Nutrient Guide (Daily)

Nutrient	Proper Action Taken	If Proper Action Not Taken, then Supplement Dosage
Magnesium	Insufficient due to soil depletion	400–600 mg/day (Magnesium glycinate or citrate preferred; essential since food sources are too low)
Calcium	Dairy or eggshell powder	1,000–1,200 mg/day (Calcium citrate preferred)
Zinc	Oysters or grass-finished beef	10–30 mg/day (Zinc picolinate or Zinc citrate preferred)
B Vitamins	Grass-finished beef	B-complex with methylated forms (especially B12 as methylcobalamin and B9 as methylfolate)
Vitamin C	Moderate carbohydrate intake; Fruits/Juices	250–500 mg/day (ascorbic acid or whole-food-based preferred)
Vitamin D	Low pressure/level one tanning bed in winter; adequate sun exposure in summer	2,000–5,000 IU/day (Vitamin D3 with K2 preferred)
Vitamin K	Animal sources (MK-4) and fermented foods (MK-7)	100–200 mcg/day (Vitamin K2 MK-7 preferred)
Omega-3:6 Ratio	Grass-finished beef or wild-caught fish; limit omega-6s	DHA: 500–1,000 mg/day, EPA: 500–1,000 mg/day (Fish oil or algae-based preferred)
Collagen	Grass-finished ground beef or bone broth	10–20 g/day (Hydrolyzed collagen peptides preferred)
Creatine	Grass-finished beef or wild-caught fish	3–5 g/day (Creatine monohydrate preferred)

MAGNESIUM

Form	Uses	Absorption Rate
Glycinate	Sleep, relaxation, muscle recovery	High (80-90%)
Threonate (MgT)	Brain function, memory, cognitive enhancement	High (~70-80%)
Malate	Energy production, muscle recovery, reducing fatigue	Moderate to High (~65-75%)
Citrate	Digestion, stool softening, muscle relaxation	Moderate (~55-70%)
Taurate	Heart health, blood sugar regulation, electrolyte balance	Moderate (~50-65%)

Overview of Magnesium & Why Supplementation is Important

Magnesium is an essential mineral involved in over 300 enzymatic reactions in the body, including muscle function, nerve signaling, energy production, and cardiovascular health. Despite its importance, obtaining adequate magnesium from diet alone is difficult, primarily because:

- **Soil depletion** has drastically reduced magnesium content in modern crops.
- **Processed foods** are stripped of natural magnesium.
- Common dietary sources (leafy greens, nuts, seeds, and whole grains) may not provide sufficient amounts due to **poor absorption**.
- **Lifestyle factors** like stress, caffeine, alcohol, and certain medications deplete magnesium levels.

As a result, many people are unknowingly deficient, leading to symptoms such as muscle cramps, fatigue, poor sleep, anxiety, and digestive issues. Supplementation becomes a practical solution to maintain optimal magnesium levels.

Here is an overview of the five major forms of magnesium, focusing on their primary uses and absorption rates. It serves as a quick reference guide for individuals looking to understand the functional benefits of different magnesium types and their effectiveness in the body.

Breakdown of Magnesium Forms:

- **Magnesium Glycinate**
  - Best For: Sleep, relaxation, muscle recovery.
  - Absorption Rate: High (80-90%).
  - Key Benefit: Gentle on digestion, promotes calmness, and supports muscle function.

- **Magnesium Threonate (MgT)**
  - Best For: Brain function, memory, cognitive enhancement.
  - Absorption Rate: High (~70-80%).
  - Key Benefit: Crosses the blood-brain barrier, making it effective for mental clarity and neuroprotection.

- **Magnesium Malate**
  - Best For: Energy production, muscle recovery, reducing fatigue.
  - Absorption Rate: Moderate to High (~65-75%).
  - Key Benefit: Helps reduce muscle fatigue and supports ATP (energy) production.

- **Magnesium Citrate**
  - Best For: Digestion, stool softening, muscle relaxation.
  - Absorption Rate: Moderate (~55-70%).
  - Key Benefit: Known for its mild laxative effect, making it beneficial for those with constipation or digestive sluggishness.

- **Magnesium Taurate**
  - Best For: Heart health, blood sugar regulation, electrolyte balance.
  - Absorption Rate: Moderate (~50-65%).
  - Key Benefit: Supports cardiovascular function and may help regulate blood pressure and glucose metabolism.

FIBER

Fiber Type	Food Sources	Key Benefits	SCFA Produced
Soluble (Gel-Forming)	Oats, Flaxseeds, Psyllium Husk, Brussels Sprouts, Carrots, Okra, Barley, Avocados	Slows digestion, lowers cholesterol, stabilizes blood sugar	Acetate, Propionate
Soluble (Prebiotic)	Onions, Garlic, Leeks, Asparagus, Bananas (green), Chicory Root, Jerusalem Artichokes, Lentils, Black Beans, Dandelion Greens, Blueberries, Apples	Feeds gut bacteria, improves microbiome, enhances immune function	Acetate, Propionate, Butyrate
Insoluble	Wheat Bran, Whole Wheat, Brown Rice, Nuts (Almonds, Walnuts), Cauliflower, Green Beans, Celery, Cabbage, Broccoli Stems, Bell Peppers	Adds bulk to stool, prevents constipation, supports gut motility	Minimal SCFA Production
Insoluble & Soluble (Combined)	Chia Seeds, Kale, Berries (Raspberries, Blackberries), Legumes (Kidney Beans, Chickpeas, White Beans), Peas, Apples (with skin), Carrots, Sweet Potatoes (with skin), Brussels Sprouts, Turnips, Beets, Cabbage	Supports digestion, blood sugar balance, and gut health	Acetate, Propionate
Resistant Starch	Cooked & cooled sweet potatoes/rice, Green bananas, Lentils, White beans	Supports gut microbiota, increases butyrate production, improves insulin sensitivity	Butyrate, Some Propionate

Dietary fiber is an essential component of a healthy diet, primarily found in plant-based foods such as vegetables, fruits, legumes, and whole grains. Unlike other carbohydrates, fiber is indigestible by human enzymes and passes through the digestive tract, where it plays a crucial role in gut health, digestion, blood sugar regulation, and satiety.

Fiber can be classified into soluble and insoluble types, each serving distinct functions:

- Soluble fiber dissolves in water, forming a gel-like substance that slows digestion, stabilizes blood sugar, and supports cholesterol management.
- Insoluble fiber, on the other hand, remains intact as it moves through the digestive system, promoting regular bowel movements and preventing constipation.

Some fibers, like prebiotic fibers and resistant starch, serve as fuel for gut bacteria, leading to the production of short-chain fatty acids (SCFAs)—key compounds that contribute to gut and metabolic health. Ensuring a diverse intake of fiber-rich foods supports digestion, enhances nutrient absorption, and promotes a balanced gut microbiome, which is essential for overall well-being.

Short-chain fatty acids (SCFAs) are essential metabolic byproducts produced by gut bacteria when they ferment dietary fibers, particularly resistant starch, prebiotic fibers, and some soluble fibers in the colon.

The three primary SCFAs—acetate, propionate, and butyrate—play distinct yet complementary roles in health:

- **Acetate** is the most abundant SCFA and serves as an energy source for peripheral tissues while supporting metabolic functions.
- **Propionate** contributes to glucose regulation and appetite control by influencing liver function and gut hormone signaling.
- **Butyrate** is particularly vital for gut health, as it serves as the primary energy source for colon cells, strengthens the intestinal barrier, and has potent anti-inflammatory effects.

Adequate SCFA production is linked to better digestion, enhanced immune function, improved insulin sensitivity, and reduced inflammation, making fiber intake crucial for overall metabolic and gut health. Without sufficient fermentable fiber in the diet, several problems arise:

1. Limited SCFA Production (Especially Butyrate)

- **Why it matters:** SCFAs, especially butyrate, are essential for gut barrier integrity, reducing inflammation, and fueling colon cells.
- **What happens without enough fiber?**

    - Reduced butyrate levels → Weakens gut lining, increasing the risk of leaky gut and inflammation.
    - Less acetate & propionate → Can impact metabolism and appetite regulation.
- **Solution:** Increase resistant starch & prebiotic fiber (e.g., cooked & cooled rice/potatoes, onions, garlic, dandelion greens).

2. Gut Bacteria Feed on the Mucus Lining (Instead of Fiber)

- **Why it matters:** The gut has a mucus layer that protects intestinal cells from harmful microbes and inflammation.
- **What happens without enough fiber?**
    - Bacteria start breaking down the mucus lining for fuel instead of fermenting fiber.
    - Leads to intestinal permeability (leaky gut), increased inflammation, and higher risk of infections.
- **Solution:** Ensure a steady intake of fermentable fiber (resistant starch, soluble fiber, and polyphenol-rich foods like berries).

3. Increased Secondary Bile Acid Production (Gut Dysbiosis & Inflammation)

- **Why it matters:**
    - Primary bile acids (produced by the liver) aid digestion, but without fiber, gut bacteria overconvert them into secondary bile acids, which can be harmful in excess.
- **What happens without enough fiber?**
    - Excess secondary bile acids → Irritate the colon and have been linked to inflammation, dysbiosis, and increased colorectal cancer risk.
- **Solution:**
    - Increase fiber intake (especially soluble fiber) to bind excess bile acids and promote healthy gut bacterial balance.
    - Include foods like psyllium, oats, and flaxseeds, which help regulate bile acid metabolism.

4. Impaired Detoxification & Waste Elimination

- **Why it matters:** Fiber helps bind toxins, waste products, and excess hormones (e.g., estrogen) to remove them through stool.
- **What happens without enough fiber?**
    - Reduced toxin clearance → Leads to hormonal imbalances, sluggish liver function, and potential toxin buildup.
    - Higher risk of constipation → Longer transit time = more reabsorption of toxins and estrogen, which can contribute to metabolic dysfunction.
- **Solution:** Increase soluble fiber (flaxseeds, chia seeds, leafy greens) to support hormone balance & detox pathways.

5. Disrupted Blood Sugar & Insulin Sensitivity

- **Why it matters:** Fiber slows glucose absorption, helping regulate blood sugar levels and insulin response.
- **What happens without enough fiber?**
    - Faster glucose spikes & crashes → Leads to insulin resistance, energy dips, and increased hunger/cravings.
    - Higher diabetes risk due to chronically elevated blood sugar & insulin levels.
- **Solution:** Increase soluble fiber & resistant starch (e.g., cooked & cooled potatoes, oats, flaxseeds) to slow digestion and improve insulin sensitivity.

6. Decreased Satiety & Increased Cravings

- **Why it matters:** Fiber contributes to fullness & appetite regulation by influencing gut hormones (GLP-1, PYY).
- **What happens without enough fiber?**
    - Increased hunger & cravings due to lack of gut hormone activation.
    - Higher calorie intake & weight gain risk since fiber-rich foods naturally curb appetite.
- **Solution:** Prioritize fiber from whole foods like berries, legumes, resistant starch, and high-fiber animal-based foods (like tendons or collagen-rich cuts of meat).

7. Poor Gut Microbiome Diversity

- **Why it matters:** Fiber feeds beneficial gut bacteria, promoting a diverse microbiome linked to better digestion, immunity, and mental health.
- **What happens without enough fiber?**
    - Gut dysbiosis (overgrowth of harmful bacteria) due to lack of fuel for beneficial microbes.
    - Increased inflammation & weaker immune system since fiber helps regulate immune responses in the gut.
- **Solution:** Eat a variety of fiber sources (fermentable fibers, resistant starch, and polyphenol-rich foods like berries & dark chocolate).