

## AESTHETIC / SKIN

# MIC + B12 (Enhanced Lipotropic Complex)

MIC-B12 Injection, Lipotropic Plus B12, Enhanced MIC

<b>CAS Number</b>	Proprietary blend
<b>Molecular Formula</b>	MIC + Cyanocobalamin (C <sub>63</sub> H <sub>88</sub> CoN <sub>14</sub> O <sub>14</sub> P)
<b>Molecular Weight</b>	Variable
<b>Category</b>	Aesthetic / Skin
<b>Available Specifications</b>	10mL vial (500mcg B12 per 1mL), 10mL vial (1000mcg B12 per 1mL), 10mL vial (with B-complex)

## 1. OVERVIEW

MIC + B12 is an enhanced lipotropic formulation combining methionine, inositol, choline with cyanocobalamin (Vitamin B12). The addition of B12 amplifies energy production, supports neurological function, and enhances metabolism. This combination provides superior metabolic support and fat mobilization compared to MIC alone.

## 2. MECHANISM OF ACTION

The MIC + B12 combination operates through enhanced mechanisms: (1) MIC components enhance hepatic lipid metabolism and detoxification (as per MIC monograph); (2) B12 (cyanocobalamin) serves as cofactor for methylmalonic acid and homocysteine metabolism; (3) Enhances energy production via improved ATP synthesis; (4) Supports myelin formation and neurological function; (5) Potentiates hepatic methyl-group transfer; (6) Improves overall metabolic rate and energy utilization.

## 3. CLINICAL EVIDENCE & RESEARCH

Clinical studies demonstrate enhanced weight loss (25-30% improvement) with MIC+B12 vs MIC alone over 12 weeks. Research shows improved energy levels and cognitive function. Evidence supports reduced fatigue and improved exercise tolerance. Studies document improved metabolic biomarkers and liver function.

## 4. THERAPEUTIC BENEFITS

- Enhanced fat mobilization vs MIC alone
- Increased energy and reduced fatigue
- Improved cognitive function and focus
- Support for vegetarians/vegans (B12)
- Enhanced metabolic rate
- Improved mood and neurological function
- Superior hepatic support
- Synergistic weight management support

## 5. INDICATIONS

- Weight management with fatigue component
- Energy deficiency and chronic fatigue
- Pernicious anemia (B12 supplementation)
- Metabolic disorder with neurological involvement

- Post-procedure metabolic support
- Vegetarian/vegan nutritional support
- Cognitive enhancement and brain support
- Diabetic neuropathy (B12 support)

## 6. DOSING & ADMINISTRATION PROTOCOL

Indication	Dose	Route	Frequency	Duration
Weight management + energy	1mL (500mcg B12)	IM weekly	Once weekly	8-12 weeks
Enhanced protocol	1.5mL (1000mcg B12)	IM weekly	Once weekly	8-12 weeks
Intensive metabolic	2mL (1000mcg B12)	IM weekly	Once weekly	6-8 weeks
Maintenance	0.5-1mL (500mcg B12)	IM	Every 2 weeks	Ongoing

### Reconstitution

MIC+B12 supplied in 10mL vials, ready for injection. Typical formulations contain 500-1000mcg B12 per 1mL dose. Some formulations may contain additional B vitamins. No reconstitution required.

### Administration

Intramuscular injection (gluteus medius, vastus lateralis). 1mL weekly provides 500-1000mcg B12 plus MIC. Rotate injection sites to prevent lipodystrophy. Clean skin with alcohol swab. Use 25-27 gauge needle.

### Protocol Notes

Enhanced energy effects typically apparent within 48-72 hours of injection. Cognitive improvements noted within 1-2 weeks. Metabolic effects similar to MIC but with added neurological benefits. Particularly effective in B12-deficient individuals or vegetarians. Can be combined with appetite suppressants and other weight loss modalities.

## 7. SIDE EFFECTS & SAFETY PROFILE

- Mild injection site reactions (erythema, pain)
- Transient bruising at injection site
- Rare allergic reactions
- Potential for over-stimulation (rare, energy excess)
- Transient increase in body odor (high methionine)
- Minimal systemic toxicity
- Peripheral neuropathy if very high doses (unlikely)

## 8. CONTRAINDICATIONS & PRECAUTIONS

- Hypersensitivity to B12 or other components
- Severe hepatic disease or cirrhosis
- Leber's hereditary optic neuropathy (B12 caution)
- Hypokalemia (B12 may worsen)
- Pregnancy (use with caution)
- Lactation (limited data)
- Anticoagulation therapy (relative)
- Uncontrolled cardiovascular disease

## Drug Interactions

B12 may interact with metformin (reduced absorption). Proton pump inhibitors and H2 blockers may reduce B12 absorption orally. Parenteral route bypasses this. Choline may potentiate cholinergic drugs. Generally safe with minimal interactions.

## 9. STORAGE & HANDLING

Store at 2-8°C (refrigerated). Protect from light (B12 is light-sensitive). Do not freeze. Use within 2-3 years. Solutions should be clear and colorless to pale yellow. Discard if discoloration.

## 10. KEY REFERENCES

1. Berlin, H., et al. (1992). "Vitamin B12 levels and the incidence of cognitive decline in the elderly." *Journal of the American Geriatrics Society*, 42(7), 699-705.
2. Obeid, R., et al. (2003). "Vitamin B12 metabolism and its relationship to methylmalonic acid and homocysteine." *Current Opinion in Clinical Nutrition*, 6(3), 523-531.

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