

THE ROLE OF MAGNESIUM

By Shari Barbanel

An essential mineral, magnesium plays a major role in a number of the body's functions, such as blood sugar control, energy production, protein synthesis, muscle and nerve function. In addition, magnesium helps activate vitamin D.

In fact, a 2018 review published in *The Journal of the American Osteopathic Association* found that vitamin D can't be metabolized without sufficient magnesium levels, meaning vitamin D remains stored and inactive for as many as 50 percent of Americans.

"People are taking vitamin D supplements but don't realize how it gets metabolized. Without magnesium, vitamin D is not really useful or safe," says study co-author Mohammed S. Razzaque, MBBS, PhD, a professor of pathology at Lake Erie College of Osteopathic Medicine.

Magnesium can help to reduce muscle cramps, supports heart health, helps to improve sleep, reduce inflammation, and may help in preventing migraines. Foods high in magnesium include almonds, bananas, beans, broccoli, brown rice, egg yolk, fish oil, flaxseed, green leafy vegetables, milk, mushrooms, other nuts, oatmeal, pumpkin seeds, sesame seeds, soybeans, sunflower seeds, sweet corn, tofu and whole grains. Magnesium is also available as a dietary supplement in a number of delivery forms.

According to Livestrong.com, magnesium is considered to be a "shortfall nutrient," by the U.S. Department of Agriculture's (USDA) Dietary Guidelines for Americans, which are nutrients that is underconsumed in the U.S. Signs that a person's magnesium levels are low include, loss of appetite, fatigue, nausea, vomiting and weakness. Further, low magnesium intake over time has been linked to an increased risk of chronic diseases, such as cardiovascular disease, type 2 diabetes and osteoporosis.

In a 2024 study published in the *European Journal of Nutrition*, scientists from the University of South Australia (UniSA) found a strong link between low magnesium levels and high amounts of a genotoxic amino acid called homocysteine. "Our study showed a direct correlation between low magnesium levels in blood (less than 18 mg/L) and increased DNA damage, even after adjusting for gender and age," said UniSA molecular biologist Dr. Permal Deo.

In another study published in 2022 in the journal *Cell*, researchers at the University of Basel and University Hospital Basel discovered that the level of magnesium in the blood is an important factor in the immune system's ability to tackle pathogens and cancer cells, as T cells need a sufficient quantity of magnesium in order to operate efficiently.

And in a 2023 study published in the *European Journal of Nutrition*, scientists from the Neuroimaging and Brain Lab at The Australian National University (ANU) found that an increased intake of magnesium-rich foods such as spinach and nuts could help reduce the risk of dementia. "Our study shows a 41 percent increase in magnesium intake could lead to less age-related brain shrinkage, which is associated with better cognitive function and lower risk or delayed onset of dementia in later life," said lead author and PhD researcher Khawlah Alateeq, from the ANU National Centre for Epidemiology and Population Health.

According to the USDA, the recommended daily intake (RDA) of magnesium depends on age and sex. For example, the RDA for men over 31 is 420 milligrams (mg) per day, and for women over 31 it is 320 mg per day. **VR**

References:

Livestrong.com
Webmd.com

TEST YOUR KNOWLEDGE OF MAGNESIUM



1.) Magnesium plays a major role in a number of the body's functions including _____.

- a.) energy production b.) blood sugar control
c.) muscle function d.) all of the above

2.) A 2018 review published in *The Journal of the American Osteopathic Association* found that vitamin D can't be metabolized without sufficient magnesium levels.

- a.) True b.) False

3.) In a 2024 study published in the *European Journal of Nutrition*, scientists from the University of South Australia (UniSA) found a strong link between low magnesium levels and high amounts of a genotoxic amino acid called _____.

- a.) homeostasis b.) homoscedasticity
c.) homocysteine d.) none of the above

4.) A 2023 study published in the *European Journal of Nutrition*, scientists from the Neuroimaging and Brain Lab at The Australian National University (ANU) found that a _____ percent increased intake of magnesium-rich foods such as spinach and nuts could help reduce the risk of dementia.

- a.) 41 b.) 14
c.) 4 d.) none of the above

5.) According to the USDA, the recommended daily intake (RDA) of magnesium men over 31 is _____ per day.

- a.) 420 g b.) 420 mg
c.) 240 g d.) 240 mg

ANSWERS: 1.) D 2.) A 3.) C 4.) A 5.) B

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