell test (Mg RBC) measures cellular Mg levels. It is the test recommended by Thomas Romano, M.D.\* If the level is low (even low normal), oral Mg is recommended. If very low, IV drip or intramuscular (push) Mg may be necessary to bring levels up more quickly.

A common Mg test is done on blood serum or plasma but these parts of the blood do not represent cellular levels. *Mg RBC is the most efficient or practical way to test for cellular magnesium; therefore, ask your doctor for the Mg RBC test.*

Your doctor's office can draw the necessary blood and ship it to Quest for processing if a local laboratory does not offer Mg RBC testing. Your doctor needs a Quest client number or account first. You may wish to have the test done even if your insurance company does not pay for it as the cost is low – in Arizona, Mg RBC is \$83 with an \$11 draw fee. To find a Quest laboratory near you call the general number below.

**Quest Labs**      1-800-225-7483 (National)  
**Sonora Quest**    602-685-5000 (Arizona)

\*Dr. Thomas Romano has no monetary affiliations with TyH, Inc. or Quest Labs. He is a rheumatologist by specialty, clinician, researcher, and author of "Magnesium Deficiency in Fibromyalgia Syndrome" published in the *J Nutr Med* (1994) 4:165-167. Dr. Romano practices in Martin's Ferry, Ohio.

\*\*Compiled from Seelig, M. MD *The Magnesium Factor* pp 278-279 2003 New York