

# Magnesium: Calcium's Off-Ignored Sibling

The metallic element magnesium (Mg) is a vital electrolyte that the body uses in over 300 different enzymatic reactions. It's also a crucial ingredient in bone-building and essential in the synthesis of ATP (the body's main form of energy.) It does not receive as much attention as calcium, but magnesium deficiency is quite common, and can lead to a wide range of severe problems.

Magnesium is often taken for granted in the body, but it plays a role in muscle function (cardiac, smooth, and skeletal), proper function of the nervous system, and enables dilation of blood vessels.

## Common symptoms of magnesium deficiency

Mild-to-moderate magnesium deficiency can manifest as symptoms including anxiety, depression, fatigue, insomnia, panic attacks, muscle cramps and twitches, headaches, digestive issues, certain cardiac arrhythmias, and tremor.

Severe deficiency can cause muscle weakness, abnormal gait, vertigo, seizures, stupor, and coma, among other things.

On physical exam, magnesium-deficient patients may be hyperreflexive, and may even show positive Chvostek and Trousseau signs. Arrhythmias and EKG abnormalities can be seen as well.

## Can Mg levels be tested?

Vitamin D Magnesium levels in the body are notoriously difficult to test. Testing the level of magnesium in the serum is often unreflective of the amount present in tissues.

The best test available is the magnesium load test, in which a slow IV administration of magnesium is compared to the amount excreted in urine over 24 hours. This test is cumbersome and often requires a hospital stay, and even it may not reflect magnesium deficiency in specific tissues, such as the heart or brain.

## What foods are rich in magnesium?

The richest food sources of magnesium are nuts, whole grains, leafy green vegetables, fish, meat, and dairy. Most of the magnesium is lost when grains are refined, as well as when vegetables are boiled.

## What do I need to know about magnesium supplementation?

- The adult RDA for magnesium, between 300 and 400 mg depending on age and gender, is probably an underestimation of the body's needs. Even so, most people consume even less than the RDA.
- If you take calcium, you should take magnesium as well, because the two minerals have a strong, synergistic relationship. A 2:1 calcium/magnesium ratio is often recommended.
- There is no clear evidence that any form of magnesium is absorbed better than any other. But if magnesium supplementation gives you loose stools, try magnesium glycinate, in divided doses, with food.

If you have questions about this material, or would like more information or a list of references, please see Dr. Shannon Brown at the Circle of Care table. Thanks for reading!

## Medications that decrease Mg levels (a partial list)

- Aminoglycosides (antibiotics such as gentamycin)
- Amphotericin B
- Various antipsychotics
- Beta-2 agonists (such as albuterol)
- Oral contraceptives
- Cisplatin
- Cyclosporine
- Thiazide and loop diuretics
- Glucocorticoids
- Theophylline

In addition, Mg deficiency may increase the toxicity of digoxin.

## The Take-Home Message:

Magnesium is a much more important mineral than many people realize. Eat lots of veggies and whole grains, and if you take calcium, be sure to take magnesium too!

