

TB-500

PATIENT EDUCATION GUIDE — PEPTIDE
THERAPY

Harriman Precision Health
Physician-Supervised Telemedicine
Wellness
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What Is TB-500?

TB-500 is a synthetic peptide that mirrors a specific fragment of Thymosin Beta-4 (Tβ4), a 43-amino-acid protein naturally produced by the thymus gland and present in virtually every cell in the human body.¹ Thymosin Beta-4 is found in especially high concentrations at sites of injury, where it is released by platelets and macrophages to coordinate the body's healing response.² TB-500 isolates the most biologically active portion of this protein — the LKKTETQ actin-binding sequence — and delivers it in concentrated form to amplify the body's natural regenerative capacity.³ First isolated by researchers at the National Institutes of Health in the 1980s, Thymosin Beta-4 has since become one of the most extensively studied regenerative molecules in the scientific literature.⁴

How It Works

TB-500's primary mechanism centers on actin regulation. Actin is the structural protein inside every cell that enables cells to move, reorganize, and respond to injury. TB-500 binds to G-actin (monomeric actin), maintaining the pool of available actin needed for rapid cytoskeletal reorganization as repair cells migrate toward damaged tissue.³ This single mechanism cascades into several downstream effects that together explain TB-500's broad therapeutic profile.

Beyond actin regulation, TB-500 promotes angiogenesis — the formation of new blood vessels — improving circulation and oxygen delivery to injured areas.⁵ It reduces inflammatory cytokine production, decreases apoptosis (programmed cell death) in injured tissue, and mobilizes stem and progenitor cells to repair sites.⁶ Importantly, TB-500 acts systemically — it travels throughout the body rather than only acting locally, making it

particularly valuable for widespread or multiple-site injuries and for systemic recovery and longevity protocols.⁷

What TB-500 Is Used For

TB-500 is most widely used for musculoskeletal recovery — muscle strains, tendon and ligament injuries, joint pain, and post-surgical rehabilitation. Research has demonstrated its utility across a range of tissue types including skeletal muscle, tendons, ligaments, skin, cornea, cardiac muscle, and neural tissue.^{8,9} Clinical and preclinical research has also explored TB-500 for cardiac protection following myocardial injury, with related compounds entering formal clinical trials for heart attack recovery.¹⁰ For patients at Harriman Precision Health, TB-500 is primarily used for injury recovery, chronic inflammation, exercise performance optimization, and as a component of longevity and tissue preservation protocols — often paired with BPC-157 for synergistic benefit.¹¹

What to Expect: Timeline of Results

TB-500 operates on a loading and maintenance model. During the loading phase — typically the first four to six weeks — higher and more frequent dosing saturates tissue receptors and establishes the systemic healing environment. Patients commonly begin noticing improved flexibility, reduced stiffness, and decreased pain within the first two to three weeks.¹² By weeks four through eight, more meaningful functional improvements develop — better range of motion, faster recovery between training sessions, and reduction in chronic inflammation. Full tissue remodeling benefits, particularly for tendons and ligaments, mature through weeks eight to twelve as collagen networks restructure and strengthen.⁹ TB-500's systemic action means patients often notice improvements in areas beyond the primary target — a frequently reported observation among patients using it for general recovery and longevity.

Standard Protocol

Phase	Dose	Frequency	Duration
Loading Phase	2.0–2.5 mg	Twice weekly	Weeks 1–4
Maintenance Phase	2.0–2.5 mg	Once weekly	Weeks 5–12

Rest Period	4 weeks off before repeating if additional cycles are desired
Route	Subcutaneous injection (abdominal fat pad); rotate injection sites
Medication Source	Compounded by Empower Pharmacy (Houston, TX) — licensed compounding partner

All protocols are individualized by your supervising physician based on your history, goals, and treatment response. TB-500 is commonly combined with BPC-157 in the Harriman Precision Health "Wolverine Blend" protocol for patients seeking comprehensive tissue repair.

Safety Profile

TB-500 has demonstrated a favorable safety profile in both preclinical research and clinical usage under physician supervision.¹³ It is not a hormone, does not suppress the HPG axis, and does not require post-cycle therapy. It is not a controlled substance. The most commonly reported side effects are mild and temporary — brief fatigue or a feeling of heaviness in the days following injection, mild injection site irritation, and occasional mild headache that typically resolves with hydration and electrolyte support.¹² These effects generally diminish after the first one to two weeks as the body adapts to the loading protocol.

One important clinical consideration: because TB-500 promotes angiogenesis (new blood vessel formation), it should be used with caution in patients with a history of cancer or active malignancy, as promotion of new vasculature in tumor-adjacent tissue is a theoretical concern.¹³ This is reviewed during your intake evaluation. As with all compounded therapies, TB-500 is used off-label, and large-scale randomized human clinical trials are ongoing.

How to Maximize Your Results

TB-500 works systemically, but the quality of your healing environment determines how fully that potential is realized. The following evidence-informed strategies are commonly recommended by peptide therapy clinics to amplify results.

Evidence-Informed Optimization Strategies

- › **Collagen + Vitamin C (Morning)**^{14,15} — TB-500 enhances collagen deposition and fibroblast activity at healing sites. Pairing 10–15 g of hydrolyzed collagen peptides with 500–1,000 mg of vitamin C in the morning provides the raw substrate your body needs for connective tissue rebuilding. Vitamin C is essential for collagen cross-linking and cannot be synthesized endogenously — making dietary or supplemental intake critical during an active recovery cycle.
- › **High-Quality Protein**¹⁶ — Adequate protein intake (0.7–1.0 g per pound of body weight daily) provides the amino acid building blocks required for tissue regeneration. Leucine-rich sources — whey protein, poultry, lean beef, eggs — are particularly valuable for driving muscle protein synthesis and collagen production alongside TB-500's cellular signaling.
- › **Prioritize Deep Sleep**¹⁷ — Growth hormone release peaks during slow-wave sleep and directly supports the tissue repair cascade TB-500 initiates. Target 7–9 hours per night. Poor sleep quality impairs collagen synthesis and prolongs inflammatory states, directly working against your protocol. If sleep is a consistent challenge, discuss CJC-1295/Ipamorelin with your provider as a complementary option.
- › **Hydration**¹⁸ — Adequate hydration (64+ oz of water daily) is essential for optimal circulation, cellular repair, and reducing injection site discomfort. TB-500's systemic action relies on healthy vascular function — dehydration impairs this directly. Electrolyte balance also helps manage the mild headaches some patients notice during the loading phase.
- › **Anti-Inflammatory Nutrition**¹⁹ — Omega-3 fatty acids (fish oil, 2–4 g daily), curcumin, and antioxidant-rich foods (berries, leafy greens) reduce systemic inflammatory background and support the tissue remodeling environment. Chronic low-grade inflammation from diet is one of the most common factors that blunts peptide therapy response.
- › **Micronutrient Support**²⁰ — Magnesium supports neuromuscular

recovery and sleep quality. Zinc plays a key role in wound healing enzyme function. Vitamin D modulates inflammatory pathways and supports musculoskeletal integrity. A quality multivitamin or targeted supplementation is recommended throughout your cycle.

- › **Purposeful Rehabilitation Movement** — Light movement, stretching, and progressive physical therapy support circulation and nutrient delivery to healing tissue. TB-500's enhancement of cell migration works best when paired with mechanical loading signals from movement — particularly for tendon and ligament repair. Avoid overtraining the injured area during active healing phases.
- › **Stress and Cortisol Management** — Elevated cortisol from chronic stress directly inhibits collagen synthesis and delays tissue remodeling. Mindfulness practices, adequate rest between training sessions, and stress reduction are practical complements to any peptide protocol.

Frequently Asked Questions

How is TB-500 different from BPC-157?

BPC-157 tends to work more locally — it targets the specific tissue or area where healing is needed. TB-500 operates systemically, traveling throughout the body to support repair across multiple tissue types simultaneously. The two are highly complementary, which is why Harriman Precision Health offers them as a combined "Wolverine Blend" protocol for patients with comprehensive recovery or performance goals.

Why is there a loading phase?

The loading phase establishes therapeutic concentrations of TB-500 throughout the body's tissue receptors. Higher frequency dosing in the first four weeks creates the systemic healing environment. The maintenance phase sustains that environment at lower frequency as the body actively repairs. This mirrors how the protocol is used by leading peptide therapy clinics.¹²

Do I need labs before starting?

A medical history and intake review are completed prior to initiating therapy. Lab work is not routinely required but may be recommended based on individual history, particularly for patients with a history of

cardiovascular disease or malignancy.

How is my medication sourced?

All peptides are compounded by Empower Pharmacy, our licensed Houston-based compounding pharmacy partner, under strict quality and sterility standards.

Important Notice: This document is for educational purposes only and does not constitute medical advice. All therapies at Harriman Precision Health are physician-supervised and protocols are individualized to your health history and goals. Results may vary. TB-500 is an off-label compounded therapy; patients with a history of cancer or active malignancy should discuss this with their physician prior to initiating. This material should not be used for self-diagnosis or self-treatment. Questions? Contact us through your patient portal.

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Research cited includes preclinical (animal model) studies and emerging human data. The majority of Thymosin Beta-4 / TB-500 research has been conducted in animal models; large-scale randomized human clinical trials are ongoing. Related compounds (RGN-259) have entered formal human clinical trials for specific conditions. All therapies at Harriman Precision Health are physician-supervised, used off-label, and protocols are individualized to each patient's health history and goals. This document does not constitute a guarantee of clinical outcomes.