MERCOLA
Take Control of Your Health

Why Liposomal Magnesium Is the Next Leap Forward in Absorption

Analysis by Dr. Joseph Mercola | April 06, 2026

STORY AT-A-GLANCE

- About 80% of the magnesium you get from food is absorbed passively — it passes between your intestinal cells through tiny gates made of proteins called claudins, not through the cells themselves
- Standard magnesium supplements work, and certain forms like threonate, glycinate and taurate offer real, targeted benefits — but all conventional forms face the same biological challenge: they dissolve quickly and release magnesium before it reaches the zone where most passive absorption occurs
- Liposomal magnesium sidesteps this challenge entirely. By wrapping magnesium inside tiny fat-based bubbles (liposomes), it gets absorbed the same way your body absorbs dietary fats — directly into your cells, right in the upper intestine where fat absorption is most active
- Liposomal delivery doesn't depend on the claudin gates, concentration levels, or the timing window that food-based magnesium relies on. It represents the most advanced supplement approach for maximizing the total amount of magnesium that reaches your bloodstream
- Conventional magnesium supplements still have a place — especially forms chosen for specific benefits like cognitive support or relaxation — but liposomal technology offers a meaningful upgrade in overall absorption efficiency

Here's something many people — and even many doctors — don't realize about magnesium: roughly 80% of it doesn't get absorbed through your intestinal cells at all. It slips between them, passing through tiny protein gates in the gaps where one cell meets the next. This passive route is the workhorse of magnesium absorption, and it's the reason conventional supplements — no matter how high-quality — run into the same biological wall.

If you're one of the roughly 50% of Americans who aren't getting enough magnesium from your diet, chances are you have tried a magnesium supplement. Walk into any health food store and you will find shelves full of options — magnesium oxide, citrate, glycinate, threonate, taurate, malate — each one claiming to be the best-absorbed form.

Many of these forms are genuinely good products that deliver real benefits. Threonate, for instance, has research supporting its ability to cross the blood-brain barrier, making it a smart choice for cognitive support. Glycinate is gentle on the stomach and well-suited for people who need a calming form of magnesium. Taurate has shown promise for cardiovascular health.

But even the best conventional magnesium supplements face an inherent biological limitation in how much magnesium they deliver to your bloodstream. The issue is not quality or form — it's the delivery method itself. Once you understand how your body was designed to absorb this mineral, you'll see why liposomal technology represents such a significant step forward.

Your Body Has 2 Doors for Magnesium — and One Handles 80% of the Job

Think of your intestinal lining as a wall of bricks. Each brick is a cell. Magnesium can get into your body in two ways. The first way is through the bricks — directly through the intestinal cells themselves. Your cells have special channels that actively pump

magnesium in. But these channels only handle so much at a time. Think of them as a narrow doorway that gets jammed when too many people try to walk through at once. This route handles only about 10% to 20% of your magnesium absorption.[1]

- **The second way is between the bricks, through the narrow gaps where one cell meets the next —** These gaps aren't just open spaces. They're carefully controlled by a family of proteins called claudins that form selective gates in the tight junctions between cells. These gates decide what gets through and what doesn't.[2]

- **This second pathway — the passive one between the cells — handles roughly 80% to 90% of all the magnesium your body absorbs —** Recent research has confirmed this is the dominant route. A 2023 review in the World Journal of Gastroenterology found that magnesium moves through tight-junction pores formed by Claudin-7 and Claudin-12, with this passive route accounting for approximately 90% of total absorption.[3,4]

- **But here's the catch —** This passive pathway only works when there's enough magnesium concentrated in the right place, at the right time. It only works when there's more magnesium inside your intestine than on the other side of the wall — a difference scientists call a concentration gradient. No difference, no movement.

Why Your Gut Is Perfectly Built to Absorb Magnesium from Food

Here's where things get really interesting. The concentration of these claudin gates isn't the same everywhere in your intestine. They become denser as you move further downstream, peaking in the lower portions of the small intestine. That means the best zone for passive magnesium absorption is reached about four to six hours after you eat a meal. At first glance, this seems odd.

- **Why would your body put its best absorption equipment so far down the line? —** The answer is one of the most elegant designs in human biology. When you eat real food — a plate of spinach, or a bowl of black beans — the magnesium isn't floating

around freely. It's locked up inside the food's structure, bound to things like chlorophyll (the green pigment in plants), fiber, phytates and proteins.

Your stomach acid starts breaking these bonds, but the full release takes time. As the partially digested food moves slowly through your intestine, enzymes and bile keep chipping away at the food matrix, gradually freeing the magnesium over a period of hours.

- **At the same time, something else is happening —** Your upper intestine is busy absorbing water, fats, sugars and proteins from the food. As all that water gets pulled out, the remaining intestinal contents become more and more concentrated — like a pot of soup that's been simmering and reducing on the stove.

  So, by the time the intestinal contents reach the lower small intestine — where the claudin gates are most abundant — you have a perfect storm for absorption: the magnesium has been freed from the food, the fluid volume has shrunk, the magnesium concentration is high, and the gates are wide open and ready.

- **Your body is essentially using food as a slow-release delivery system and water absorption as a natural concentrator —** The whole system is calibrated so that the magnesium arrives at the right place, at the right concentration, at the right time.[5] It's a masterpiece of biological engineering.

The Absorption Challenge Every Conventional Supplement Faces

This elegant system was built around food — and that's precisely what creates a problem for supplements. When you swallow a magnesium supplement — whether it's oxide, citrate, glycinate or any other form — it dissolves in your stomach acid and releases free magnesium into your upper intestine relatively quickly. Unlike food, there is no slow release from a complex food matrix. The magnesium arrives in your upper gut before the conditions for peak passive absorption are in place.

- **In this upper region, the claudin gates are sparse —** The water content is still high, so the magnesium is diluted. The concentration gradient that drives passive absorption is weaker than it would be further downstream. The pathway available in the upper intestine is primarily the active one — those active transport channels that only handle 10% to 20% of the job.

  This isn't a flaw in the supplements themselves — it's simply a mismatch between how quickly supplements release their magnesium and the timing your body's absorption system was designed around.

- **This doesn't mean conventional supplements are ineffective —** They absolutely work — millions of people have successfully improved their magnesium levels with standard supplements. A 2021 systematic review confirmed that organic forms like citrate have better bioavailability than inorganic forms like oxide, and specific forms offer their own unique advantages beyond just raw absorption numbers.[6,7]

  Threonate, for example, has demonstrated an ability to increase brain magnesium levels in ways other forms may not, making it a valuable choice for cognitive health regardless of its overall absorption percentage. Glycinate's gentle profile makes it ideal for sensitive individuals. These are real, research-backed benefits that matter.

  But when it comes to maximizing the sheer amount of magnesium that makes it into your bloodstream, there is room for improvement.[8] That is where liposomal technology comes in — as a more advanced delivery method.

Liposomal Magnesium: Using a Completely Different Door

If the claudin gates between cells are the bottleneck, what if you could skip them entirely? That is exactly what liposomal technology does. A liposome is a tiny bubble made of the same type of fat (phospholipids) that makes up every cell membrane in your body.

When magnesium is wrapped inside a liposome, it's no longer a naked ion floating around in your intestinal fluid hoping to squeeze between cells through a claudin gate. It's now packaged in something your cells recognize as familiar — a tiny sphere made of the same material as their own walls.

- **Your intestinal cells absorb liposomes the same way they absorb dietary fats —** They either fuse directly with the cell membrane (like two soap bubbles merging together) or the cell actively pulls the liposome inside — imagine it reaching out, wrapping around the bubble, and swallowing it whole. Biologists call this endocytosis.

  A 2025 review I published in the World Journal of Gastrointestinal Pharmacology and Therapeutics found that the phospholipid makeup of liposomes "mirrors that of biological membranes," allowing them to fuse with intestinal cells and deposit their contents directly inside, completely bypassing the need for any transporter proteins or claudin gates.[9]

- **This changes everything about when and where absorption happens —** Liposomes are absorbed in the upper intestine — the duodenum and jejunum — where fat absorption is most active. Remember, this is the exact region where a standard magnesium supplement fails because the claudin gates are sparse. But a liposome doesn't need those gates. It's walking through a completely different door — the fat-absorption door — which is wide open in that very same region.

- **There's another benefit too —** Some liposomes get processed into structures similar to the fat transport vehicles your body naturally makes during digestion and enter your lymphatic system.[10] This means the magnesium can reach your bloodstream without ever passing through your liver first, which further boosts the amount that actually makes it into circulation.

  A 2022 randomized crossover clinical trial tested liposomal mineral absorption head-to-head against standard delivery and found measurable improvements with the liposomal form, supporting what the science predicts.[11]

Not All 'Liposomal' Products Are the Real Thing

I want to be upfront about one thing. Putting the word "liposomal" on a label doesn't magically make a product work. The quality of the liposome matters enormously.

If the liposomes are poorly made — too big, unstable, or cheaply manufactured — they will fall apart in your stomach acid before they ever reach your intestinal cells. And then you're right back where you started: naked magnesium ions dumped into your upper intestine with no way to get absorbed efficiently.

- **Liposome size determines whether magnesium reaches and penetrates intestinal cells —** Research has shown that liposomes need to be small — typically under 200 nanometers — to penetrate the mucus layer that coats your intestinal wall and make intimate contact with the cells underneath.[12]

  The phospholipid source, the manufacturing process, and how much magnesium actually stays encapsulated (known as encapsulation efficiency) all determine whether a "liposomal" product actually delivers on its promise.

The Bottom Line: Good, Better, Best

Your body has an incredibly sophisticated system for absorbing magnesium from food. Standard magnesium supplements work within this system, and quality forms like threonate, glycinate and taurate offer real, targeted benefits that go beyond simple absorption numbers. If you're already taking one of these forms and experiencing results, that's a good thing.

- **Liposomal delivery represents the next level —** Rather than working within the constraints of the claudin-gate system, it wraps magnesium in something your cells are built to absorb — a phospholipid bubble — and lets your body's own fat-absorption machinery do the work. The result is a meaningful boost in how much magnesium actually reaches your bloodstream.

Think of it this way: conventional magnesium supplements are like sending a package through standard mail. It gets there, and certain carriers (threonate for the brain, glycinate for relaxation) deliver to specific destinations better than others. Liposomal magnesium is like upgrading to express delivery — the package gets into the system faster and more of it arrives intact.

- **Liposomal magnesium focuses on improving how much actually reaches your cells** — If you're looking to maximize your magnesium absorption, liposomal technology is the most advanced delivery method available. But if a specific form like threonate is part of your cognitive health strategy, it served a valuable purpose.

FAQs About Liposomal Magnesium

Q: What makes liposomal magnesium different from standard magnesium supplements?

A: Liposomal magnesium encloses magnesium inside phospholipid bubbles called liposomes. This allows absorption through fat-uptake pathways in your upper intestine rather than relying primarily on tight-junction pathways that handle most conventional magnesium absorption.

Q: Why is magnesium absorption from supplements limited compared to food?

A: Magnesium from whole foods is released gradually as digestion progresses, which increases concentration in your lower small intestine where passive absorption is most active. Standard supplements dissolve quickly, releasing magnesium before those optimal absorption conditions are reached.

Q: Do conventional magnesium forms like glycinate or threonate still have value?

A: Yes. Different forms provide targeted benefits — for example, glycinate is well tolerated and often used for relaxation, while threonate has research supporting effects on brain magnesium levels. These advantages remain relevant even if overall absorption efficiency varies.

Q: How does liposomal delivery improve magnesium availability?

A: Liposomes can fuse with intestinal cell membranes or be taken up through endocytosis, allowing magnesium to enter cells directly and bypass limitations related to concentration gradients, transporter channels and tight-junction gates.

Q: Are all liposomal magnesium products equally effective?

A: No. Effectiveness depends on liposome quality, including particle size, stability, phospholipid composition and encapsulation efficiency. Poorly manufactured liposomes may break down before absorption.

Sources and References

- [1] Clin J Am Soc Nephrol. 2023 Jul 1;18(7):969-978
- [2] Ann N Y Acad Sci. 2023 Mar;1521(1):14-31
- [3] World J Gastroenterol. 2023 Jan 14;29(2):332–342
- [4] Ann N Y Acad Sci. 2022 Dec;1518(1):69-83
- [5] Curr Nutr Food Sci. 2017 Nov;13(4):260–278
- [6] Nutrition. 2021 Sep:89:111294
- [7] Magnes Res. 2001 Dec;14(4):257-62
- [8] Nutrients. 2019 Jul 20;11(7):1663
- [9] World J Gastrointest Pharmacol Ther. 2025 Dec 5;16(4):111502
- [10] Biomater Res. 2016 Nov 23;20:36
- [11] Nutrients. 2022 Aug 13;14(16):3321
- [12] Acta Pharm Sin B. 2018 Jun 20;9(1):36–48