

Lundberg, George, Medscape editorial on Magnesium

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Hello and welcome. I am Dr George Lundberg, and this is At Large at Medscape.

How is your magnesium level? I bet you don't know. You may not think much about it. How about your various patients' magnesium levels? If you think calcium metabolism in health and disease is complicated, and I do, you ain't seen nothing yet. Try magnesium. With calcium, serum levels give you a pretty good idea as to whether the body has enough. With magnesium, not so much.

Approximately 99% of total body magnesium is located in bone, muscles, and soft tissues; 1% is extracellular.^[1] Thus, plasma or serum magnesium levels are only a rough approximation of amounts of magnesium. Substantial hypomagnesemia does indicate magnesium deficiency, but normal blood levels do not dependably exclude significant depletion of magnesium stores. We "manage what we measure." If we cannot reliably measure some metabolic substance, we have far less chance of sensibly understanding or managing it.

A "Really Big Deal"

Magnesium is an essential mineral, vitally involved in more than 300 regulatory enzyme systems controlling muscle, nerve, bone, protein, DNA, glucose, and energy metabolism. Magnesium is a really big deal.

The recommended daily intake of magnesium varies by age and gender, but 400 mg is a good round number for adults. The kidneys provide homeostasis, typically excreting 120 mg/day. Since the 1960s, we have known that consumption of alcohol, even in modest amounts, can double or even quadruple the excretion of magnesium.^[1] Many over-the-counter and prescription drugs, such as proton pump inhibitors, can lower body magnesium levels.

Is Magnesium the True Emperor of All Maladies?

Magnesium deficiency has been blamed for various arrhythmias, hypertension, attention-deficit/hyperactivity disorder, anxiety, seizures, leg cramps, restless legs syndrome, kidney stones, myocardial infarction, headaches, premenstrual syndrome, fibromyalgia, chest pain, osteoporosis, altitude sickness, diabetes, fatigue, weakness, and other maladies.^[1]

Whoaaa. Really? That is almost everything. Can that be true? Because of the vital nature of magnesium in so many cellular functions, it actually could be true. We simply do not know.

Calcium and magnesium interact in innumerable ways. Magnesium is considered "the calming mineral."

WHO: Americans Need to Consume More Magnesium

There has been no large systematic study of the adequacy of magnesium body stores in Americans. In 2009, the World Health Organization published a report^[2] that stated that 75% of Americans consumed less magnesium than needed. Some say that we have a nationwide magnesium deficiency. Certainly, those named illnesses are common. Obviously, the National Institutes of Health or the Centers for Disease Control and Prevention should fund serious work to ascertain the status of Americans' magnesium body stores, and I call upon them to do so.

For most of my professional life, I have supported the adequacy of a balanced diet and opposed the addition of nutritional supplements as unnecessary, wasteful, possibly harmful, and mostly a scam. But as the "typical" American diet has evolved into one of fast foods and processed foods, my attitude has changed.

Eat Your Spinach, Take Supplements

Foods with high magnesium content include dark leafy greens, especially kale, chard, and spinach; tree nuts and peanuts; seeds; oily fish; beans, lentils, legumes, and whole grains; avocado, yogurt, bananas, and dried fruit; dark chocolate; and molasses.

Supplemental magnesium is available over the counter in many forms: citrate, amino acid chelate, chloride, glycinate, malate, taurate, carbonate, and others, which vary in absorption, concentration, and bioavailability.

Because you cannot just draw a blood sample and ask the lab to identify a deficiency, I advise that if a patient has any of the symptoms I listed, you might best just try that old standby, "trial of therapy," and track what happens. Since I got interested in this topic a couple of years ago, I have emphasized the inclusion of magnesium-rich foods in my diet. Because I like to drink wine and I take occasional proton pump inhibitors, I supplement my balanced diet with an additional 400 mg of magnesium daily.

I feel terrific—better than before magnesium. I know that is subjective as all hell, but what better way would you like your patients to feel than "terrific"?

That's my opinion. I am Dr George Lundberg, at large at Medscape.

Refs:

Janen-Dechent 2012

Water report from WHO, 2009