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MAST CELLS & POTS

Dizzy When You Stand?

The surprising link between overactive mast cells and POTS, and natural ways to find relief



Running on Empty?

The quiet signs of low iron, and natural ways to restore it

Nature's Multivitamin

Why beef liver is making a comeback, and what to know about organ supplements

The Second-Meal Effect

Why Wednesday's dinner shapes your blood sugar at Thursday's feast

Plus | **Your Thanksgiving Blood Sugar Game Plan**

4 simple moves, from Wednesday dinner to Friday morning

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From the Editor

“It all started after a stressful event.” Dr. Scott Saunders hears some version of that sentence again and again. A racing heart every time she stands up. Flushing after dinner. Foods she ate for years that suddenly don’t agree with her. One specialist treats the heart. Another treats the allergies. And the symptoms keep coming back.

In this month’s lead article, Dr. Saunders explains why. Histamine released by mast cells can rev up your nervous system, and a nervous system stuck in fight-or-flight can push mast cells to release even more histamine. Each side feeds the other. His 4-step plan shows how to calm both at once, starting with a two-week low-histamine diet and including something many treatment plans skip: taking your nervous system as seriously as your plate.

That’s really what this issue is about: the connections that are easy to miss.

Low iron is a perfect example. Your blood count can come back “normal” while your iron stores quietly run on empty. Our low iron article reveals the ferritin number to ask for, seven hidden drains on your iron, and natural ways to rebuild it.

Beef liver capsules are all over social media. Our article shows what a daily serving really delivers (about two or three bites of liver) and who should skip organ supplements altogether.

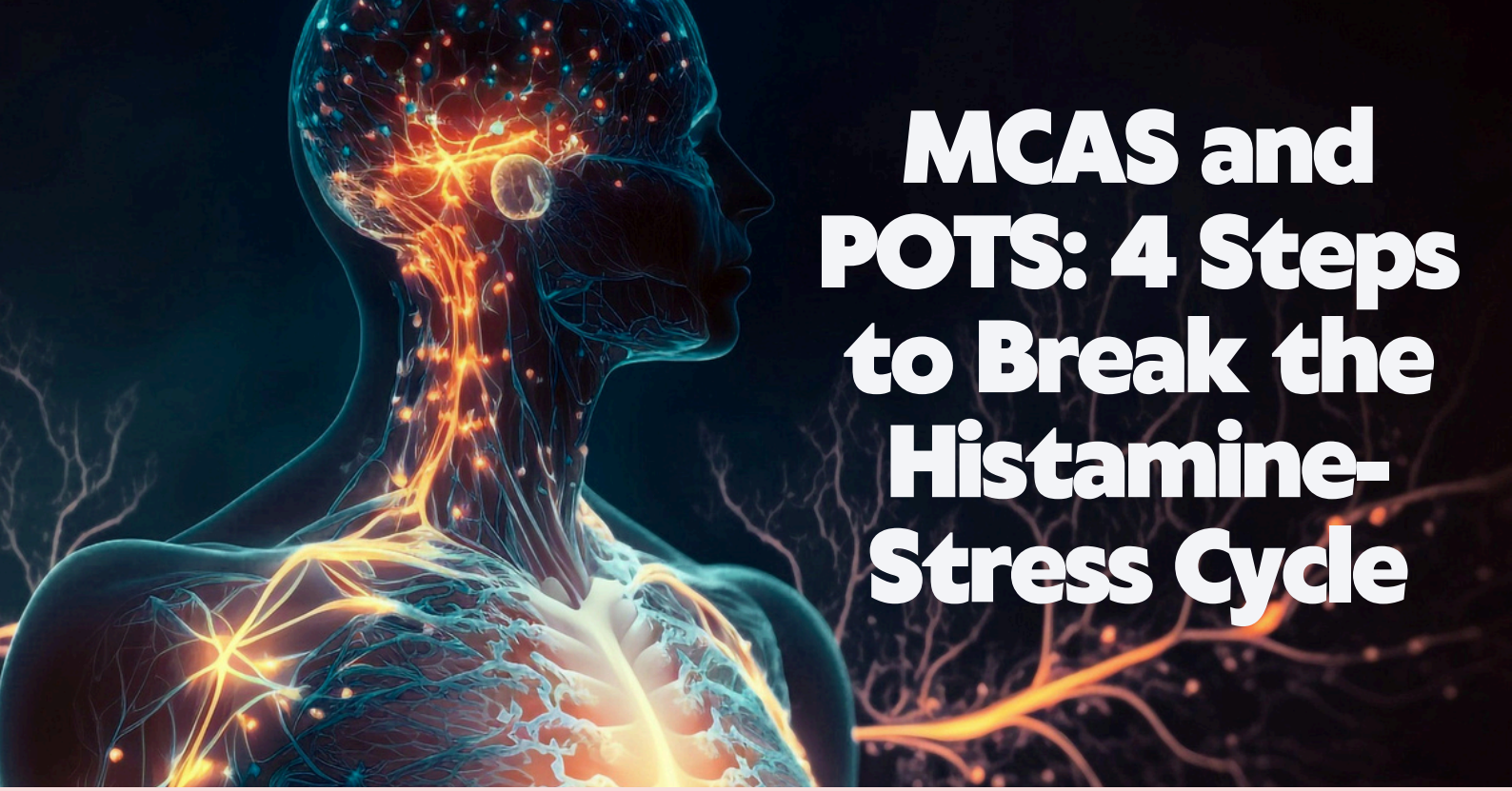
And with Thanksgiving around the corner, our article on blood sugar uncovers a 100-year-old discovery: your body remembers your last meal. What you eat Wednesday night and Thursday morning can shape your blood sugar at the feast itself.

Your body is a web of connections, not a list of separate parts. As Dr. Saunders reminds us, when you treat both sides, the cycle can finally break.

This Thanksgiving, we’re grateful for you, and for every small step you take to care for the body that carries you through life.

Cheryl Ravey

Editor, Home Cures That Work



MCAS and POTS: 4 Steps to Break the Histamine-Stress Cycle

The two-way street most doctors are missing, and why treating only one side fails.

What Is This?

Mast cells are immune cells that live in your tissues — your skin, your gut, your lungs, your blood vessels. When triggered, they release histamine and other chemicals. Histamine is normal and necessary. It helps regulate stomach acid, sleep, blood pressure, and inflammation. But when your body releases histamine too easily, or can't break it down fast enough, it builds up.

Meanwhile, your autonomic nervous system (ANS) runs everything you don't think about. ANS handles heart rate, blood pressure, digestion, sweating, temperature. Most people have never heard of it, but it's the control panel for your whole body.

Here's the problem: these two systems are connected, and a disorder in one may affect the other. If you have mast cell activation syndrome (MCAS), then you likely also have some degree of dysautonomia (autonomic dysfunction).

The opposite is also true. If you have dysautonomia, then it is probable you have MCAS. **Most doctors treat only one problem in patients and never the other. That's a major blind spot in modern medicine.**

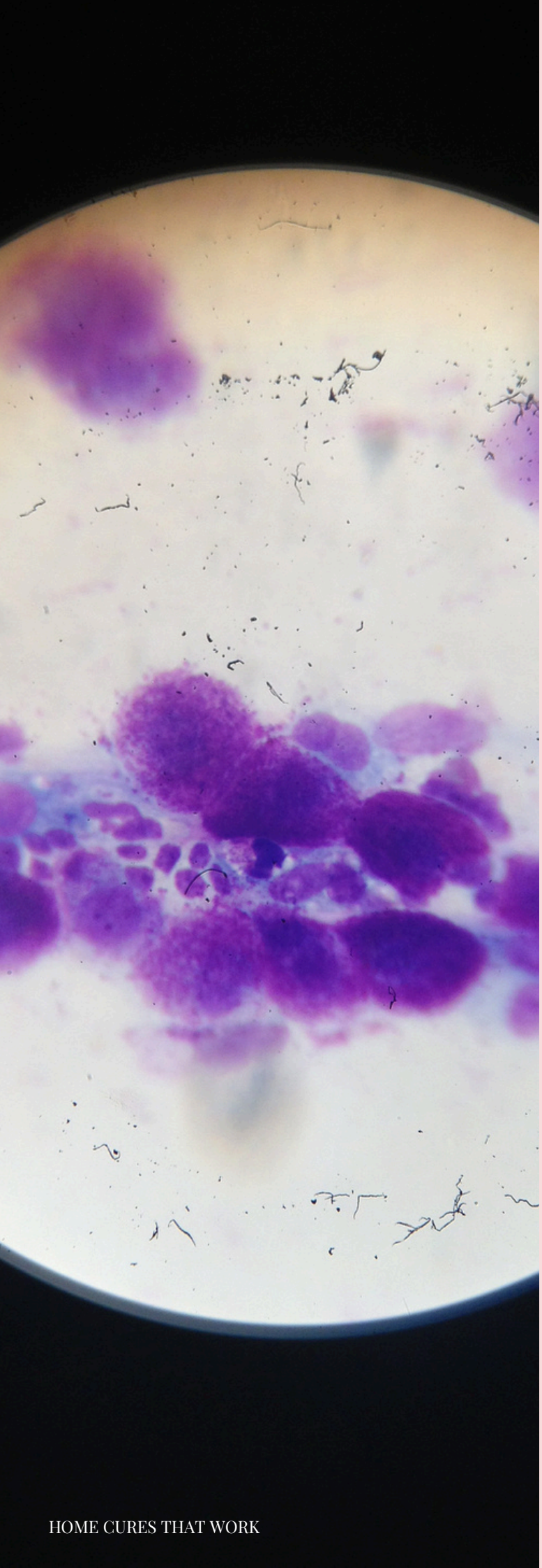
The core message of this article: MCAS and autonomic dysfunction is a two-way street. Histamine drives autonomic chaos. Autonomic chaos makes mast cells release more histamine. Most often, **treating both will break the cycle.**

The treatment is the test. The treatment response is a clue. If lowering histamine and calming your nervous system leads to rapid symptom improvement, it may offer an important clue about what's contributing to your symptoms.

First, Meet Your Two Key Players

The Mast Cell

Normally, mast cells are protective. They're part of your body's first line of defense against invaders. In MCAS, they're trigger-happy, firing off histamine at the wrong times.



The Autonomic Nervous System

It has two branches that work like a gas pedal and a brake:

Branch	Job	Dominant When
Sympathetic ("fight or flight")	Speeds up the heart, raises blood pressure, dilates airways, slows digestion	Stress, danger, standing up
Para-sympathetic ("rest and digest")	Slows down the heart, lowers blood pressure, promotes digestion, sleep	Rest, calm

The vagus nerve is your main "brake." It is the parasympathetic highway that calms everything down, including your mast cells. When vagal tone is high, mast cells stay calm. When it is low, mast cells get trigger-happy. The key is balance between these two systems.

The Two-Way Street: How MCAS Drives Autonomic Dysfunction

This is direction #1 and it's one possible reason some MCAS patients develop POTS.

Histamine does two things that directly scramble your autonomic nervous system:

- **It dilates blood vessels** (a potent vasodilator via H1/H2 receptors). Blood vessels relax, widen, and **blood pools in your extremities.**
- **It increases norepinephrine** and adrenaline, a direct sympathetic stimulant.

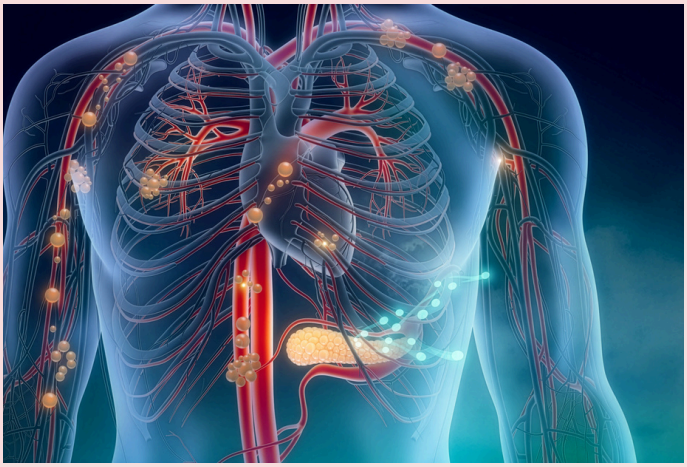
Now put those together. This is the recipe for **POTS (postural orthostatic tachycardia syndrome)**, the most classic dysautonomia:

Histamine dump ↠ blood vessels dilate ↠ blood pools in legs ↠ brain senses dropping blood pressure ↠ sympathetic system screams "emergency!" ↠ heart rate spikes to compensate.

That's why MCAS patients so commonly have POTS. **It is NOT a coincidence**. The histamine load itself is causing the autonomic chaos. It's also why you get:

- Palpitations, racing heart
- Orthostatic hypotension (sudden blood pressure drops on standing)
- Anxiety, "fight or flight" feelings (from adrenaline)
- Flushing, sweating, temperature dysregulation
- Digestive slowdown or IBS-type symptoms (sympathetic dominance suppresses normal gut function)

In short, histamine directly revs up the sympathetic system and sabotages the parasympathetic brake.



And the Reverse: How Autonomic Dysfunction Worsens MCAS

This is direction #2 and it's the part almost everyone misses.

The vagus nerve doesn't just calm your body down. I**t actively regulates mast cell activity.**

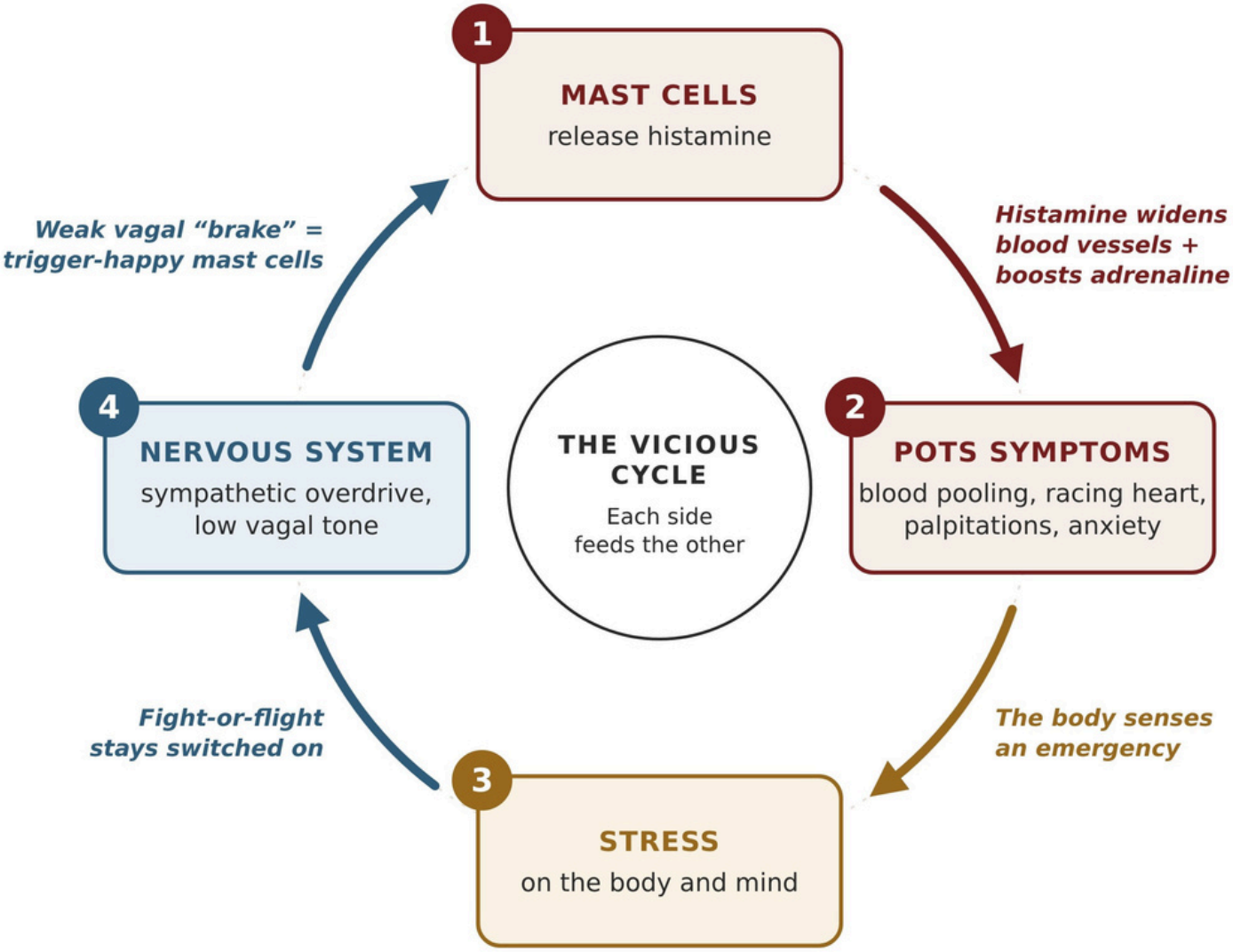
- High vagal tone = stable, calm mast cells.
- Low vagal tone = reactive, easily triggered mast cells that release more histamine.

Cortisol (the stress hormone) makes it worse still. **Cortisol reduces DAO enzyme function and increases histamine release from mast cells.**

So, the cycle feeds itself:

Chronic stress / chronic sympathetic overdrive ↠ low vagal tone ↠ mast cells fire more easily ↠ more histamine ↠ more vasodilation, more adrenaline ↠ more sympathetic overdrive ↠ more vagal suppression ↠ more histamine...

This is why "a stressful event brought it all out." Patients repeatedly report this pattern. And it's why so much of the dysfunction in MCAS is not just about food. Your nervous system state is a trigger, a driver, and a victim all at once.



Each side feeds the other. Histamine causes autonomic dysfunction. Autonomic dysfunction causes histamine release. Untreated, it spirals.

Why Most Treatment Fails (The Blind Spot)

Here's the problem I see repeatedly:

- **The cardiologist or neurologist treats POTS** with beta blockers, salt, compression, and hydration, but may never look at mast cells. The histamine keeps dumping; the POTS keeps coming back.
- **The allergist treats MCAS with antihistamines,** mast cell stabilizers, and diet, but may never look at the nervous system. The patient keeps living in chronic sympathetic overdrive; the mast cells stay revved up.

Each treat only half the loop. Neither breaks the cycle.

The patients who genuinely improve are the ones whose care addresses **both sides simultaneously**: low-histamine diet + mast cell stabilization and nervous system.

What You Can Do: Treating Both Sides

The Histamine Diet Is Essential

There's no way to remove histamine entirely from your diet. But you can avoid foods that are **high in histamine** and foods that **cause your body to release histamine**. Lists vary and contradict each other, because each person is different. Eggs appear on "avoid" lists for some and "eat" lists for others.

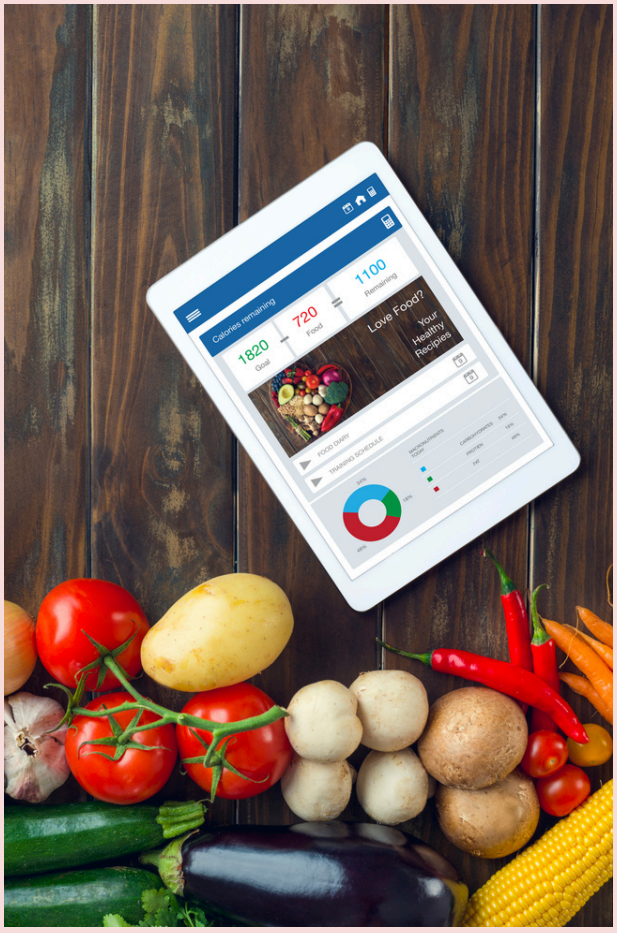
Here's why. Egg whites don't contain much histamine, but they trigger histamine release in some.

The most important concept: histamine's effects are cumulative.

If you tolerate avocados but add sauerkraut at the same meal, you may have a reaction. But not because you're "allergic" to either. It is because the combination overwhelmed your enzymes. It becomes a threshold problem, not an allergy. The same applies during pollen season. Add a normally fine high-histamine food while mid-allergy-reaction, and you tip over the edge. It's all additive.

A food diary is essential. Research shows a strict low-histamine diet helps your enzymes function better over time, so be disciplined early. Once symptoms resolve, add foods back one at a time.

(I'm not reproducing a food list here because there are many good ones. The UK NHS has a clear patient handout on the low-histamine diet.)



Supplements That Help (the histamine side)

- **DAO (Diamine oxidase):** Replaces the digestive enzyme that breaks down histamine in the gut. **Suggested use:** 1 capsule (10,000 units) with each meal, <15 min before eating.

- **Copper:** Essential for DAO to function. **Suggested use:** 2 mg/day short-term; involve your doctor (copper and zinc compete)

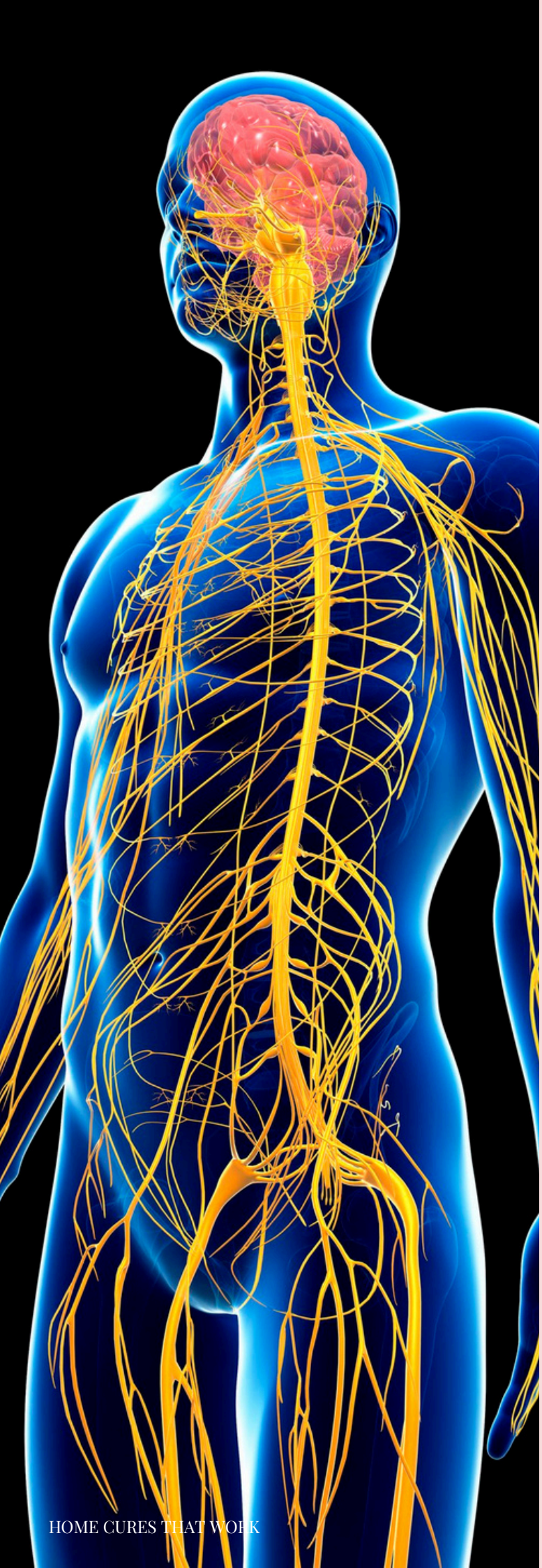
- **SAMe :**Donates the methyl group HNMT needs to deactivate histamine. **Suggested use:** 400 mg/day

- **Quercetin** Stabilizes mast cells — prevents them from releasing excess histamine. **Suggested use:** ~500–1000 mg/day; consider with bromelain for absorption.

*Doses are examples, not a prescription — please confirm with your own clinician.

Important caveat on DAO supplements: they work in the gut to break down histamine before it's absorbed. Once histamine is in your bloodstream, a DAO supplement can't help. That's why the diet remains non-negotiable even with supplements.





Calming the Nervous System (This is the half most treatment plans ignore)

- **Sleep**. Sleep is non-negotiable. Histamine prevents sleep, which is why Benadryl works. Poor sleep raises sympathetic tone, which revs up mast cells. Sleep is not optional for MCAS patients; it's treatment.

- **Stress reduction / vagal tone.** Do breathing exercises, gentle movement or whatever reliably calms you. High vagal tone = calmer mast cells. This is physiology, not "relaxation woo."

- **Treat the POTS directly.** Hydration, increased salt intake when medically appropriate, and compression garments can help reduce blood pooling and improve circulation. These measures may ease the strain on the autonomic nervous system, which interacts with mast cell activity. If your doctor prescribes medication for POTS (e.g., beta blockers), that's part of breaking the loop, too.

- **Avoid sympathetic triggers**. Avoid excessive caffeine, alcohol, overexertion, and chronic stress. They all push your nervous system toward the "fight or flight" state that destabilizes mast cells.

Medications (these are available OTC at any pharmacy)

- **Cimetidine (Tagamet).** Cimetidin blocks histamine in the stomach, reducing acid. It is useful for ulcer-related symptoms and doesn't lower histamine levels. This drug blocks a receptor. Tagamet interacts with other drugs like warfarin and theophylline. I recommend doctor oversight.

- **Diphenhydramine (Benadryl, Tylenol PM).** Blocks histamine receptors throughout the body, and because it reaches the brain, it causes drowsiness, which can aid sleep. Like all antihistamines, it doesn't lower your histamine level. It blocks histamine's signal, so the underlying load is still there. Good for occasional, short-term use only. Good for occasional, short-term use only.

The Bottom Line

MCAS and autonomic dysfunction form a single cycle and should be treated together.

The cycle will keep spinning if your doctor treats your POTS but not your mast cells. It will also continue to wreak havoc if your doctor treats your MCAS but not your nervous system.

Here's your practical starting plan to break the loop:

- **Try a strict low-histamine diet for two weeks** with a food diary.
- **Take DAO with meals** to support gut breakdown.
- **Calm your nervous system daily.** Focus on prioritizing sleep, breathing, and stress reduction. Treat it as seriously as the diet.
- Track your symptoms. Most people notice a difference **within days** if histamine is driving the picture.

Look at everything. The supplements may be helpful, but the diet is essential. And so is calming the nervous system. Treat both, or the cycle never breaks.▼

Histamine Adds Up

It's a threshold problem, not an allergy.



Each source of histamine fills the same bucket. An avocado alone may be fine.

Add sauerkraut at the same meal, pollen season, or a stressful week, and the bucket **overflows**. That's when symptoms appear.

Lowering the load from *every* side keeps you below the rim.



Why Your Breakfast Decides Your *Thanksgiving* Blood Sugar

Your body remembers your last meal. A hundred years of research on the "second-meal effect" shows that the smartest Thanksgiving choices happen before and after the turkey, not during it.

In 1921, a researcher named H. Staub ran what should have been a boring experiment. He gave healthy volunteers a drink of sugar water, waited, then gave them a second one. Common sense said the second dose would pile on top of the first and send blood sugar even higher.

It didn't. Blood sugar rose less after the second drink than after the first. A year later, K. Traugott confirmed the finding. The first dose of sugar had somehow primed the body to handle the next one better. Medicine named it the Staub-Traugott effect. Today it is better known as the second-meal effect, and nearly a century of research since has added a twist Staub never imagined: it works in both directions.

What you eat at one meal shapes how your body handles the next. Eat well, and your next meal goes easier. Skip a meal or eat poorly, and the next one hits harder. In other words, your blood sugar after any meal depends partly on the meal before it.

That changes how you should think about Thanksgiving.

Why "surviving" the big meal is the wrong goal

Most of us treat Thanksgiving dinner as one event to get through.

We skip breakfast to "save room," eat until we can't move, then swear off food until Saturday. It feels like discipline. For your blood sugar, it is close to the worst possible plan.

And the holidays leave a mark. In a study published in the New England Journal of Medicine in 2000, National Institutes of Health researchers weighed 195 adults before and after the season. On average, they gained only about 0.8 pound between Thanksgiving and New Year's Day. The catch: they didn't lose it the rest of the year. A pound a year doesn't sound like much, until you add up the decades.

The good news is that the second-meal effect gives you leverage. You don't have to white-knuckle your way past the stuffing. You can set your body up to handle the feast better, starting the night before.

The breakfast you skip comes back at dinner

In 2015, researcher Daniela Jakubowicz and colleagues at Tel Aviv University tested the "save room" strategy directly. They brought in 22 adults with type 2 diabetes for two test days. On both days, the volunteers ate exactly the same lunch and dinner. The only difference: on one day they ate breakfast, and on the other they fasted until lunch.

The results, published in Diabetes Care, were striking. On the day they skipped breakfast, blood sugar after lunch reached 268 mg/dL, compared with 192 mg/dL on the breakfast day, about 40% higher. After dinner, it was 298 versus 215, about 39% higher. Same food, same calories. The only change was a missing breakfast hours earlier.

Why would skipping a meal make later meals worse? The researchers found several reasons. After lunch on the no-breakfast day, insulin was 17% lower, and fatty acids in the blood, which interfere with insulin's work, were 41% higher. By dinner, GLP-1, the gut hormone that helps insulin do its job, was about 16% lower. Without breakfast, the body essentially lost its warm-up. Staub's first glass of sugar water had primed the system; an empty morning left it cold.

This study was done in people with type 2 diabetes, who are most vulnerable to these swings. But the lesson is worth taking to heart for anyone watching their blood sugar: skipping breakfast to save room for Thanksgiving dinner can backfire.

But what if you do intermittent fasting?

If you practice intermittent fasting and haven't eaten breakfast in years, you may be wondering whether this study is telling you to stop. It isn't. There is an important difference between skipping breakfast and fasting through it.

The volunteers in the Tel Aviv study skipped breakfast on a single day, on a body used to eating it. That sudden change is what threw their blood sugar off at lunch and dinner. Intermittent fasting is different: it is a consistent daily rhythm your body adapts to, and it often leads to weight loss, which improves blood sugar on its own.

But the research on fasting holds a surprise of its own. When you fast seems to matter as much as how long.

In a 2018 study published in Cell Metabolism, researchers had eight men with prediabetes eat all their meals between 8 a.m. and 2 p.m. for five weeks, then compared that with eating the same food between 8 a.m. and 8 p.m. On the early schedule, their insulin sensitivity improved by about 36%, even though they didn't lose weight. Only the timing had changed.

A larger trial published in Nature Communications in 2022 put two fasting schedules head to head in 82 healthy adults. One group ate between 6 a.m. and 3 p.m.; the other ate between 11 a.m. and 8 p.m., the popular "skip breakfast" approach. After five weeks, the early eaters showed greater improvements in insulin sensitivity. The late eaters did about the same as people who didn't fast at all.

These were small, short studies, and researchers are still sorting out the details. But the pattern fits everything else we know: your body handles food best earlier in the day. So if fasting works for you, there is no need to break your routine for Thanksgiving. Just know that if you ever want to adjust it, moving your eating window earlier, with an earlier dinner rather than a later breakfast, appears to be the better trade for blood sugar.



What to eat before the feast

If breakfast matters, what kind? Two studies point the way.

Start with protein

In an earlier study by the same Tel Aviv team, published in Diabetologia in 2014, 15 people with type 2 diabetes drank a whey protein shake before a high-sugar breakfast of white bread and jam. Compared with drinking water first, their blood sugar after the meal was 28% lower, and their insulin response roughly doubled. Protein gives the body's insulin system an early head start

.

You don't need a shake. Eggs, Greek yogurt, cottage cheese, or leftover chicken all bring protein to the breakfast table.



Add a handful of almonds

At Purdue University, researchers gave 14 adults with impaired glucose tolerance, an early stage of blood sugar trouble, a breakfast with or without almonds in different forms. Whole almonds lowered blood sugar not only after breakfast but after the next meal, a standard lunch, and they kept people feeling fuller all day. That is the second-meal effect in action, from a single handful of nuts.

A good Thanksgiving morning breakfast, then, looks something like eggs with a side of berries and a small handful of almonds. If dinner won't be served until late afternoon, have a protein snack around midday rather than arriving at the table starving.

Your Wednesday night dinner matters too

The second-meal effect doesn't stop at a few hours. What you eat in the evening can still be working the next morning.

The pioneer here is David Jenkins of the University of Toronto, the scientist who created the glycemic index. In 1982 he showed that slowly digested carbohydrates, the kind found in beans and lentils, improve the body's response to the following meal. Later research uncovered part of the reason: your gut bacteria.

Researchers at Lund University in Sweden tested this by serving volunteers either white bread or whole barley kernels for dinner, then measuring blood sugar after a standard breakfast the next morning. After the barley dinner, blood sugar after breakfast was lower. The barley eaters also had higher levels of hydrogen in their breath, a sign that gut bacteria had spent the night fermenting the fiber. Those bacteria produce compounds that help the body manage blood sugar hours later.

So the night before Thanksgiving, skip the pizza and make something with beans, lentils, or barley: a pot of lentil soup, a bean chili, or a barley and mushroom stew. You are feeding the bacteria that will help you handle tomorrow's feast.

After the meal: the 2-minute fix

Once the plates are cleared, the instinct is to collapse on the couch. Resist it, even briefly.

In 2022, researchers at the University of Limerick in Ireland pooled the results of seven studies comparing sitting, standing, and light walking. Published in Sports Medicine, their analysis found that light walking lowered blood sugar by about 17% compared with sitting, and even short bouts of 2 to 5 minutes made a difference. Working muscles pull sugar out of the bloodstream, no extra insulin required.

Timing matters. Blood sugar typically peaks 60 to 90 minutes after eating, so the sooner you move, the better. Make it a new family tradition: a short walk around the block between dinner and dessert. Even a few laps clearing dishes and tidying up count.

Friday morning: don't overcorrect

The day after Thanksgiving, many people try to make up for the feast by skipping breakfast or barely eating. Remember the Tel Aviv study: skipping meals can make the meals that follow harder on your blood sugar, not easier.

Instead, go right back to normal. Eat a protein-and-fiber breakfast. Turn leftover turkey into a big salad or a bean soup. Take another walk. The fastest way to recover from a big meal is not to punish yourself. It's to give your body its routine back.

YOUR THANKSGIVING BLOOD SUGAR GAME PLAN

Wednesday dinner: Make it beans, lentils, or barley. Lentil soup or bean chili feeds the gut bacteria that help tomorrow.

Thursday breakfast: Don't skip it. Eggs or Greek yogurt, berries, and a handful of almonds. Add a protein snack if dinner is late.

After the feast: Walk for even 2 to 5 minutes within the first hour, before dessert if you can.

Friday morning: No fasting to "make up for it." Protein, fiber, and back to your routine.

YEAR-ROUND SUPPORT FOR HEALTHY BLOOD SUGAR

Thanksgiving lasts a day, but healthy blood sugar is a 365-day job. CinnaChroma is Barton Nutrition's daily formula for healthy blood sugar metabolism, combining cinnamon and chromium with selenium, vanadium, vitamin D3, and vitamin K2.

Make it part of the same routine this article describes: a protein-rich breakfast, a fiber-rich dinner, and a short walk after meals. Learn more at bartonsupplements.com.

The bottom line

A century ago, H. Staub discovered something that still surprises people: the body handles a meal better when it has been primed by the one before. Your blood sugar doesn't judge Thanksgiving dinner in isolation. It remembers Wednesday night's lentil soup, Thursday morning's eggs and almonds, and the walk you took before pie.

So this year, don't just survive the feast. Prepare for it. Thanksgiving dinner really starts the night before.

These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease. This article is for educational purposes only. If you have diabetes or take medication to lower your blood sugar, talk with your healthcare provider before changing your meal schedule or starting any supplement. ▼





Running on Empty: 7 Hidden Reasons Your Iron Is Low

Your blood work came back "normal." So why are you exhausted, craving ice, and losing hair in the shower? The answer may be a number that rarely gets more than a glance.

In 1681, the English physician Thomas Sydenham, sometimes called "the English Hippocrates," was puzzling over a condition that had filled the medical books for more than a century. Young women were turning pale, almost greenish. They were weak, breathless on the stairs, and plagued by strange cravings for chalk, clay, and ash. Doctors called it chlorosis, "the green sickness," and blamed everything from lovesickness to tight corsets.

Sydenham's cure was oddly specific: iron filings, steeped in wine. It worked. He had no idea why. It would be another 150 years before the French physician Pierre Blaud turned the remedy into a pill, and nearly a century after that before anyone understood that chlorosis was simply severe iron deficiency.

Chlorosis has all but disappeared from medical textbooks. Iron deficiency has not. The World Health Organization ranks it as the most common nutritional deficiency on earth, and it is far from a "developing world" problem. Here in the U.S., it hides in plain sight in women with heavy periods, in runners, in people on heartburn medication, in anyone who has had weight-loss surgery, and in millions of people whose blood work looks perfectly fine.

The "normal" blood test that isn't

When most people get checked for low iron, the doctor orders a complete blood count and looks at hemoglobin, the iron-carrying protein in red blood cells. If hemoglobin is in range, you are told you are not anemic and sent home.

The problem is that hemoglobin is the last thing to fall. Your body protects your blood at all costs. Long before your red cells come up short, it quietly drains your iron reserves to keep them supplied. You can spend months or even years running on fumes, with fatigue, hair loss, and poor concentration, while your hemoglobin stays technically normal. This stage is called iron deficiency without anemia, and it is far more common than full-blown anemia.

The number that tells you how full your tank is is ferritin, your stored iron. And here is where it gets interesting. Many labs flag ferritin as low only below about 12 to 15 ng/mL. But in 2020, the American Gastroenterological Association reviewed the evidence and recommended a cutoff of 45 ng/mL for diagnosing iron deficiency in anemic patients, because a 15 cutoff misses so many people who are truly depleted.

That means a ferritin of 25 can come back "normal" on your lab report while still pointing to an iron shortfall.

There is one more wrinkle. Ferritin rises with inflammation, infection, and chronic disease, so it can look adequate even when iron stores are low. That is why a complete picture includes a few more markers.

ASK FOR THE FULL IRON PANEL

Ferritin: your iron "savings account." Ask for the actual number, not just "normal."

Serum iron, TIBC, and transferrin saturation: how much iron is actually circulating and available. A saturation under about 20% suggests iron-restricted supply.

Complete blood count (CBC): hemoglobin, plus MCV (red cell size). Small, pale red cells are a classic late sign.

C-reactive protein (CRP): if inflammation is high, ferritin may be falsely reassuring.

Signs your tank is running low

Iron is not just about blood. It is needed to make energy inside every cell, to build the neurotransmitters dopamine and serotonin, to keep your thyroid working, and to grow hair and nails. (If you read last month's issue on Hashimoto's, here is one more connection: the enzyme your thyroid uses to make its hormones depends on iron, so low iron and sluggish thyroid function often travel together.) So the symptoms are broader than most people expect:

- Fatigue that sleep doesn't fix, especially feeling winded climbing stairs
- Craving ice. Chewing ice, called pagophagia, is one of the most specific clues to iron deficiency. It is a modern cousin of the chalk and clay cravings Sydenham's patients described.
- Restless legs at night, that creepy-crawly urge to move. Low brain iron is strongly linked to restless legs syndrome.
- Hair shedding, brittle nails, or nails that curve upward like a spoon
- Cold hands and feet, headaches, brain fog, and a racing heart with exertion
- Pale inner eyelids and a washed-out complexion

7 hidden reasons your iron is low

Low iron is a symptom, not a diagnosis. Something is either draining iron out or keeping it from getting in. Finding which one is the real fix.

1. **Heavy periods**

This is the most common cause in women before menopause, and it is chronically underreported because so many women assume their periods are "normal." Soaking through a pad or tampon every hour or two, passing clots larger than a quarter, or bleeding longer than seven days are all signs of heavy menstrual bleeding worth discussing with your doctor.

2. **Slow, silent bleeding in the gut**

In men and in women past menopause, iron deficiency should always prompt the question: where is the blood going? Daily pain relievers like ibuprofen, naproxen, and aspirin can cause small stomach ulcers that ooze for months. So can hemorrhoids, polyps, and in some cases colon cancer.

Black, tarry stools or any blood in the stool should be checked promptly. This is why the AGA recommends that men and postmenopausal women with iron deficiency anemia be evaluated with endoscopy and colonoscopy. It is not a step to skip.

3. Heartburn medication

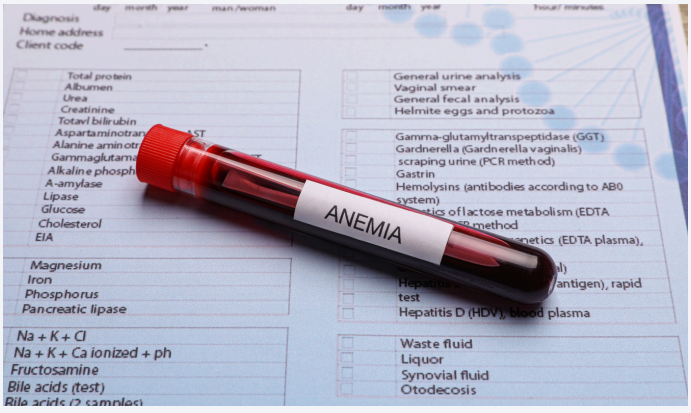
Plant-based iron must be converted by stomach acid into a form your intestines can absorb. Acid-blocking drugs like omeprazole and other proton pump inhibitors reduce that conversion. Long-term use is associated with a higher risk of iron deficiency, and millions of Americans have been on these drugs for years.

4. Celiac disease and other gut problems

Iron is absorbed almost entirely in the first section of the small intestine, the duodenum, which happens to be the area celiac disease damages most. For some people, unexplained iron deficiency that won't respond to supplements is the only sign of celiac disease. The AGA recommends celiac testing for adults with unexplained iron deficiency anemia. H. pylori, the stomach bacterium behind most ulcers, can also block absorption and should be tested for.

5. Weight-loss surgery

Gastric bypass reroutes food past the duodenum, the exact spot where iron is absorbed. Iron deficiency is one of the most common long-term complications of bariatric surgery, sometimes showing up years after the operation.



6. Exercise, especially running

Endurance athletes lose iron through sweat, through tiny amounts of blood in the gut, and through red cells that break apart from the pounding of feet on pavement ("foot-strike hemolysis"). But the bigger factor is a hormone called hepcidin, your body's master iron gatekeeper. Hard exercise triggers a spike in hepcidin that peaks a few hours later and temporarily locks iron out of the bloodstream. Eat your iron-rich meal at the wrong time, and you absorb less of it. If you exercise in the morning, have your iron-rich breakfast (or supplement) before or shortly after your workout rather than hours later.

7. What you drink with your meals

This one surprises almost everyone. In a 1983 study published in the American Journal of Clinical Nutrition, researchers found that a cup of coffee taken with a meal cut iron absorption by about 39%. A cup of tea cut it by about 64%. The culprit is polyphenols, which bind iron in the gut. Calcium, whether from a glass of milk or a calcium supplement, also competes with iron. For someone who drinks tea with every meal, this alone can tip the balance.

Other contributors include pregnancy, frequent blood donation, vegetarian and vegan diets, and chronic kidney disease. Often, it is two or three of these working together.

Natural ways to rebuild your iron

- **Eat the iron your body absorbs best**

Not all iron is created equal. Heme iron, found in animal foods, is absorbed at roughly 15 to 35%.

Non-heme iron from plants is absorbed at a much lower and more variable rate, often under 10%. The richest sources of heme iron are oysters, mussels, clams, beef liver, red meat, sardines, and dark-meat poultry. A 3-ounce serving of cooked oysters delivers about 8 mg, a full day's worth for men and women past menopause.

Animal foods have a second advantage. Researchers have long described a "meat factor": eating even a small amount of meat, fish, or poultry alongside beans or greens increases how much of the plant iron you absorb.

- **Pair plant iron with vitamin C**

If you rely on lentils, beans, spinach, pumpkin seeds, or fortified cereals, vitamin C is your best ally. The Swedish researcher Leif Hallberg spent decades measuring iron absorption, and his work showed that vitamin C taken with a meal can multiply non-heme iron absorption several times over. Practically, that means bell peppers in your bean chili, a squeeze of lemon on your greens, or strawberries with your oatmeal.

- **Move the coffee and tea**

You don't have to give them up. Simply drink them at least an hour before or two hours after iron-rich meals. Do the same with calcium supplements and dairy.

- **Cook in cast iron**

It sounds like folk wisdom, but it has been tested. In a 1986 study in the Journal of the American Dietetic Association, spaghetti sauce simmered in a cast-iron pot contained roughly nine times more iron than the same sauce cooked in glass. Acidic, moist, long-cooked foods like tomato sauce, chili, and stews pick up the most.

And in a 1999 trial published in The Lancet, Ethiopian children whose families were given iron cooking pots had significantly higher hemoglobin after a year than children whose families cooked in aluminum.

- **Soak, sprout, and ferment**

Whole grains, beans, and seeds contain phytates, natural compounds that bind iron. Soaking beans overnight, sprouting grains, and choosing sourdough bread over conventional loaves all break down phytates and free up more iron.

PUTTING IT TOGETHER: AN IRON-SMART DAY

Breakfast: oatmeal topped with pumpkin seeds and strawberries. Save the coffee for an hour later.

Lunch: spinach salad with chickpeas, sliced red bell pepper, and a lemon-olive oil dressing, topped with sardines or grilled chicken.

Snack: an orange and a handful of pumpkin seeds.

Dinner: beef or bean chili simmered in a cast-iron pot. Enjoy your tea between meals, not with them.



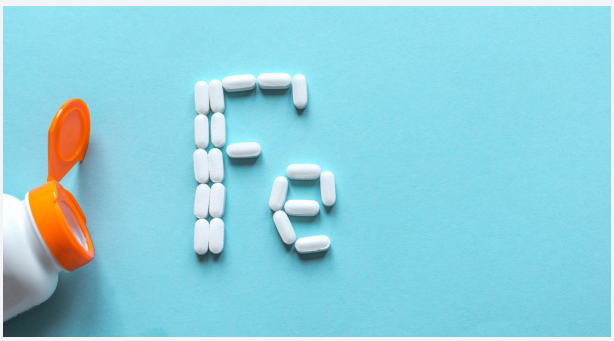
If you need a supplement: the every-other-day trick

When diet isn't enough, an iron supplement may be necessary. But how you take it matters more than most labels let on.

For decades, the standard advice was to take iron two or three times a day. Then researchers at ETH Zurich, including Nicole Stoffel, Diego Moretti, and Michael Zimmermann, discovered why that approach can backfire. Every dose of iron triggers a hepcidin spike that lasts about 24 hours, blocking absorption of the next dose. In studies published in The Lancet Haematology (2017) and Haematologica (2020), giving iron as a single morning dose on alternate days increased the share of each dose that was absorbed. Fewer doses also means fewer chances for the nausea and constipation that make so many people quit iron altogether.

A few more tips that make supplements work better and feel easier:

- Take iron in the morning on an empty stomach, with water or a little orange juice, not with coffee, tea, or milk.
- If it upsets your stomach, take it with a small amount of food rather than stopping altogether.
- Gentler forms like iron bisglycinate are often better tolerated than ferrous sulfate.
- Recheck your levels after about 8 to 12 weeks. It can take several months to rebuild ferritin even after hemoglobin recovers.



IMPORTANT: TEST BEFORE YOU SUPPLEMENT

More iron is not always better. Unlike most nutrients, your body has no good way to get rid of extra iron, so it accumulates in the liver, heart, and joints.

An inherited condition called hereditary hemochromatosis, which causes the body to over-absorb iron, affects about 1 in 300 people of Northern European descent, and many don't know they have it.

Get a ferritin and iron panel first, and work with your doctor. And keep iron supplements locked away from children; accidental iron overdose is a serious danger to kids under six.

The bottom line

Thomas Sydenham didn't know what iron was doing for his pale, breathless patients. He only knew that when he gave it to them, the color came back into their faces. Three and a half centuries later, we know a great deal more, but the pattern is the same. Low iron rarely announces itself. It shows up as tiredness you have learned to live with, hair in the brush, an urge to chew ice.

If that sounds familiar, don't settle for "your blood count is normal." Ask for your ferritin number. Find out where the iron is going. And rebuild it the way your body was designed to absorb it, one well-paired meal at a time.

These statements have not been evaluated by the Food and Drug Administration. This article is for educational purposes only and is not intended to diagnose, treat, cure, or prevent any disease. Talk with your healthcare provider before starting any supplement, especially iron. ▼



Beef Liver Supplements: 5 Things to Know *Before* You Buy

Organ supplements are one of the fastest-growing trends in natural health. Liver has earned its reputation as a superfood. Here is what a capsule can and can't do, and why the real thing still wins.

In the early 1920s, a diagnosis of pernicious anemia was a death sentence. Patients grew pale and weak, their nerves began to fail, and within a few years most were gone. Boston physician George Minot knew something about death sentences. In the early 1920s he had been diagnosed with diabetes, and he survived only because insulin became available just in time, in 1923.

Minot suspected diet might matter in anemia. So he and his colleague William Murphy tried something radical: they fed their patients about half a pound of liver every single day. In 1926 they reported the results in the Journal of the American Medical Association. Their 45 patients, who should have been dying, were recovering. In 1934, Minot, Murphy, and George Whipple, whose experiments on dogs had pointed to liver first, shared the Nobel Prize.

There was just one problem. Patients hated eating that much liver. So drug companies started concentrating it into extracts, the first "liver supplements," nearly a century before anyone posted one on social media. It took until 1948 for scientists to isolate the compound in liver that saved those lives: vitamin B12.

Today liver is having a second moment. Over the past year, searches for "organ supplement" have climbed nearly 300%, and searches for "beef liver supplement" are up 94%, fueled by nose-to-tail eating, carnivore diets, and ancestral health influencers. If you read this issue's article on low iron, you may be wondering whether a bottle of liver capsules is the answer. The truth is more interesting than the hype.

What's actually in liver

Gram for gram, liver is one of the most nutrient-dense foods you can eat. It is the body's storage warehouse, which is exactly why it is packed with what it stores. A 3-ounce serving of cooked beef liver provides roughly:

- **Vitamin B12:** about 70 mcg, nearly 30 times the daily value
- **Vitamin A:** about 6,600 mcg, more than 7 times the daily value

- **Copper:** about 12 mg, more than 13 times the daily value
- **Iron**: about 5 mg, roughly 28% of the daily value
- Plus generous amounts of choline, riboflavin, folate, and zinc

Look closely at that list, and you'll notice something. Liver's true superpowers are B12, vitamin A, and copper. Its iron is good, but not spectacular. A 3-ounce serving of oysters has more. And chicken liver offers nearly twice the iron of beef liver with roughly half the vitamin A, which makes it the better pick if iron is your main goal.

The capsule math

Here is what most supplement labels won't spell out. Fresh liver is about 70% water. Desiccated liver supplements are dried, so a typical daily serving of six 500 mg capsules, 3,000 mg in all, equals only about a third of an ounce of fresh liver. That is two or three bites.

Run the numbers on that serving, and you get well under 1 mg of iron. For someone who is truly iron deficient and needs to rebuild ferritin, that is a drop in the bucket. Liver capsules are not a treatment for iron deficiency, and they are not a substitute for testing and targeted treatment.

Where capsules do deliver is vitamin B12. The same serving supplies several times the daily value, plus a meaningful dose of vitamin A. That's useful, but it also brings us to the part of the liver story that gets left out.

READ THE LABEL

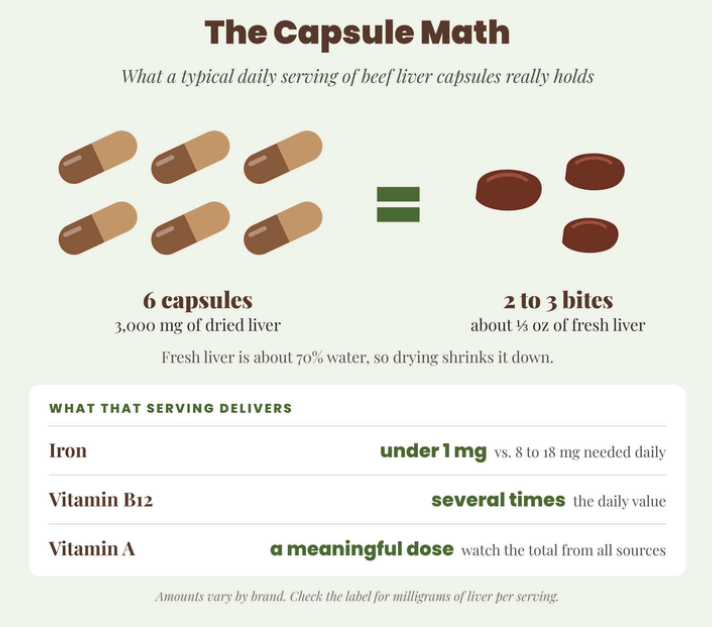
Amounts vary widely by brand. Look for the milligrams of liver per serving, not just per capsule, and check whether the label lists actual vitamin A, B12, and iron content.

Choose products with third-party testing from a group like NSF or USP, and look for the country of origin. Freeze-dried products are generally processed more gently than heat-dried ones.

Remember that supplements are not approved by the FDA before they are sold. Quality is up to the manufacturer.

When liver becomes too much of a good thing

In December 1912, the Australian explorer Douglas Mawson and his companion Xavier Mertz were stranded in Antarctica, hundreds of miles from base, after their teammate and most of their food disappeared into a crevasse. To survive, they ate their sled dogs, including the livers.



Within weeks, Mertz was dead. Mawson barely made it back, with his hair falling out, his skin peeling, and the soles of his feet coming off in layers. Many researchers have since blamed vitamin A poisoning from the dog livers, which are extraordinarily rich in it. Historians still debate it, since starvation alone can cause some of the same symptoms, but the episode became a classic warning about eating too much liver.

No one is eating husky liver today, but the lesson holds. Vitamin A from animal sources is stored in the body, not flushed out. The safe upper limit for adults is 3,000 mcg per day, and a single 3-ounce serving of beef liver contains more than twice that. Eaten once a week, that is fine; your body draws down its stores between servings. Eaten every day, or stacked with a multivitamin, cod liver oil, and liver capsules, it can add up.

Too much vitamin A over time is linked to liver damage, headaches, and weaker bones. In the Nurses' Health Study, which followed more than 72,000 postmenopausal women, those who got 2,000 mcg or more of preformed vitamin A a day had nearly twice the risk of hip fracture of women getting less than 500 mcg, a finding published in JAMA in 2002. Copper works the same way: the upper limit is 10 mg a day, and a serving of beef liver tops it.



What about heart, kidney, and "glandulars"?

Many organ supplements go beyond liver, blending heart, kidney, spleen, pancreas, and glands like the thyroid and adrenals. The pitch rests on an old idea called "like supports like": eat heart to support your heart, adrenal to support your adrenals. It's a compelling story, but there is very little human research to back it up.

Organ meats do contain real nutrients. Heart, for example, is one of the richest food sources of CoQ10. But some glandular products carry a hidden risk. In a 2013 study in the journal Thyroid, researchers tested 10 over-the-counter "thyroid support" supplements. Nine contained measurable amounts of the thyroid hormone T3, and five contained T4, the active ingredient in prescription thyroid medication. One product's daily dose held more than 90 mcg of T4. A typical prescription starting dose is 25 mcg. If you read last month's issue on Hashimoto's, you'll see the problem: people could be taking thyroid hormone without knowing it, on top of their prescription or without any testing at all.

How to eat the real thing (and actually like it)

For most people, the best way to get liver's benefits is the way Minot's patients did: as food, in moderate amounts. About 3 to 4 ounces once a week gives you a generous dose of B12, copper, vitamin A, and iron without overdoing it. If the taste puts you off, try these tricks:

- Soak it first. Soaking sliced liver in milk or lemon water for an hour mellows the strong flavor.
- Start with chicken livers. They are milder and more tender than beef. Sautéed with onions or blended into a pâté, they win over many skeptics.
- Hide it. Finely grind or grate a small amount of frozen liver into ground beef for burgers, meatballs, or chili. About a quarter pound of liver per pound of beef is barely noticeable.
- Don't overcook it. Liver turns tough and bitter when cooked through. Sear it quickly so it stays slightly pink inside.
- Pair it wisely. Serve it with vitamin C–rich vegetables like peppers or tomatoes, and save the coffee or tea for later, to get the most from its iron.



WHO SHOULD SKIP LIVER AND ORGAN SUPPLEMENTS

- **Pregnant women or those trying to conceive:** high preformed vitamin A can harm a developing baby. Talk with your doctor about safe amounts.
- **People with gout:** organ meats are very high in purines, which can trigger flares.
- **People with hemochromatosis or Wilson's disease**, conditions in which the body builds up too much iron or copper.
- **Anyone already taking vitamin A, cod liver oil, or a high-dose multivitamin**, or prescription retinoids like isotretinoin.
- **Anyone taking thyroid medication**, before trying a glandular blend.

The bottom line

George Minot didn't prescribe liver because it was trendy. He prescribed it because it saved lives, at half a pound a day, under a doctor's watch, for a specific deficiency. Nearly a century later, liver still deserves its place as one of nature's most powerful foods.

But a few capsules of dried liver are not Minot's cure in a bottle. If you're tired and suspect low iron, start with the ferritin test from this issue's iron article. If you want liver's benefits, put it on your plate once a week. Treat it as food, not magic, and it will treat you well.

These statements have not been evaluated by the Food and Drug Administration. This article is for educational purposes only and is not intended to diagnose, treat, cure, or prevent any disease. Talk with your healthcare provider before starting any supplement. ▼



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