MAGNESIUM BASICS

There has been increased attention and research focus on magnesium recently due to its role in many vital biological functions such as heartbeat regulation, muscle contraction, and protein synthesis.\(^1,2\) Magnesium is the 4th most abundant mineral in the body with 50-60% stored in our bones, 1% found in our blood and remaining magnesium is stored in cells and tissues.\(^3\) Despite the importance of magnesium, many American adults fail to consume the recommended daily amount (RDA).\(^4\) A magnesium supplement may help fill nutrient gaps for this essential mineral.

PHYSIOLOGICAL FUNCTIONS OF MAGNESIUM

Magnesium helps support nerve, muscle and heart function and is involved in over 300 reactions in the body.\(^3,5\) This key mineral also plays a role in energy metabolism support, specifically in the production of adenosine triphosphate (ATP) or cellular energy, for our body.\(^1\) Magnesium also supports healthy bones and teeth.\(^1\)

DIETARY MAGNESIUM REQUIREMENTS

The US Food and Nutrition Board (FNB) recommends a daily magnesium intake of 310–320 mg for American females (≥19 y) and 400–420 mg for American males (≥19 y).\(^3\)

The table outlines the Recommended Daily Allowance (RDA) for magnesium for all age groups as well as different life stages including pregnancy and lactation.

FOOD SOURCES OF MAGNESIUM

Magnesium is found in a variety of foods but at varying levels.\(^1,2\) Foods that are good sources of magnesium include dark green vegetables, beans and peas, whole grains, as well as nuts and seeds. It is important to include magnesium-rich foods in the diet when possible to help meet individual daily requirements. To meet the RDA for magnesium, you must consume at least 4-8 servings of magnesium-rich foods daily.

DIETARY SUPPLEMENTS

More than half (59%) of American adults (>19 y) are not meeting their magnesium requirements from diet alone.\(^4\) If a diet is lacking in magnesium rich foods, you may want to determine an appropriate supplement regimen to help you fill in the gap from your dietary intake. There are various forms of magnesium available such as: magnesium oxide (most common form), magnesium citrate (highly absorbable form),\(^7,8\) magnesium gluconate, and magnesium chloride. If additional magnesium is warranted, different strengths of magnesium supplements are offered for the varying needs of consumers. Some individuals may experience mild transient gastrointestinal discomfort (e.g. diarrhea) with use of magnesium supplements. The FNB has set a tolerable upper limit (UL) of ≤ 350 mg for daily magnesium intake from supplements for healthy adults.\(^3\) However, magnesium needs and response to magnesium salts may vary within individuals, particularly those with certain conditions that may need higher levels. You should consult with your healthcare professional to determine the right form and strength to meet your needs.

The table below provides a list of magnesium rich foods.\(6\)

<table>
<thead>
<tr>
<th>FOOD</th>
<th>SERVING SIZE</th>
<th>MAGNESIUM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cereal, oat bran, raw</td>
<td>1/2 cup</td>
<td>110 mg</td>
</tr>
<tr>
<td>Almonds, dry roasted</td>
<td>1 oz.</td>
<td>79 mg</td>
</tr>
<tr>
<td>Spinach, frozen, chopped, cooked</td>
<td>1 oz.</td>
<td>78 mg</td>
</tr>
<tr>
<td>Cashews, dry roasted</td>
<td>1 oz.</td>
<td>74 mg</td>
</tr>
<tr>
<td>Soy Milk, plain or vanilla</td>
<td>1 cup</td>
<td>61 mg</td>
</tr>
<tr>
<td>Black beans, cooked</td>
<td>1/2 cup</td>
<td>60 mg</td>
</tr>
<tr>
<td>Peanut butter, smooth</td>
<td>2 Tbsp.</td>
<td>54 mg</td>
</tr>
<tr>
<td>Peanuts, oil roasted</td>
<td>1 oz.</td>
<td>50 mg</td>
</tr>
</tbody>
</table>
FACTORS AFFECTING MAGNESIUM STATUS

A variety of factors can affect one’s magnesium status including: age, health conditions, lifestyle factors, nutrient interactions, and medication use.

- **Age**: Mature adults tend to consume less dietary magnesium, and magnesium absorption decreases while urinary magnesium excretion tends to increase with age.

- **Health Conditions**: Gastrointestinal disorders (Crohn’s disease, malabsorption syndromes, celiac disease, bariatric surgery, and/or any surgical removal of the intestine or intestinal inflammation due to radiation) may lead to magnesium depletion. Renal disorders and long-term use of certain diuretics may result in increased urinary loss of magnesium.1–2

- **Lifestyle Factors**: Poor dietary intake and gastrointestinal issues from chronic alcoholism also leads to increased urinary loss of magnesium.2–3

- **Nutrient Interactions**: High intakes of phosphorus may cause an increase in magnesium excretion, and therefore, a decrease in intestinal magnesium absorption.2

- **Medication Interactions**: There are some medications that may deplete magnesium from the body including: acid suppressing drugs (i.e. proton pump inhibitors), antibiotics, anti-neoplastic and diuretics drugs.1–2,10–15 If individuals have impaired kidney function and/or are taking medications, they should use caution with magnesium supplements and consult their healthcare professional before use as magnesium may affect the effectiveness of certain medications. For example, it is important to take magnesium supplements two hours apart from bisphosphonates as magnesium may affect absorption of bisphosphonates.10

SO WHAT SHOULD HEALTHCARE PROFESSIONALS DO?

Work with your patients to understand their magnesium needs, and encourage them to consume magnesium-rich foods, such as dark green vegetables, nuts, and seeds regularly. For those who are still unable to meet their needs, discuss the potential to use magnesium supplements as a safe and effective way to incorporate additional magnesium into their diet.

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REFERENCES


