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WHAT IS MAGNESIUM?

Magnesium is an abundant mineral that your body needs to stay healthy. It is naturally found in many foods, added to some food products, and available as a supplement. It is even found in common medicines like antacids and laxatives.

Why Does Your Body Needs It?

Magnesium is a cofactor, or helper, for over 300 enzyme systems in your body. These systems act like small engines that regulate important reactions, such as:

- **Energy Production:** Helping your body turn food into fuel.
- **Physical Function:** Supporting muscle and nerve health.
- **Glycolysis (Stability):** Keeping blood pressure and blood glucose (sugar) under control.
- **Structural Development (Building Blocks):** Helping develop strong bones and the synthesis of DNA and antioxidants.

Magnesium & Diabetes

Research from experts like Dr. Benjamin Nwosu shows that magnesium is essential for how your body responds to insulin.

Magnesium helps with the "post-receptor" actions of insulin. This means it helps your cells use the insulin your body produces to take in glucose from your blood.

If your magnesium levels are low for a long time, your cells may struggle to use sugar effectively (this is known as insulin resistance). Over time, this can lead to:

- High blood sugar levels (Hyperglycemia).
- An increased risk or worsening of Type 2 Diabetes.

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Magnesium & Type 2 Diabetes

It is very common for people with Type 2 Diabetes to have low magnesium levels. This is especially true for those who:

- Have had diabetes for many years.
- Have high blood sugar levels that are difficult to control.
- Are experiencing long-term complications with their blood vessels or nerves.

Understanding your magnesium levels is a vital part of managing your long-term health and well-being.

WHEN IS A MAGNESIUM TEST ORDERED?

Your doctor may request a magnesium test if you:

- **Experience symptoms** such as nausea, unusual weakness, muscle twitching, cramping, or an irregular heartbeat (cardiac arrhythmia).
- **Have a medical condition** linked to magnesium imbalances, including:
    - Chronic kidney disease or malabsorption syndromes.
    - Diabetes that is not well-controlled.
    - Long-term diarrhea or malnutrition.
    - Low levels of potassium or calcium.
- **Take certain medications** that can lower magnesium (like "water pills" or some antibiotics) or increase it (like certain antacids, laxatives, or Aspirin).
- **Are currently receiving treatment** for magnesium or calcium deficiencies.

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RECOGNIZING THE SYMPTOMS

It is important to note that the symptoms of high and low magnesium can often feel similar.

Low Magnesium (Deficiency)	**High Magnesium (Excess)**
Loss of appetite & fatigue	Diarrhea
Nausea & vomiting	Belly cramping
Muscle cramps & twitching	**Extreme levels: Cardiac arrest**
Numbness or tingling	
Irregular heartbeat	
Extreme levels: Seizures	

MAGNESIUM & YOUR DIABETES JOURNEY

Why it matters:

Magnesium is essential for **insulin sensitivity** (how well your body responds to insulin) and **glucose metabolism** (how your body processes sugar).

The Benefits for You:

1. **Improved Insulin Action:** Healthy magnesium levels help your body's insulin work more effectively.
2. **Better Sugar Control:** Proper levels are linked to lower fasting glucose and improved HbA1c results.
3. **Reduced Complications:** Adequate magnesium helps protect you against diabetes-related issues, such as nerve damage (neuropathy) and heart disease.

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NUTRITION: FOOD AS MEDICINE

Most people with Type 2 Diabetes can benefit from increasing their intake of magnesium-rich foods, such as:

- **Seeds & Nuts:** Pumpkin seeds, chia seeds, almonds, and cashews.
- **Greens & Veggies:** Spinach and baked potatoes (with the skin).
- **Grains & Legumes:** Brown rice, black beans, and edamame.
- **Protein & Dairy:** Salmon, soy milk, and low-fat yogurt.



LABORATORY INFORMATION

To ensure the most accurate results, please follow these collection guidelines:

Patient Preparation: If you are taking high doses of **Biotin** (more than 5 mg/day), please wait at least **8 hours** after your last dose before having your blood drawn.

Educational Brochures
Clinical Laboratories

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Specimen Requirements:

- **Blood Test (Serum):** Collected in a plain or lithium heparin tube.
- **Urine Test:** Can be a "Random" sample or a "24-Hour" collection to evaluate how your body processes and excretes magnesium.

Normal Reference Ranges: *(Note: These may vary slightly between different laboratories)*

- **Blood (Adults):** 0.75 – 0.99 mmol/L
- **24-Hour Urine:** 3 – 5 mmol/24 hr

Turnaround Time (TAT):

- **Blood Results:** Typically, available within 24 hours.
- **Urine Results:** Typically, available within 7 days.

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