

# Magnesium Deficiency

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Any time I hear something enhances mitochondrial health, I am all ears. I know I am overstating the obvious, but if cells don't have energy, they don't repair and replicate. So, encouraging mitochondrial health should be an underlying emphasis with every patient, regardless of their condition. Mitochondrial health is enhanced by many factors; exercise and intermittent fasting are two big ones. In terms of nutrients: CoQ, lipoic acid, D-Ribose, and acetyl L-carnitine are all stars.

Did you know that 90% of free radicals come from everyday mitochondrial function. That's why the body has Coenzyme Q and lipoic acid among others as internal mitochondrial antioxidants to quench free radicals. But I was surprised to learn magnesium plays a major role in optimizing mitochondria.

Here's why: One of the major functions in mitochondrial health is to package energy in units called ATP. We need magnesium to form magnesium ATP. If magnesium is not present inside the



mitochondria, it can't make ATP in a stable form that the body can transport and use efficiently. If we can't store and transport energy, cellular repair and regeneration is severely compromised. And that's what defines DIS-EASE, the inability to repair and regenerate healthy cells.

In an earlier discussion called "Crash Course on Magnesium," we've talked about magnesium as being a critical mineral in over 300 enzymatic reactions. But researchers are now saying magnesium is a critical co-factor in more than 600 enzymatic reactions in the human body. Many of them are tied to energy production.

Deficiencies in magnesium ultimately yield lower energy states, which means cells can't maintain homeostasis. As a result, they are more susceptible to environmental toxins and infections, which cause free radicals to increase. Free radicals "inside the cells" damage DNA and mitochondria, which further reduce energy production and healthy cell replication.

Let's look at why magnesium is the single greatest mineral deficiency. We start by realizing magnesium in our soil is depleted. Next, as a culture, we consume foods that will deplete magnesium. Processed foods are not only

deficient but drain mineral reserves to make the enzymes needed to detoxify the food additives and chemicals we unknowingly ingest. Know anyone who complains of digestive issues? In fact, digestive issues reduce availability even further because we need sufficient HCL to cleave magnesium from its substrates.

You can see how our magnesium pools are low to begin with, but if we add stress to the picture, that depletes cellular magnesium even faster. Here's another way magnesium is lost: chronic illness. Many chronic conditions are tied to magnesium deficiency. But even more conditions drain magnesium reserves: diabetes, hypertension, kidney disorders, metabolic syndrome, inflammatory lung diseases, cancer, heart attacks, strokes, atherosclerosis, excess clotting, liver damage, heart conditions like arrhythmias, further deplete magnesium pools.

And let's not forget aging. In general, the elderly eat less and eat less of the foods that contain magnesium. Heck, the aging process itself depletes magnesium. Also consider that many pharmaceutical agents deplete magnesium. Dr. Russell Blaylock, neurosurgeon, asserts that magnesium is the body's primary protectant against uncontrolled inflammation.

By the way, several studies have shown inverse relationships between reduced magnesium and increased CRP. In other words, lower levels of magnesium mean increased levels of CRP. It behooves us to make sure we have optimal levels. Most of us know serum blood tests are woefully inept because they measure

magnesium outside the cell. Whereas 99% of magnesium is inside the cell. For example, Lab Corp provides a serum level range from 1.6 - 2.6 mg/dl. However, as a ballpark figure, optimal levels should be over 2.2. Have you ever seen patients with magnesium over 2.2? Rarely. A better measurement is RBC magnesium. This represents magnesium inside red blood cells and reflects the physiology of what's going on intracellularly. Lab Corp suggests RBC Magnesium should be 4.2- 6.8 mg/dl. However, I learned from the Balancing Body Chemistry group years ago, the optimal ranges of RBC Magnesium should be 6.00-7.2 mg/dl.

Let's not forget that magnesium activates vitamin D, which has multiple genetic and immune enhancing properties. Also, you can see a link to a discussion on the magnesium-thyroid connection to the right. I hope you can see that your patients need minerals, but the number one mineral they need is magnesium. In that light, my team has put together 2 resources for you. The first is a simplified chart that discusses the different forms of magnesium and what they are used for. The second is a brief video that you can send out via Facebook, Instagram, or email sharing an easy way to take a form of magnesium that doesn't cause loose stools and has 400 mg of elemental magnesium per scoop in a tasty berry flavor. It's called Acti-Mag Plus.

Thanks for taking the time to be with me today. I look forward to being with you again next Tuesday.