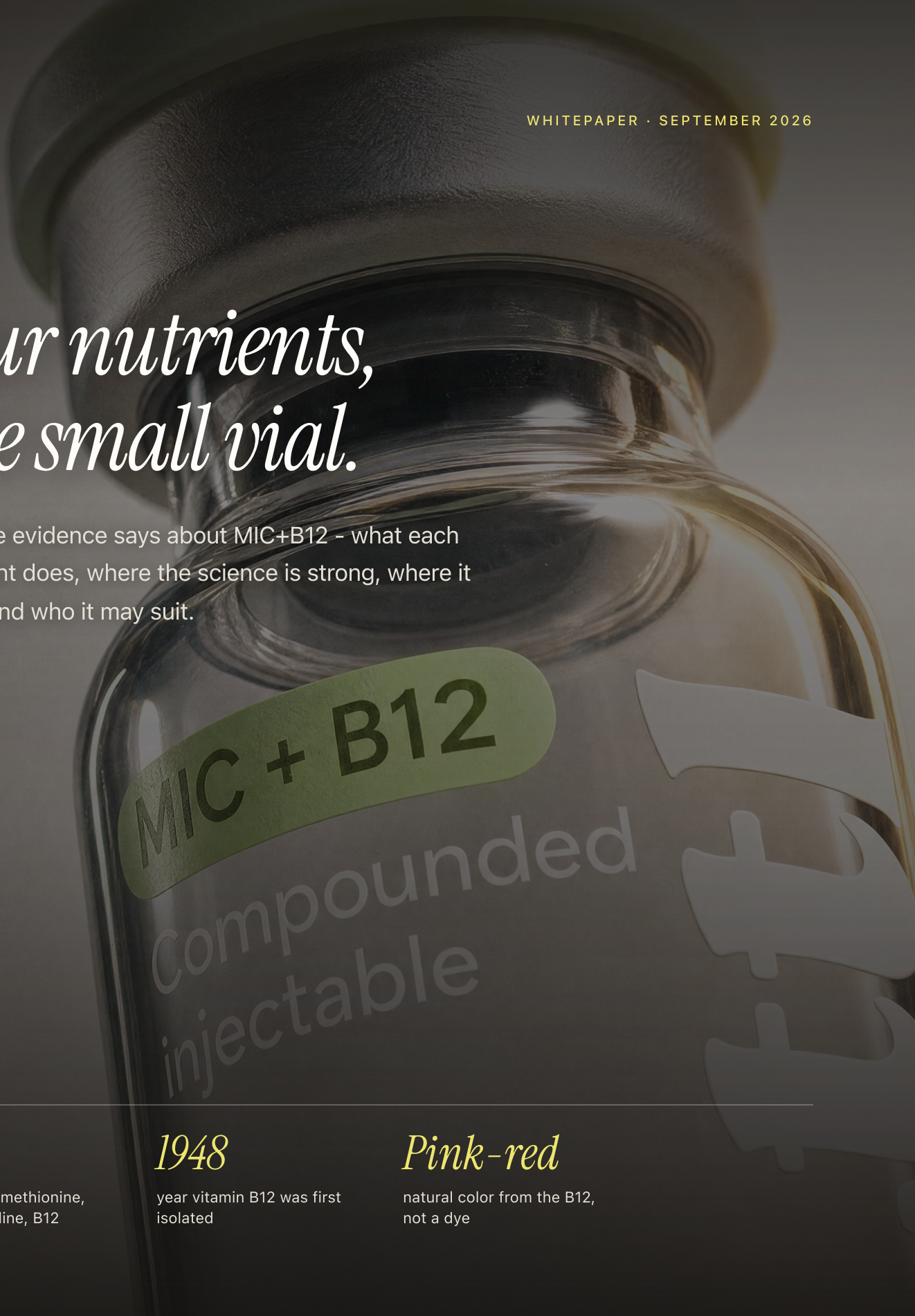


MIC+B12

Four nutrients, one small vial.

What the evidence says about MIC+B12 - what each ingredient does, where the science is strong, where it is thin, and who it may suit.



MIC + B12

Compounded
injectable

Lttl

4

ingredients: methionine,
inositol, choline, B12

1948

year vitamin B12 was first
isolated

Pink-red

natural color from the B12,
not a dye

Well-known nutrients, paired with a supporting role – not a starring one.

MIC+B12 combines three lipotropic nutrients – methionine, inositol, and choline – with vitamin B12. "Lipotropic" means involved in how the liver moves and processes fat. B12 supports energy metabolism, red blood cells, and nerve health.

Each ingredient has a clear role in the body, and B12 injections are an established treatment for B12 deficiency. But there are no quality clinical trials showing that MIC+B12 injections cause weight loss. The blend is compounded and not FDA-approved.

KEY FINDINGS

- 1 B12 is essential.** Needed for red blood cells, nerves, and turning food into energy.
- 2 Low B12 is common.** Especially with age, plant-based diets, some stomach conditions, and long-term metformin use.
- 3 Choline protects the liver.** In a controlled study, low-choline diets led to fatty liver or muscle damage in most adults.
- 4 Inositol has some data.** Oral myo-inositol improved some metabolic markers in women with PCOS.
- 5 Weight loss is unproven.** No quality trials test the MIC+B12 blend for fat loss.
- 6 Generally well tolerated.** Side effects are usually mild and at the injection site.

CONTENTS

- | | | |
|--|---------------------------------------|--|
| 01 The four ingredients | 02 The evidence | 03 Injection vs. oral B12 |
| 04 Safety & side effects | 05 Compounded MIC+B12 | 06 Expectations & references |

01 *Three for the liver, one for energy.*

Methionine, inositol, and choline help the liver **package and move fat** out for use. B12 works alongside them in **methylation**, a chemical process the body uses to build, repair, and process many molecules.

M · METHIONINE

The methyl donor

An essential amino acid. The body turns it into SAMe, which supplies methyl groups for liver and cell processes.

I · INOSITOL

The messenger

A sugar-like compound involved in insulin signaling and fat processing. The body also makes its own.

C · CHOLINE

The fat mover

An essential nutrient the liver needs to export fat. Too little can lead to fat building up in the liver.

B12 · COBALAMIN

The energy vitamin

Needed for red blood cells, nerve health, and energy metabolism. It gives the liquid its pink-to-red color.

WHY THEY ARE PAIRED

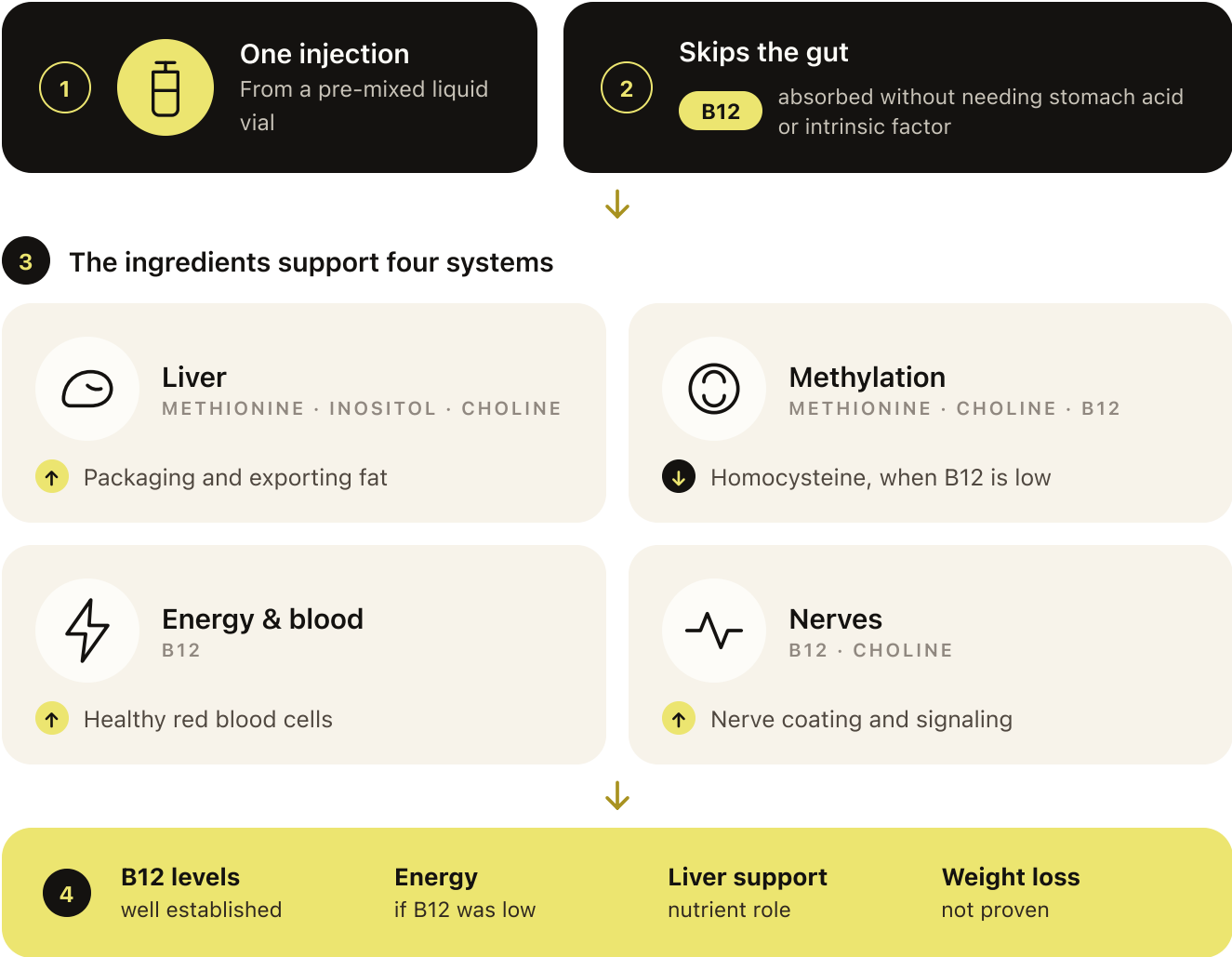
Methionine, choline, and B12 all feed the same methylation cycle, so each depends partly on the others. The idea behind the blend is to supply that cycle and the liver's fat-handling steps together.

That rationale is biologically sound, but a sound rationale is not the same as proven results. For most people eating a varied diet, levels of methionine, inositol, and choline are already adequate.

"MIC+B12 is a supporting player. Your plan, food, and movement do the heavy lifting."

The Lttl care team

From one injection to the systems it supports.



Simplified illustration. Effects vary by person. Weight and wellness benefits of MIC+B12 are not FDA-established.

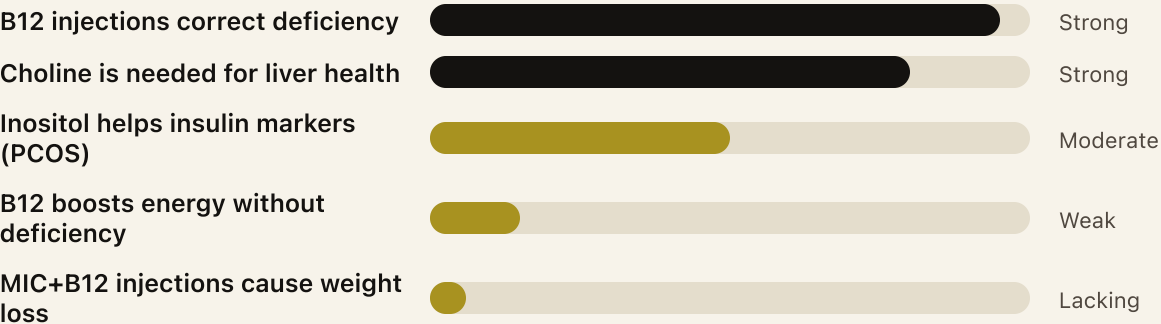
02

Strong for the parts. Thin for the blend.

The science behind each ingredient is solid, especially B12. What is missing is research on the combined injection - and on weight loss in particular.

Strength of evidence, by claim

Lttl summary of cited studies



Bars are a qualitative summary, not measured values. Several findings come from oral supplements or specific groups, not MIC+B12 injections.

STUDY	WHO AND WHAT	WHAT WAS FOUND
Butler 2006	Review of trials in people with B12 deficiency; oral vs. injected B12	High-dose oral B12 raised levels about as well as injections in the short term
Fischer 2007	Healthy adults on a controlled low-choline diet	Most men and postmenopausal women developed fatty liver or muscle damage; reversed with choline
Aroda 2016	Diabetes Prevention Program; long-term metformin users	Higher rates of B12 deficiency with long-term metformin use
Unfer 2017	Meta-analysis; women with PCOS; oral myo-inositol	Improvements in some hormone and insulin markers
MIC+B12 blend	Injected lipotropic combinations for weight loss	No quality randomized trials published

Long-term outcomes for MIC+B12 injections have not been established.

03 *Who benefits from skipping the gut.*

Absorbing B12 from food needs stomach acid and a protein called intrinsic factor. When either runs low, injections deliver B12 directly. For people who absorb well, high-dose oral B12 can also work.

INJECTABLE (L TTL)

Direct and complete

Delivers B12 alongside the three lipotropics, with no reliance on digestion.

ORAL

Needle-free

High-dose tablets rely on a small passive absorption route. Works for many, but not all.

	MIC+B12 INJECTION	HIGH-DOSE ORAL B12	DIET ALONE
Contains	B12 plus methionine, inositol, choline	B12 only	All four, from eggs, meat, fish, dairy, beans
Needs good absorption	No	Partly	Yes
Best suited to	People wanting direct delivery as part of a plan	Mild low B12 with normal absorption	Most healthy adults
Prescription	Yes	No	No

People at higher risk of low B12 include adults over 50, those on long-term metformin or acid-reducing medicines, people who have had weight-loss surgery, and those eating mostly plant-based diets.

04 *Mostly mild. A few to know.*

B12 is water-soluble, so the body clears what it does not use. Most side effects are brief and at the site. A few health conditions call for a conversation first.

Common

Stinging, redness, or tenderness at the site.
Bright or darker yellow urine is normal.

Less common

Mild nausea, headache, diarrhea, itching, or acne-like breakouts.

What helps

Let the vial reach room temperature, inject slowly, and rotate sites.

TALK TO YOUR CLINICIAN FIRST IF YOU HAVE

Cobalt or B12 allergy. B12 contains cobalt; past reactions to B12 injections matter.

Polycythemia vera or blood disorders. Correcting B12 can change blood counts; monitoring may be needed.

Unexplained fatigue or numbness. These can signal true B12 deficiency, which needs proper testing.

Leber's hereditary optic neuropathy.

Cyanocobalamin may worsen this rare inherited eye condition.

Kidney or liver disease. These organs process the ingredients; dosing may need care.

Other B vitamins. Tell your clinician about any supplements, so totals stay sensible.



Pregnancy and breastfeeding. B12 itself is important in pregnancy, but safety data for the compounded MIC+B12 blend are lacking. Tell your clinician if you are pregnant, planning to be, or breastfeeding.

05 *B12 alone is approved. The blend is not.*

Cyanocobalamin injection on its own is an FDA-approved treatment for B12 deficiency. The MIC+B12 combination is prepared by compounding pharmacies for individual patients and has not been reviewed by the FDA.

	B12 INJECTION (APPROVED)	COMPOUNDED MIC+B12 (L TTL)
FDA status	Approved for B12 deficiency	Not FDA-approved; not reviewed before use
Ingredients	Cyanocobalamin	Methionine, inositol, choline, and B12
Made by	Licensed drug manufacturers	A state-licensed or FDA-registered compounding pharmacy
Prescription	Required	Required, after clinician review
Used for	Diagnosed deficiency	Support alongside a weight or wellness plan; benefits not FDA-established

QUESTIONS TO ASK ANY PROVIDER

- Which pharmacy prepares it, and is it licensed or FDA-registered?
- How much of each ingredient is in my dose?
- Should my B12 level be tested first?
- How should I store it, and what is the beyond-use date?

THE DOSING DETAIL THAT MATTERS

Blends differ between pharmacies in the amount of each ingredient. Always confirm your dose in milliliters **and** the exact syringe marking with your care team, especially with each new vial.

06 *A helper, not the headline.*

People whose B12 was low often notice more energy within weeks. People with normal levels may notice little. MIC+B12 works best as one small part of a plan built on food, movement, and sleep.

WEEKS 1-2

Building a routine

Site stinging is most noticeable now and usually eases.

WEEKS 2-6

Settling in

If B12 was low, energy may improve. Otherwise changes are often subtle.

MONTHS 2-3

Check in

Review how you feel and whether it fits your plan.

ONGOING

Review

Reassess benefit and goals with your clinician.

HOW Lttl SUPPORTS TREATMENT

Board-certified clinicians

Licensed providers review your history before prescribing.

FDA-registered pharmacy partners

Prepared by certified U.S. pharmacies and shipped to your door.

Unlimited 24/7 support

Reach the care team any time at (888) 847-7806 📞 or hello@lttl.com.



Where the findings come from.

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IMPORTANT INFORMATION

This whitepaper is educational and does not replace medical advice, diagnosis, or treatment. Study results describe specific populations under study conditions and may not reflect individual outcomes. Most studies cited tested individual nutrients, often by mouth, not the MIC+B12 injection. Compounded medications are not FDA-approved, and the weight and wellness benefits of MIC+B12 are not FDA-established. MIC+B12 is not right for everyone; discuss your full health history and all medications and supplements with a licensed clinician before starting.

Questions? Talk to our care team.

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