



# PEPTIDE CATALOG

*The ultimate peptide reference for  
modern wellness provider*





COMPREHENSIVE

# *Peptide Therapy Guide*

## 5 - A M I N O - 1 M Q

5-amino-1MQ (5-amino-1-methylquinolinium) is a small, membrane-permeable molecule first identified in 2017 by researchers at the University of Texas. Their work focused on finding compounds that inhibit the enzyme nicotinamide N-methyltransferase (NNMT), which plays a significant role in fat tissue, energy homeostasis, and cellular metabolism. NNMT activity has been closely linked to metabolic disorders such as obesity and type 2 diabetes (T2D).

The molecular formula for 5-amino-1MQ is  $C_{10}H_{11}N_2^+$ . By suppressing NNMT activity, this compound improves glucose uptake from the bloodstream and promotes more efficient cellular energy use, leading to reductions in both fat and glycogen storage.

Inhibiting NNMT with 5-amino-1MQ has also been shown to increase levels of NAD<sup>+</sup>, a cofactor essential for energy production, cellular repair, immune function, and healthy aging. NAD<sup>+</sup> elevation has been associated with improved muscular strength, cognitive performance, and longevity.

In a 2021 animal study, obese mice treated with 5-amino-1MQ showed significant reductions in body weight and liver fat, ultimately achieving body composition metrics similar to lean, untreated controls. The findings reinforced the therapeutic potential of NNMT inhibition for addressing obesity and its related metabolic complications.

At present, 5-amino-1MQ has not been approved for human use by the United States Food and Drug Administration (USFDA) and has not entered clinical trials. It is currently available only for in vitro research and laboratory investigation by qualified professionals.

### POTENTIAL BENEFITS OF 5-AMINO-1MQ:

Although human clinical data is still lacking, preclinical studies indicate that 5-amino-1MQ may be a promising agent in addressing several conditions associated with metabolic dysfunction.

#### Weight Loss Support

By targeting and inhibiting NNMT, 5-amino-1MQ helps elevate NAD<sup>+</sup> levels and enhances energy-burning metabolic processes. This action may help the body resist storing excess fat and glycogen. Elevated NNMT levels are correlated with reduced expression of glucose transporter 4 (GLUT4), a protein essential for moving glucose from the blood into fat and muscle cells. Low GLUT4 levels impair glucose utilization and promote fat accumulation. While exercise can increase GLUT4, this is often a barrier for individuals with obesity. 5-amino-1MQ helps upregulate GLUT4 expression, resulting in improved glucose clearance and reduced fat storage.



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## POTENTIAL BENEFITS OF 5-AMINO-1MQ:



***Weight Loss Support***



***Insulin Resistance and  
Metabolic Disorders***



***Muscle Repair and  
Performance***

In one notable study, mice on a high-fat diet experienced:

- A 35% reduction in body weight and size
- A 30% decrease in fat cell size
- A 40% reduction in fat cell volume

Additionally, treated mice achieved cholesterol levels similar to healthy controls, and results were not linked to changes in food intake, pointing to metabolic changes as the driving factor.

### **Insulin Resistance and Metabolic Disorders**

Because NNMT activity is associated with insulin resistance, it may serve as a biomarker for reduced glucose tolerance. Blocking NNMT could enhance insulin sensitivity and overall blood sugar management. In studies on obese mice, NNMT inhibition via 5-amino-1MQ resulted in:

- 50-60% reduction in insulin levels
- Marked fat loss and decreased adipocyte volume
- Lower triglycerides and free fatty acid concentrations

These findings highlight its therapeutic promise for individuals with type 2 diabetes and prediabetes.

### ***Muscle Repair and Performance:***

NNMT inhibition by 5-amino-1MQ in skeletal muscle appears to boost GLUT4 activity, potentially improving exercise capacity and recovery. Studies in aged mice demonstrated that 5-amino-1MQ enhanced stem cell activation after muscle injury. Treated mice showed:

- 2x greater muscle fiber size
- 70% stronger muscle contractility in regenerated tissue

Increased NNMT levels have also been observed in certain forms of muscular dystrophy, likely as a response to chronic inflammation. Since NAD<sup>+</sup> synthesis is crucial for muscle repair and protection, elevating it through 5-amino-1MQ may offer a new therapeutic pathway for muscle maintenance and regeneration.



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## SAFETY & SIDE EFFECTS

5-amino-1MQ has shown significant promise in preclinical studies for its ability to enhance energy metabolism and reduce fat storage, making it a potential agent in weight loss and metabolic optimization. However, it is essential to consider the safety profile before initiating use in any research or clinical setting.

To date, no adverse effects have been reported in rodent studies, and early research suggests a favorable safety profile. However, no human clinical trials have been conducted, and therefore, its safety in humans has not been established.

Some anecdotal reports and researcher observations indicate that:

- Taking 5-amino-1MQ late in the day may interfere with sleep onset
- An initial acclimation period may be required, as some subjects report reduced cardiovascular exercise tolerance in the early stages of use

Due to limited safety data, it is recommended that certain populations be excluded from use or research protocols, including:

- Pregnant or breastfeeding individuals
- Individuals with chronic medical conditions
- Individuals currently taking medications that may interact with this compound

As with any investigational therapy, a cautious, well-monitored approach is essential.

## STANDARD PROTOCOL:

50 mg daily -This dosing has been used in observational settings, but given the lack of formal clinical trials, dosing should always be tailored to the context of use and supervised by qualified professionals.



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## AOD - 9604

AOD-9604 is a synthetic peptide fragment derived from human growth hormone (HGH), originally developed by Professor Frank Ng at Monash University in Australia. This compound was specifically designed to harness HGH's fat-burning capabilities without promoting muscle growth or increasing IGF-1, making it a unique candidate for obesity treatment and weight management.

### Key Features

- Non-anabolic - Does not stimulate IGF-1 production
- Supports bone formation - Encourages mesenchymal stem cells in adipose tissue to differentiate into bone
- Aids cartilage repair - Stimulates production of proteoglycans and collagen in bovine chondrocytes, showing promise for osteoarthritis management

### POTENTIAL BENEFITS OF AOD-9604:

AOD-9604 has demonstrated the following benefits in preclinical models and observational use:

- Promotes lipolysis (fat breakdown) without raising blood sugar or stimulating tissue growth
- Inhibits lipogenesis (fat accumulation)
- Encourages fat release from stubborn fat cells
- Boosts basal metabolic rate
- May assist in appetite reduction
- Supports treatment of osteoarthritis, hypercholesterolemia, and bone/cartilage repair
- Shows synergistic effects when combined with BPC-157

### POTENTIAL BENEFITS OF AOD-9604:



*Promotes lipolysis*



*Boosts basal  
metabolic rate*



*Supports  
bone/cartilage repair*



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## STANDARD PROTOCOL:

- Formulation: AOD-9604 5mg/mL
- Dose: 0.5mg administered subcutaneously (SQ) once daily
- Frequency: Monday through Friday
- Cycle Duration: 8-10 weeks, followed by a 6-8 week break before repeating

### Important Disclosures:

- This peptide has not been evaluated by the FDA
- Not intended to diagnose, treat, cure, or prevent any disease
- Compounded medications and research peptides are not FDA-approved
- We ensure all peptides meet strict quality, purity, and safety benchmarks in accordance with regulatory expectations.

## SAFETY & SIDE EFFECTS

Extensive review of multiple preclinical studies has shown that AOD-9604 has no observable adverse effects and is considered to have an excellent safety profile.

## ARA - 290

ARA-290, also known as Cibinetide, is an 11-amino acid synthetic peptide derived from erythropoietin (EPO), the hormone responsible for red blood cell production. Unlike EPO, ARA-290 does not stimulate erythropoiesis, eliminating the hematopoietic side effects traditionally associated with EPO.

Instead, ARA-290 selectively activates the Innate Repair Receptor (IRR), a receptor complex formed by the erythropoietin receptor and  $\beta$ -common receptor. This unique mechanism allows ARA-290 to trigger powerful anti-inflammatory and tissue repair pathways, particularly in response to injury, hypoxia, or metabolic stress.

### How It Works:

ARA-290 binds to the IRR, which is upregulated in damaged or inflamed tissues. Upon activation, the receptor initiates intracellular signaling cascades that promote:

- Reduction of systemic inflammation
- Repair of damaged nerve and vascular tissue
- Protection against further injury caused by oxidative stress or ischemia



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## POTENTIAL BENEFITS OF ARA-290:

ARA-290's broad therapeutic potential lies in its ability to regulate inflammation and accelerate tissue regeneration. Documented benefits include:

### **Relief from Neuropathic Pain**

Shown to reduce nerve inflammation and promote nerve healing, ARA-290 has demonstrated effectiveness in treating neuropathic pain associated with diabetes, sarcoidosis, and other nerve-damaging conditions.

### **Improved Diabetic Neuropathy Symptoms**

Clinical studies have reported reductions in pain, tingling, and other neuropathic symptoms in patients with type 2 diabetes, potentially improving quality of life.

### **Anti-Inflammatory Properties**

ARA-290 helps downregulate systemic inflammation, offering relief in autoimmune conditions and chronic inflammatory diseases, and potentially slowing disease progression.

### **Tissue Protection & Wound Healing**

The peptide supports tissue regeneration in settings of injury, ischemia, and hypoxia, aiding in vascular repair, wound healing, and organ preservation.

### **Neuroprotection**

ARA-290 shows promise in promoting nerve cell survival and repair, with implications for neurodegenerative disorders and injury-related nerve damage.

### **Enhanced Vascular Health**

By reducing inflammation and restoring endothelial function, ARA-290 may improve vascular integrity, supporting cardiovascular health and blood vessel resilience.

## POTENTIAL BENEFITS OF ARA-290:



*Neuroprotection*



*Anti-Inflammatory  
Properties*



*Tissue Protection &  
Wound Healing*



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## STANDARD PROTOCOL:

- Recommended Dose: 2 mg (0.25 mL or 25 units on an insulin syringe)
- Route: Subcutaneous (SQ) injection
- Frequency: Daily for 6 weeks
- Cycle: May be repeated following medical guidance

### Disclosures:

- These statements have not been evaluated by the U.S. Food and Drug Administration (FDA)
- This product is not intended to diagnose, treat, cure, or prevent any disease
- ARA-290 is a compounded research peptide, not FDA-approved for general use
- Peptides are produced under strict quality control and compounding pharmacy standards

## SAFETY & SIDE EFFECTS

ARA-290 has shown a favorable safety profile in early clinical studies. However, as with any therapeutic peptide, some side effects may occur:

- Mild increase in blood pressure (temporary)
- Slight elevation in heart rate in some individuals
- Elevated liver enzymes in rare cases (recommend monitoring in patients with liver concerns)
- Injection site irritation (redness, itching, or swelling)
- Occasional dizziness or lightheadedness
- Mild fatigue or nausea reported in a small number of users



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## BPC - 157

BPC-157 is a synthetic peptide derived from a naturally occurring protective protein found in gastric juice. Initially studied for its potent gut-healing capabilities, BPC-157 has since gained widespread use for injury repair, neuroprotection, cardiovascular health, and immune system modulation.

### POTENTIAL BENEFITS OF BPC-157:

#### Gut Health & GI Repair

- Promotes intestinal healing and prevents ulcers, especially those caused by NSAIDs
- Stabilizes the gut microbiome and reduces inflammation
- Beneficial for IBD, GERD, and ulcerative colitis
- Balances neurotransmitters along the gut-brain axis, improving mood and GI-linked mental health

### POTENTIAL BENEFITS OF BPC-157:



*Gut Health & GI  
Repair*



*Injury Recovery &  
Wound Healing*



*Cardiovascular  
Support*

#### Injury Recovery & Wound Healing

- Accelerates healing of ligaments, tendons, muscles, and bones
- Increases type I collagen production for robust tissue regeneration
- Aids nerve regeneration and recovery from burns, wounds, and surgical trauma
- Enhances blood flow to injured areas via the Nitric Oxide (NO) pathway



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## POTENTIAL BENEFITS OF BPC-157:

### Neurological & Brain Health

- Protects neurons from neurotoxicity and supports regeneration (e.g., Parkinson's model studies)
- Modulates neurotransmitters (dopamine, serotonin, GABA) for improved mood and stress resilience
- Aids in brain injury recovery, withdrawal symptoms, and neuroinflammation
- May offer benefits for conditions like multiple sclerosis

### Cardiovascular Support

- Protects vascular tissue from oxidative stress
- Encourages angiogenesis (new blood vessel formation)
- May assist in managing arrhythmias and support recovery from heart failure (CHF)

### Immune Modulation & Inflammation

- Calms inflammation in autoimmune conditions like rheumatoid arthritis
- May reduce reactivity in individuals with histamine intolerance or chronic immune activation
- Works synergistically with Thymosin Alpha-1 (TA-1) and TB-500 to support immune rebalancing
- Aids in NSAID recovery and detox from medication-related inflammation

## SAFETY & SIDE EFFECTS

- Well-tolerated in most users
- Individuals with autoimmune disease, Lyme, histamine intolerance, or compromised immune systems should begin BPC-157 therapy under the supervision of a qualified healthcare provider
- Co-administration with TA-1 or TB-500 is recommended to support immune regulation in sensitive populations



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## STANDARD PROTOCOL:

- **Oral Form - KPV/BPC-157 Capsules**
- Dose: 500 mcg of each peptide per capsule (1 capsule daily)
- Best For: Gut healing, brain-gut axis support, microbiome balance, mild inflammation
- Injectable BPC-157 / BPC-157 + TB-500
- **Acute Injury Protocol:**
- 1 mg (0.1 mL or 10 units) subcutaneous injection near injury site, once daily for 20 days
- Maintenance Phase: 200-500mcg (0.02ml – 0.05ml or 2-5 units) 2-5 times per week (SQ or intramuscularly) until healing is complete or as needed.

### Regulatory Disclosures:

- Not evaluated by the U.S. Food and Drug Administration (FDA)
- Not intended to diagnose, treat, cure, or prevent any disease
- Research peptides are not FDA-approved but are manufactured under strict quality control standards

## C J C - 1 2 9 5

Growth Hormone Peptides (GHPs) are a class of compounds designed to stimulate the release of growth hormone (GH) from the pituitary gland. They mimic the body's natural growth hormone-releasing hormones (GHRH) or act as growth hormone secretagogues (GHS), peptides that trigger GH secretion by activating ghrelin receptors. Increased GH levels have been associated with improvements in body composition, skin health, recovery, sleep, cognition, and immune function.

### ***Types of Growth Hormone Peptides:***

#### Growth Hormone-Releasing Hormones (GHRH)

These peptides act directly on the pituitary gland to stimulate GH secretion.

Examples include:

- Sermorelin
- CJC-1295 (with or without DAC)
- Tesamorelin

#### 2. Growth Hormone Secretagogues (GHS)

These peptides bind to ghrelin receptors to indirectly promote GH release.

Examples include:

- Ipamorelin
- GHRP-2
- GHRP-6
- Hexarelin



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## TYPES OF GROWTH HORMONE PEPTIDES:

### **Growth Hormone-Releasing Hormones (GHRH)**

These peptides act directly on the pituitary gland to stimulate GH secretion.

Examples include:

- Sermorelin
- CJC-1295 (with or without DAC)
- Tesamorelin

### **Growth Hormone Secretagogues (GHS)**

These peptides bind to ghrelin receptors to indirectly promote GH release.

Examples include:

- Ipamorelin
- GHRP-2
- GHRP-6
- Hexarelin

## POTENTIAL BENEFITS OF GROWTH HORMONE PEPTIDES:

### **Collagen Production & Skin Health**

- Stimulates collagen synthesis, improving skin elasticity, hydration, and reducing the appearance of fine lines and wrinkles
- Supports post-surgical and wound healing by enhancing the skin's structural repair capacity

### **Joint, Bone, and Connective Tissue Repair**

- Increases collagen in cartilage, tendons, and ligaments, improving joint integrity and reducing injury risk
- Enhances bone mineral density by supporting bone matrix formation
- Accelerates fracture recovery and tissue regeneration

### **Muscle Mass & Recovery**

- Promotes lean muscle development and improves muscle integrity
- Reduces exercise-related soreness and enhances recovery time after physical exertion

### **Cardiovascular Health**

- Strengthens blood vessel walls via collagen production, potentially reducing risk of vascular damage and aneurysms
- May improve vascular elasticity and circulation



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## POTENTIAL BENEFITS OF GHRH:



*Collagen Production &  
Skin Health*



*Joint, Bone, and  
Connective Tissue Repair*



*Cardiovascular  
Health*

## TYPES OF GROWTH HORMONE PEPTIDES:

### Immune System Enhancement

- Stimulates regeneration of the thymus gland, boosting T-cell production-especially important with aging
- Modulates cytokine balance, supporting immune regulation and reducing chronic inflammation
- Increases immunoglobulin levels, enhancing the body's ability to neutralize pathogens
- Activates Natural Killer (NK) cells, macrophages, and neutrophils, improving innate immune defense

### Sleep Optimization

- GH secretion during sleep helps promote deeper, more restorative sleep
- Many users report fewer awakenings, improved sleep architecture, and more consistent rest patterns

### Cognitive Function & Brain Health

- Neurogenesis & Synaptic Plasticity
- GH peptides promote the formation of new neurons and synaptic connections, particularly in the hippocampus, a key region for memory and learning
- Neuroprotection
- Protects neurons from oxidative stress and apoptosis, helping preserve cognitive function
- Neurotransmitter Modulation
- Supports balanced levels of dopamine, serotonin, and GABA, enhancing mood, focus, and reducing anxiety
- Cerebral Blood Flow
- May enhance brain perfusion, ensuring optimal delivery of oxygen and nutrients for brain performance
- Cognition in GH Deficiency
- In GH-deficient individuals, supplementation has shown improvements in attention, memory, and executive function
- Age-Related Cognitive Support
- Some studies suggest GH peptides may help slow cognitive decline associated with aging, though further research is warranted



C O M P R E H E N S I V E

# *Peptide Therapy Guide*

- **Considerations & Limitations of Growth Hormone Peptide Therapy**

When incorporating growth hormone peptides (GHPs) into wellness or performance protocols, the following factors should be considered to ensure safe, effective, and personalized use:

**Individual Response May Vary:**

- Cognitive and physical outcomes from GHPs can differ based on factors such as:
- Age
- Baseline HGH levels
- Overall health and hormonal function
- Personalized dosing and monitoring are recommended for optimal results.

**Timing and Insulin Sensitivity**

- Insulin inhibits growth hormone release.
- To maximize efficacy, GHPs should be administered:
  - At least 60 minutes after eating
  - Ideally in a fasted state for best GH stimulation

**Optimal Time of Day**

- The body produces its highest levels of growth hormone during deep sleep, so bedtime administration is typically preferred.
- However, some individuals report disrupted sleep when dosing at night. In such cases, morning administration may be better tolerated.

**Limited Human Clinical Evidence**

- While animal studies and preliminary human data suggest promising benefits, particularly for cognition and neuroprotection, comprehensive long-term human trials are limited.
- Further research is needed to confirm long-term safety and efficacy.

**Receptor Desensitization**

- Continuous daily use may lead to GH receptor downregulation or reduced peptide effectiveness over time.
- To reduce the risk of desensitization:
  - Use peptides Monday through Friday with weekend breaks, or
  - Follow a cyclical protocol such as 6 weeks on / 6 weeks off

**Age-Related Limitations**

- Because GHPs work by stimulating the pituitary gland, they may be less effective in older adults with diminished pituitary function.
- Alternative strategies or combination therapies may be needed for mature individuals with low GH production capacity.



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**GROWTH HORMONE PEPTIDES:**

Peptide	Sermorelin	Ipamorelin	CJC-1295 w/DAC	Tesamorelin	Hexarelin
Receptor Type	GHRH	GHS-R, Ghrelin	GHRH	GHRH	GHS-R, Ghrelin
Advantages	- No GH spikes	↓ arrhythmias post-MI	Prolonged GH release	↓ visceral fat & TG	↓ scarring post-MI
	- Improves sleep		↓ injection frequency		
Acting Type	Short (½-life 11-12m)	Long (½-life ~2h)	Very Long (½-life 6-8days)	Medium (½-life 26-38min)	Long (½-life 55-70min)
Time to Peak	5-20 min	5-20 min	30-60 min	15-30 min	15-30 min
↑ Cortisol / Prolactin	No	No	No	No	Yes
↑ IGF-1	↑	↑↑	↑↑↑↑↑	↑↑↑	↑↑↑↑
Muscle Growth	+	++	+++++	+++	++++
Fat Burning	+	++	+++++	+++	++++
Healing / Recovery	+	++	++++	+++	++++
↑ Collagen Production	↑	↑↑	↑↑↑↑↑	↑↑↑↑	↑↑↑
Joint Pain / Water Ret.	+	++	++++	+++	+++++



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## C J C - 1 2 9 5

CJC-1295 is a long-acting analog of Growth Hormone Releasing Hormone (GHRH), designed to stimulate the pituitary gland to release growth hormone (GH) over an extended period. As GH levels rise, this triggers a corresponding increase in insulin-like growth factor 1 (IGF-1) production in the liver and peripheral tissues. CJC-1295 is often combined with a Drug Affinity Complex (DAC), which significantly extends its half-life and allows for sustained GH release, reducing the frequency of injections required for therapeutic effect.

### POTENTIAL BENEFITS OF CJC-1295:

#### Muscle Growth and Strength

- Prolonged GH/IGF-1 release supports muscle anabolism
- IGF-1 enhances protein synthesis, contributing to lean muscle development and maintenance

#### Fat Reduction

- Promotes lipolysis and metabolic enhancement through prolonged growth hormone exposure
- May assist in body composition optimization

### POTENTIAL BENEFITS OF CJC-1295:



*Muscle Growth  
and Strength*



*Fat  
Reduction*



*Body Composition  
Optimization*



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# *Peptide Therapy Guide*

## SAFETY & SIDE EFFECTS

While well-tolerated by many, extended GH and IGF-1 elevation may cause:

- Joint discomfort or water retention
- Risk of insulin resistance with prolonged use
- Numbness or tingling in extremities (transient)
- Facial flushing shortly after injection, typically resolving within 5-10 minutes
- Potential for hormonal desensitization due to non-pulsatile hormone exposure

## STANDARD PROTOCOL:

- **CJC-1295 without DAC (5mg/mL)**
  - Dose: 0.3mg-0.5mg (0.06mL-0.1mL or 6-10 units)
  - Route: Subcutaneous (SQ)
  - Frequency: Every morning, Monday-Friday, in a fasted state before training
- **CJC-1295 with DAC (1mg/mL)**
  - Dose: 0.1mg (0.1mL or 10 units)
  - Route: Subcutaneous
  - Frequency: Twice weekly, at least 1 hour after eating
  - Cycle: Use for 8-10 weeks, followed by a 4-6 week break
- **CJC-1295 (No DAC) + Ipamorelin Blend (2.5mg/2.5mg/mL)**
  - Dose: 0.12mL-0.2mL (12-20 units)
  - Route: Subcutaneous
  - Frequency: Every morning, Monday-Friday, in a fasted state before workouts
- **Important Disclosures:**
  - This product has not been evaluated by the FDA
  - Not intended to diagnose, treat, cure, or prevent any disease
  - Compounded peptides are not FDA-approved, but are produced under strict quality standards
  - Manufacturing is conducted under strict protocols to ensure safety, purity, and efficacy



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## DSIP(DELTA SLEEP-INDUCING PEPTIDE)

DSIP is a naturally occurring nonapeptide (composed of 9 amino acids) found in various tissues throughout the body. It plays a role in regulating sleep-wake cycles by acting on specific regions of the brain and is able to cross the blood-brain barrier with ease. Lower levels of DSIP have been observed in individuals with schizophrenia, depression, and other neuropsychiatric conditions.

### Mechanism of Action

Although DSIP has been studied for over four decades, its exact mechanism is still not fully understood. However, key findings include:

- **Sleep Regulation:** DSIP supports deep (delta) sleep, corresponding to stages 3 and 4 of the sleep cycle. These stages are characterized by slow-wave brain activity, crucial for physical and neurological recovery.
- **REM & Circadian Rhythm:** The peptide has been shown to modulate REM sleep, help reset circadian clock genes, and suppress paradoxical (REM-related) disturbances.
- **Cellular Repair:** DSIP contributes to cellular recovery during rest, enhancing overall restorative functions during sleep.

## POTENTIAL BENEFITS OF DSIP:

### Enhanced Deep Sleep

Improves the depth and quality of sleep, particularly by increasing time spent in slow-wave stages. DSIP does not act as a sedative but rather promotes more restorative sleep architecture.

### Support for Withdrawal Syndromes

Since the 1980s, DSIP has shown promise in supporting drug and alcohol withdrawal protocols, with minimal side effects in most patients.

### Hormonal Optimization

- **Luteinizing Hormone (LH):** May support natural testosterone production
- **Growth Hormone (GH):** Shown to stimulate GH secretion, enhancing sleep and cellular repair
- **Seizure Protection:** Some preclinical data suggest anticonvulsant potential
- **Pain Modulation:** May reduce chronic migraine and tinnitus-related pain
- **Antioxidant Activity:** In vitro research supports potential free radical scavenging properties



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## POTENTIAL BENEFITS OF DSIP:



*Enhanced Deep  
Sleep*



*Support for Withdrawal  
Syndromes*



*Hormonal  
Optimization*

## SAFETY & SIDE EFFECTS

While generally well-tolerated, DSIP may cause:

- Tolerance with frequent use- may require higher doses over time
- Dose sensitivity- underdosing may be ineffective; overdosing can cause excessive sleepiness or, in rare cases, paradoxical insomnia
- Injection site irritation- redness or discomfort may occur
- Additional effects:
  - Headache
  - Mild nausea
  - Slight elevation in body temperature
- Drug interaction: Naloxone may inhibit DSIP's effects

## STANDARD PROTOCOL:

- **Starting Dose:**
- 0.06 mg (0.03 mL or 3 units on an insulin syringe)
- Administration: Subcutaneous (SQ) injection 1- 3 hours before bedtime
- Frequency: No more than twice per week to minimize tolerance risk
- **Adjustment if Needed:**
- May titrate up to 0.1 mg - 0.2 mg (0.05 mL - 0.1 mL or 5-10 units)
- Always assess response before increasing dosage
- **Disclosures**
- These statements have not been evaluated by the U.S. Food and Drug Administration (FDA)
- This product is not intended to diagnose, treat, cure, or prevent any disease
- Compounded research peptides are not FDA-approved, but are manufactured under rigorous quality controls



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## EPITALON / EPITHALONE

Epithalon is a synthetic tetrapeptide originally derived from Epithalamin, a natural compound produced in the pineal gland. Discovered by Russian scientist Professor Vladimir Khavinson, Epithalon is best known for its potential anti-aging properties, primarily through its ability to activate telomerase, an enzyme that maintains telomere length, the protective caps on the ends of chromosomes that naturally shorten with age.

By supporting telomere preservation and repair, Epithalon may help delay cellular senescence, enhance vitality, and promote longevity.

### POTENTIAL BENEFITS OF EPITALON:

#### **Telomere Maintenance & Anti-Aging Effects**

Epithalon has been shown to stimulate telomerase production, which helps maintain and even lengthen telomeres. This cellular support mechanism is believed to play a key role in delaying biological aging and improving cell function over time.

#### **Powerful Antioxidant Properties**

Research indicates that Epithalon helps reduce oxidative stress by neutralizing free radicals. This action may protect cellular DNA, reduce inflammation, and support long-term healthspan.

#### **Immune System Support**

Preclinical studies suggest that Epithalon may enhance immune cell activity, helping to bolster the body's natural defenses against infection, inflammation, and age-related immune decline.

#### **Sleep & Circadian Rhythm Regulation**

By modulating melatonin production, Epithalon may help restore circadian balance, improve sleep quality, and support endocrine function, especially in older adults with disrupted sleep-wake cycles.

#### **Potential Anti-Tumor Activity**

Preliminary data suggest that Epithalon may inhibit the growth of certain tumor types. While early results are promising, larger-scale studies are needed to confirm these effects in clinical settings.

#### **Skin & Collagen Support**

Epithalon may promote the synthesis of collagen and elastin, proteins essential for skin firmness and elasticity. This may result in reduced wrinkles and improved skin texture.

#### **Cognitive and Neurological Support**

There is emerging evidence that Epithalon may help preserve neuronal health, promote neurogenesis, and protect against age-related cognitive decline, including memory loss and neurodegenerative disorders.



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## POTENTIAL BENEFITS OF EPITALON:



*Anti-Aging Effects*



*Immune System  
Support*



*Cognitive and  
Neurological Support*

## SAFETY & SIDE EFFECTS

Epithalon is generally considered safe and well-tolerated. In a 15-year follow-up study on elderly patients, no serious side effects were reported, and treated individuals showed a reduction in overall mortality.

However, as with any peptide, some users may experience mild and transient side effects:

- Injection site reactions: Redness, tenderness, or mild swelling
- Digestive disturbances: Nausea or diarrhea
- Sleep disruptions: Insomnia or changes in sleep patterns
- Headaches or fatigue: Typically short-lived
- Body temperature shifts: Rare and self-resolving

Note: Use caution if taking Naloxone, as it may interfere with Epithalon's effects.

## STANDARD PROTOCOL:

- **Formulation:** Epithalon 20mg/mL
- **Typical Protocol:**
  - 10mg (0.5mL or 50 units) subcutaneously (SQ)
  - Administered at bedtime, every other day for 10 days
  - Repeat cycle twice yearly for maintenance and anti-aging support

### Disclosures

- This product is not intended to diagnose, treat, cure, or prevent any disease
- Compounded and research peptides are not FDA-approved, but are manufactured under rigorous quality control standards



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## GLUTATHIONE

Glutathione is a naturally occurring tripeptide composed of three amino acids: cysteine, glycine, and glutamic acid. Known as the body's master antioxidant, it plays a vital role in cellular defense, detoxification, and the maintenance of optimal health. It is found in nearly every cell in the body and is especially concentrated in the liver, where it assists in removing toxins and supporting metabolic processes.

### KEY FUNCTIONS OF GLUTATHIONE:

- **Detoxification:** Binds to and eliminates heavy metals, alcohol byproducts, and environmental toxins
- **Immune Support:** Enhances immune cell activity and supports a healthy inflammatory response
- **Cellular Repair:** Protects and restores damaged cells, DNA, and proteins
- **Oxidative Stress Reduction:** Neutralizes free radicals, reducing chronic inflammation and slowing the aging process
- **Brain Protection:** Crosses the blood-brain barrier to support neurological detox and cognitive clarity

### WHO CAN BENEFIT FROM GLUTATHIONE?

- Individuals with neurodegenerative conditions (e.g., Parkinson's, Alzheimer's)
- Patients with liver disorders, fatty liver, or undergoing chemotherapy
- Men with infertility or oxidative damage to sperm cells
- Clients seeking brighter skin, reduced hyperpigmentation, and an anti-aging glow
- Those with chronic fatigue, autoimmune conditions, or frequent illness due to low immunity

### SYMPTOMS OF GLUTATHIONE DEFICIENCY

#### Mild Deficiency

- Fatigue, poor sleep, and reduced focus ("brain fog")
- Recurring infections or poor immune resilience



COMPREHENSIVE

# Peptide Therapy Guide

## Severe Deficiency

- Anemia
- Enlarged spleen
- Loss of coordination or seizure activity
- Metabolic acidosis (acid buildup that can cause nausea or vomiting)

## POTENTIAL BENEFITS OF GLUTATHIONE:

### Immune Optimization

- Boosts the production and function of immune cells, improving overall resilience and recovery

### Oxidative Stress & Disease Prevention

Neutralizes free radicals and reduces oxidative stress, which contributes to the prevention of chronic diseases such as:

- Cancer
- Diabetes
- Cardiovascular disease
- Neurodegenerative disorders

### Anti-Aging & Skin Brightening

- Reduces hyperpigmentation and brightens complexion
- Fades fine lines and wrinkles, promoting youthful, glowing skin
- Improves tone and texture, particularly at higher doses

### Liver & Metabolic Support

- Enhances detoxification pathways
- May assist in reducing abdominal fat and supporting overall metabolic function

### Cognitive Health

- Supports mental clarity and may improve memory in neurological conditions such as Parkinson's disease

## POTENTIAL BENEFITS OF GLUTATHIONE:



*Immune  
Optimization*



*Disease  
Prevention*



*Anti-Aging & Skin  
Brightening*



COMPREHENSIVE

# Peptide Therapy Guide

## SAFETY & SIDE EFFECTS

- Asthma: May exacerbate respiratory symptoms; not recommended without medical supervision
- Pregnancy & Breastfeeding: Safety data is limited; use only under direct medical guidance
- Drug Interactions: Consult a healthcare provider before use if taking other medications or supplements

### Important Notes:

- Long-term use may reduce zinc levels; zinc supplementation is advised
- Vitamin C supplementation is recommended to enhance glutathione's antioxidant effectiveness
- Discontinue use and contact a provider if any unusual side effects occur

## STANDARD PROTOCOL:

- Recommended Dose: 100mg (0.5 mL or 50 units)
- Route: Subcutaneous (SQ) or Intramuscular (IM) injection
- Frequency: Daily, 5 days per week
- **Important Disclosures**
- These statements have not been evaluated by the U.S. Food and Drug Administration (FDA)
- This product is not intended to diagnose, treat, cure, or prevent any disease
- Glutathione is a compounded injectable and is not FDA-approved, but is manufactured under strict quality control protocols in certified compounding pharmacies

## HEXARELIN

Hexarelin is a synthetic hexapeptide and powerful growth hormone secretagogue (GHS). It mimics the action of ghrelin, the body's natural hunger hormone, by binding to GHS-R receptors in the pituitary gland and hypothalamus, stimulating a substantial release of growth hormone (GH). In addition to its GH-boosting properties, Hexarelin has been widely studied for its cardioprotective, antioxidant, and anti-inflammatory effects.

### Mechanism of Action

Hexarelin works by activating GHS-R1a receptors, prompting the pituitary gland to increase endogenous GH production. Unlike natural GH pulses, Hexarelin induces a stronger and more sustained GH release, resulting in anabolic, regenerative, and anti-aging outcomes.



# COMPREHENSIVE PEPTIDE THERAPY GUIDE

## GROWTH HORMONE PEPTIDES:

Peptide	Sermorelin	Ipamorelin	CJC-1295 w/DAC	Tesamorelin	Hexarelin
Receptor Type	GHRH	GHS-R, Ghrelin	GHRH	GHRH	GHS-R, Ghrelin
Advantages	- No GH spikes	↓ arrhythmias post-MI	Prolonged GH release	↓ visceral fat & TG	↓ scarring post-MI
	- Improves sleep		↓ injection frequency		
Acting Type	Short (½-life 11-12m)	Long (½-life ~2h)	Very Long (½-life 6-8days)	Medium (½-life 26-38min)	Long (½-life 55-70min)
Time to Peak	5-20 min	5-20 min	30-60 min	15-30 min	15-30 min
↑ Cortisol / Prolactin	No	No	No	No	Yes
↑ IGF-1	↑	↑↑	↑↑↑↑↑	↑↑↑	↑↑↑↑
Muscle Growth	+	++	+++++	+++	++++
Fat Burning	+	++	+++++	+++	++++
Healing / Recovery	+	++	++++	+++	++++
↑ Collagen Production	↑	↑↑	↑↑↑↑↑	↑↑↑↑	↑↑↑
Joint Pain / Water Ret.	+	++	++++	+++	+++++



COMPREHENSIVE

# *Peptide Therapy Guide*

## POTENTIAL BENEFITS OF HEXARELIN:

**Hexarelin provides all the physiological benefits associated with elevated growth hormone levels, including:**

- Improved muscle mass and recovery
- Increased collagen production for skin, joints, and connective tissues
- Enhanced immune function, sleep quality, and cognitive performance
- Fat metabolism and body recomposition

### **Reduction of Oxidative Stress**

- Decreases reactive oxygen species (ROS)
- Enhances antioxidant enzymes such as superoxide dismutase (SOD) and glutathione peroxidase (GPx)
- Reduces cellular apoptosis under oxidative stress
- Modulates the PI3K/Akt pathway, which governs cell survival and anti-aging defense mechanisms

### **Cardioprotective Effects**

- Shown to protect cardiac cells from ischemia-reperfusion injury
- Supports cardiac muscle regeneration and function post-injury
- May help reduce long-term cardiovascular risk

### **Body Composition Optimization**

- Stimulates muscle hypertrophy and strength gains
- Enhances bone formation via increased osteoblast activity
- Supports connective tissue and soft tissue repair
- Promotes fat loss by accelerating lipolysis and improving lean mass-to-fat ratio



COMPREHENSIVE

# *Peptide Therapy Guide*

## POTENTIAL BENEFITS OF HEXARELIN:



*Reduction of  
Oxidative Stress*



*Cardioprotective  
Effects*



*Body Composition  
Optimization*

## SAFETY & SIDE EFFECTS

### Common Side Effects

Injection site reactions: Swelling, redness, or mild discomfort

Flushing: Warm sensation or redness in the face or chest

Fatigue: Temporary post-injection lethargy

Water retention: Mild fluid accumulation in soft tissues

Muscle stiffness: Generalized soreness or tightness



COMPREHENSIVE

# *Peptide Therapy Guide*

## STANDARD PROTOCOL:

Muscle Growth & Recovery- dose: 0.1-0.2 mg (10-20 units)

SQ injection every morning, Monday-Friday, in a fasted state before workout

Cycle Guidance: Consider using for 6 weeks on, followed by a 4-6 week break to reduce risk of desensitization.

### Important Usage Considerations

Take Hexarelin at least 1 hour after meals, as insulin can suppress GH release

GH peptides are typically administered at bedtime for optimal results, but morning dosing is preferred if nighttime use disrupts sleep

Hexarelin may be less effective in older adults due to reduced pituitary sensitivity

### Important Disclosures

- These statements have not been evaluated by the U.S. Food and Drug Administration (FDA)
- This product is not intended to diagnose, treat, cure, or prevent any disease
- Hexarelin is a compounded research peptide, not FDA-approved, but produced under strict pharmaceutical quality control standards

## IPAMORELIN

Ipamorelin is a highly selective growth hormone secretagogue (GHS-R agonist) and ghrelin receptor stimulator. It promotes the release of endogenous growth hormone (GH) without significantly impacting other hormones such as cortisol or prolactin, offering a more refined and side effect-friendly alternative to earlier GH-releasing peptides.

### Mechanism of Action

Ipamorelin mimics ghrelin by activating GHS-R1a receptors, triggering the pituitary to release GH. It is especially valued for its ability to increase GH levels without causing elevations in appetite, cortisol, or prolactin, which are common with other GHS peptides.



# COMPREHENSIVE PEPTIDE THERAPY GUIDE

## GROWTH HORMONE PEPTIDES:

Peptide	Sermorelin	Ipamorelin	CJC-1295 w/DAC	Tesamorelin	Hexarelin
Receptor Type	GHRH	GHS-R, Ghrelin	GHRH	GHRH	GHS-R, Ghrelin
Advantages	- No GH spikes	↓ arrhythmias post-MI	Prolonged GH release	↓ visceral fat & TG	↓ scarring post-MI
	- Improves sleep		↓ injection frequency		
Acting Type	Short (½-life 11-12m)	Long (½-life ~2h)	Very Long (½-life 6-8days)	Medium (½-life 26-38min)	Long (½-life 55-70min)
Time to Peak	5-20 min	5-20 min	30-60 min	15-30 min	15-30 min
↑ Cortisol / Prolactin	No	No	No	No	Yes
↑ IGF-1	↑	↑↑	↑↑↑↑↑	↑↑↑	↑↑↑↑
Muscle Growth	+	++	+++++	+++	++++
Fat Burning	+	++	+++++	+++	++++
Healing / Recovery	+	++	++++	+++	++++
↑ Collagen Production	↑	↑↑	↑↑↑↑↑	↑↑↑↑	↑↑↑
Joint Pain / Water Ret.	+	++	++++	+++	+++++



COMPREHENSIVE

# Peptide Therapy Guide

## POTENTIAL BENEFITS OF IPAMORELIN:

Ipamorelin provides all core benefits of increased GH production, including:

- Increased collagen synthesis for skin, joints, and connective tissue
- Fat loss through enhanced lipolysis
- Improved sleep quality, especially deep stages of sleep
- Immune support, anti-aging, and enhanced recovery

### Sleep Support

Its interaction with ghrelin receptors may help reduce sleep latency (time to fall asleep), contributing to more restorative sleep patterns.

### Stable Effectiveness

Compared to other GHSs, Ipamorelin has a lower risk of receptor desensitization, allowing it to maintain its effectiveness over longer periods of use.

### Hormonal Safety Profile

- Does not significantly elevate cortisol
- Does not stimulate prolactin release, making it ideal for long-term or sensitive users

### Muscle, Endurance, and Performance

- Muscle Mass & Strength: Enhances protein synthesis and supports muscle fiber growth, improving strength and performance
- Reduced DOMS: Accelerates repair of microtears, leading to less delayed onset muscle soreness
- Improved Endurance: Boosts fatty acid utilization as a fuel source during prolonged activity
- Muscle Preservation: Helps prevent muscle breakdown during caloric deficits or intensive training cycles

## POTENTIAL BENEFITS OF IPAMORELIN:



*Endurance and  
Performance*



*Sleep Support*



*Fat loss*



COMPREHENSIVE

# *Peptide Therapy Guide*

## SAFETY & SIDE EFFECTS

**While generally well-tolerated, some users may experience:**

- Injection site reactions: Mild redness, swelling, or discomfort
- Mild nausea or digestive changes
- Water retention or tissue swelling
- Headaches or dizziness
- Joint discomfort (arthralgia), potentially due to fluid retention or soft tissue changes
- Paresthesia: Tingling or numbness in the hands or feet

## STANDARD PROTOCOL:

**Muscle Growth Protocol:**

- 0.4mg (0.2ml or 20 units) subcutaneously (SQ) every morning, Monday-Friday, in a fasted state before workout

**General Wellness Protocol:**

- Inject 0.15ml (300mcg subcutaneously daily, 5 days on, 2 days off

## Important Disclosures

- These statements have not been evaluated by the U.S. Food and Drug Administration (FDA).
- This product is not intended to diagnose, treat, cure, or prevent any disease.
- Research peptides and compounded drugs are not FDA-approved, but are produced under strict quality control measures.

## KISSPEPTIN-10

Kisspeptin-10 is a naturally occurring peptide critical for regulating reproductive hormone release via the hypothalamic-pituitary-gonadal (HPG) axis. It plays a key role in triggering the release of gonadotropin-releasing hormone (GnRH), which regulates luteinizing hormone (LH) and follicle-stimulating hormone (FSH). Beyond fertility, emerging research highlights Kisspeptin's roles in mood, sexual behavior, metabolism, cardiovascular health, and even oncology.

Discovered in Hershey, Pennsylvania, Kisspeptin is an exciting peptide with applications ranging from puberty support to advanced fertility protocols.



COMPREHENSIVE

# *Peptide Therapy Guide*

## POTENTIAL BENEFITS OF KISSPEPTIN-10:

### Reproductive Health

- Initiates and regulates puberty through GnRH signaling
- Supports ovulation in women and spermatogenesis in men
- May regulate menstrual cycles and hormone balance
- Useful for treating hypogonadotropic hypogonadism and PCOS
- Enhances testosterone and sperm production in men

### Fertility & Assisted Reproduction

- Safely induces ovulation in IVF treatments
- May reduce risk of Ovarian Hyperstimulation Syndrome (OHSS)
- Can be strategically timed to improve conception outcomes

### Mood, Emotion & Sexual Behavior

- Influences brain regions tied to stress, emotion, and libido
- Some users report enhanced sexual arousal and emotional well-being

### Metabolic Function

- Modulates appetite and energy expenditure
- Potential benefits for glucose balance and metabolic disorders

### Bone Health

- May indirectly support bone density via sex hormone regulation

### Cancer & Inflammation

- The KISS1 gene may suppress metastasis in cancers (e.g., melanoma, breast, prostate)
- Possible anti-inflammatory action in endometriosis and other conditions

### Cardiovascular Support

- Receptors in vascular tissues suggest a role in blood pressure regulation



COMPREHENSIVE

# *Peptide Therapy Guide*

## POTENTIAL BENEFITS OF KISSPEPTIN-10:



*Reproductive  
Health*



*Fertility & Assisted  
Reproduction*



*Bone Health*

## STANDARD PROTOCOL:

General Dose: 0.1mg - 0.2mg subcutaneously (SQ), once daily.

- For testosterone support (men): Best taken in the morning, fasted
- For fertility (men & women): Best taken 45-60 minutes before attempting conception, near ovulation



COMPREHENSIVE

# Peptide Therapy Guide

## SAFETY & SIDE EFFECTS

- Hormonal overstimulation may lead to LH/FSH imbalance or premature ovulation
  - Risk of OHSS with improper use (though lower than hCG)
  - Possible mood swings or emotional sensitivity
  - Changes in sexual desire (increase or decrease, varies by individual)
  - Appetite and weight changes due to metabolic involvement
  - Blood pressure fluctuations
  - Injection site irritation (mild and temporary)
  - Long-term effects are not yet fully studied, cycling may be advised
- **Important Disclosures:**
  - These statements have not been evaluated by the U.S. Food and Drug Administration (FDA)
  - Not intended to diagnose, treat, cure, or prevent any disease
  - Compounded drugs and research peptides are not FDA-approved, but manufactured under strict quality control

## KPV (LYSINE-PROLINE-VALINE)

KPV is a naturally occurring tripeptide derived from the C-terminal of  $\alpha$ -MSH (alpha-melanocyte-stimulating hormone). Composed of lysine, proline, and valine, it is known for its anti-inflammatory, antimicrobial, and gut-healing properties. KPV is available in injectable, oral capsule, and topical cream forms.

## POTENTIAL BENEFITS OF KPV:



*Anti-Inflammatory  
Effects*



*Gut Health*



*Skin Healing &  
Inflammation*



COMPREHENSIVE

# Peptide Therapy Guide

## POTENTIAL BENEFITS OF KPV:

### Anti-Inflammatory Effects

- Inhibits NF-κB pathways and reduces pro-inflammatory cytokines
- Helps manage systemic inflammation, supporting metabolic and autoimmune health

### Gut Health & Gastrointestinal Support

- Promotes gut lining repair and reduces symptoms of leaky gut
- Provides relief for IBD conditions (Crohn's disease, ulcerative colitis)
- Supports a healthy gut microbiome by reducing inflammation and infection

### Antimicrobial Protection

- Active against pathogens such as Staphylococcus aureus and Candida albicans
- Reduces infection risk in wounds, burns, and post-surgical sites

### Skin Healing & Inflammation

- Accelerates wound healing and tissue regeneration
- Reduces scarring through modulation of collagen metabolism
- Supports skin conditions like eczema, acne, psoriasis, and rosacea

### Pain Relief

- Alleviates pain associated with inflammation, including arthritis and IBD
- May reduce post-surgical pain and swelling

### Autoimmune Modulation

- Reduces inflammation without immune suppression
- May benefit individuals with lupus, MS, and rheumatoid arthritis

### Neurological Health

- Preliminary data suggests reduction in neuroinflammation
- Potential benefit in Alzheimer's disease or traumatic brain injury

### Anti-Aging & Systemic Wellness

- Promotes healthier, younger-looking skin
- Reduces "inflammaging": chronic, low-grade inflammation that accelerates aging

## FORMS OF USE:

- **Oral Capsules:** Best for gut, systemic inflammation, and immune modulation
- **Topical Creams:** Ideal for skin issues, acne, burns, eczema, and psoriasis
- **Injectable Form:** For targeted relief and precise systemic support



COMPREHENSIVE

# *Peptide Therapy Guide*

## STANDARD PROTOCOL:

### **Injectable KPV**

- Dose: 0.1mg - 0.2mg (0.1ml - 0.2ml or 10-20 units) subcutaneously (SQ) once daily
- Duration: Until desired results are achieved

### **Oral KPV / BPC-157 Combo**

- Formula: 500mcg / 500mcg per capsule
- Dose: One capsule daily

## SAFETY & SIDE EFFECTS

- **Mild Reactions**
  - Injectable: Redness, irritation, or swelling at injection site
  - Oral: Mild nausea, changes in digestion or bowel habits
  - Topical: Skin sensitivity or itchiness
- **Allergic Reactions (Rare)**
  - Rash, swelling of lips/face, breathing difficulty - seek medical help immediately
- **Other Precautions**
  - Overuse may theoretically suppress immune regulation
  - Caution in people with severe liver/kidney disease
  - Individuals with complex immune disorders should consult a provider
- **Important Disclosures**
  - These statements have not been evaluated by the FDA
  - Product is not intended to diagnose, treat, cure, or prevent disease
  - Compounded peptides are not FDA-approved but are made under strict quality control



COMPREHENSIVE

# Peptide Therapy Guide

## MELANOTAN 1 (MELANOTAN I)

Melanotan 1 is a synthetic analog of  $\alpha$ -MSH (alpha-melanocyte-stimulating hormone). It works by stimulating melanin production, the natural pigment that gives skin its color. Users often take Melanotan 1 to achieve a sunless tan while minimizing UV exposure and the associated skin damage.

### How It Works

- **Melanin Production:** Binds to melanocortin receptors on melanocytes to increase melanin.
- **UV Protection:** More melanin = more natural protection against UV rays and sunburn.
- **Tanning Effect:** Promotes an even, sun-kissed skin tone with less time in the sun or tanning beds.

## POTENTIAL BENEFITS OF MELANOTAN 1:

### Deeper, Longer-Lasting Tan

- Promotes uniform, natural-looking skin tone
- Reduces dependence on UV exposure or tanning beds

### Sun Damage Protection

- Boosts natural melanin barrier for safer time in sunlight
- Ideal for those prone to sunburn or sun sensitivity

### Medical Applications

- **Photosensitivity Disorders:** Helpful in managing erythropoietic protoporphyria (EPP)
- **Vitiligo Research:** May support repigmentation, although results are mixed

### Year-Round Cosmetic Tanning

- Enables maintenance of tan with minimal UV exposure
- Boosts confidence and body image for many users

### Convenient Alternative to Tanning Beds

- No need for UV lamps, reducing skin cancer and aging risks

## POTENTIAL BENEFITS OF MELANOTAN 1:



*Deeper, Longer-  
Lasting Tan*



*Medical  
Applications*



*Sun Damage  
Protection*



COMPREHENSIVE

# *Peptide Therapy Guide*

## STANDARD PROTOCOL:

### Protective Dose

- 0.25mg (0.05ml or 5 units) SQ injection
- Taken 30 minutes before sun exposure

### Maintenance Dose

- 0.25mg-0.5mg (5-10 units) SQ once daily for 10 days
- Then reduce to 1-2x per week to maintain pigmentation
- If side effects occur, lower the dose accordingly

## SAFETY & SIDE EFFECTS

### Common:

- Nausea or vomiting (especially early on)
- Facial flushing or temporary skin redness
- Appetite suppression and mild weight loss
- Increased freckles/moles or hyperpigmentation in specific areas
- Mild stomach cramps after injection

### Less Common

- Fatigue or headaches
- Dizziness or blood pressure fluctuations
- Darkened lips or gums (rare pigmentation shifts)

### Important Safety Notes

- Use with caution if you have a history of pigmented lesions or skin cancer
- Long-term effects are still under investigation
- Not intended for minors or individuals with hormone-sensitive conditions
- These statements have not been evaluated by the FDA
- Not intended to diagnose, treat, cure, or prevent any disease
- Melanotan 1 is a research peptide and not FDA-approved



COMPREHENSIVE

# Peptide Therapy Guide

## MELANOTAN 2 (MT-2)

Melanotan 2 is a potent synthetic peptide that mimics the effects of alpha-melanocyte-stimulating hormone ( $\alpha$ -MSH). It stimulates melanin production in the skin while also affecting other melanocortin receptors, leading to unique effects such as enhanced libido and improved UV protection.

- **Melanin Stimulation:** Binds to MC1R receptors on melanocytes, increasing melanin for a tanning effect
- **Multi-Receptor Action:** Also affects MC3R and MC4R receptors, leading to libido-enhancing properties

### KEY DIFFERENCES FROM MELANOTAN 1

- **More Potent:** Smaller doses required for the same pigmentation
- **Longer Duration:** Effects last longer, requiring less frequent dosing
- **Affects Libido:** Unlike MT-1, it also stimulates sexual arousal

### POTENTIAL BENEFITS OF MELANOTAN 2:

#### Tanning & Skin Pigmentation

- Deep, even tan with less UV exposure
- Helps achieve uniform skin tone
- Can enhance melanin even in fair skin tones

#### UV Protection & Reduced Sun Exposure

- Natural UV shield through increased melanin
- Reduces risks of sunburn, photoaging, and skin cancer
- Ideal for sun-sensitive individuals

#### Medical Applications

- May assist with photosensitivity disorders like EPP
- Investigated for vitiligo and repigmentation therapy

#### Cosmetic & Confidence Boost

- Maintains a bronzed look all year round
- Increases body image satisfaction and perceived attractiveness

#### Libido & Erectile Function

- Enhances sexual desire and arousal in both sexes
- May benefit men with erectile dysfunction



COMPREHENSIVE

# Peptide Therapy Guide

## POTENTIAL BENEFITS OF MELANOTAN 2:



*Tanning & Skin  
Pigmentation*



*Cosmetic &  
Confidence Boost*



*Libido & Erectile  
Function*

## STANDARD PROTOCOL:

### Loading Phase

- 0.25mg- 0.5mg (5- 10 units) SQ daily
- Use for 3- 5 days until desired pigmentation is achieved
- Reduce dose if side effects are too strong

### Maintenance Phase

- 0.5mg- 1mg (10- 20 units) SQ
- Inject 1- 2x weekly to maintain tan and sexual effects

## SAFETY & SIDE EFFECTS

- Nausea, possibly with vomiting
- Facial flushing or warmth
- Spontaneous erections (MC4R activation)
- Appetite suppression and mild weight loss
- Hyperpigmentation, especially in freckles or moles
- Mild stomach cramps post-injection
- **Less Common Effects:**
  - Fatigue or drowsiness
  - Headaches or dizziness
  - Darkening of gums or lips
  - Mood changes
- **Unique Side Effects**
  - Increased libido, often intense or spontaneous
  - Unwanted erections, especially shortly after dosing

### Important Disclosures:

- Not FDA-approved for medical use
- For research purposes only
- These statements have not been evaluated by the FDA & Not intended to diagnose, treat, or prevent disease



COMPREHENSIVE

# *Peptide Therapy Guide*

## **NAD+ (NICOTINAMIDE ADENINE DINUCLEOTIDE)**

NAD+ is a vital coenzyme found in every cell of the body. It fuels multiple biological processes, including energy production, DNA repair, immune function, and healthy aging. However, NAD+ levels decline naturally with age, contributing to fatigue, cognitive decline, and chronic disease.

### • **What Does NAD+ Do?**

- Converts food into cellular energy (ATP)
- Repairs DNA and supports healthy gene expression
- Fortifies immune defense and lowers inflammation
- Regulates circadian rhythm and metabolism

## **WHY NAD+ LEVELS DECLINE:**

Aging, stress, poor diet, chronic illness, and lack of exercise reduce NAD+ levels over time. Low NAD+ is associated with:

- Fatigue and brain fog
- Premature aging
- Increased risk of heart disease, diabetes, and Alzheimer's
- Slower recovery and weaker immunity

### **Boosting NAD+ Levels:**

1. IV & Injection Therapy -most effective for cellular uptake
2. Precursors (NMN / NR) -oral supplements that convert to NAD+
3. Diet -foods rich in B3 (niacin), tryptophan, and whole grains
4. Lifestyle -exercise, fasting, and sleep optimization

## **POTENTIAL BENEFITS OF NAD+:**

### **Energy & Mitochondrial Function**

- Supports ATP production in mitochondria
- Reduces fatigue and increases endurance

### **DNA Repair & Longevity**

- Activates PARPs for DNA damage repair
- Linked to reduced aging markers and oxidative stress



COMPREHENSIVE

# Peptide Therapy Guide

## POTENTIAL BENEFITS OF NAD<sup>+</sup>:



*Energy & Mitochondrial  
Function*



*DNA Repair &  
Longevity*



*Brain & Neurological  
Health*

### Brain & Neurological Health

- Protects neurons from inflammation and degeneration
- May support Alzheimer's, Parkinson's, and cognitive function

### Metabolic & Immune Health

- Improves insulin sensitivity and weight management
- Regulates immune response and reduces chronic inflammation

### Heart & Vascular Function

- Supports endothelial cell repair and blood vessel health
- May lower risk of heart disease and improve circulation

### Muscle Recovery

- Aids tissue regeneration and strength recovery, especially in aging adults

### Anti-Aging & Appearance

- Improves skin elasticity and cellular vitality
- Helps reduce visible signs of aging

## SAFETY & SIDE EFFECTS

### Common Side Effects:

- Mild nausea, especially at higher doses
- Redness or tenderness at injection site
- Flushing, warmth, or lightheadedness
- Temporary fatigue or headaches
- Less common: digestive upset, muscle cramps, anxiety

### Rare Side Effects:

- Palpitations or irregular heartbeat
- Drop in blood pressure (usually from rapid administration)
- Chest tightness or muscle stiffness
- Dizziness, especially when standing



COMPREHENSIVE

# *Peptide Therapy Guide*

## STANDARD PROTOCOL:

### Low-Dose (Wellness / Longevity)

- 100-250mg (10-25 units)
- Injected 1-2x per week, then once monthly for maintenance

### High-Dose (Fatigue / Recovery)

- 250-500mg (25-50 units)
- Injected 1-2x per week, depending on health goals

### Important Disclosures:

- Not FDA-approved; compounded under strict standards
- For research and wellness support
- Not intended to diagnose, treat, or cure disease

## PT-141 (BREMELANOTIDE)

PT-141, also known as Bremelanotide, is a peptide-based therapy used to improve sexual arousal and desire in both men and women. Unlike traditional erectile dysfunction medications (like Viagra® or Cialis®), PT-141 works by activating the central nervous system, increasing natural sexual desire and physical arousal through melanocortin receptors.

### • How PT-141 Works:

- Stimulates the Nervous System (MC4R receptors) rather than blood vessels alone
- Enhances Dopamine Release, associated with pleasure, reward, and motivation
- Improves Genital Circulation for better physical sexual response
- No Reliance on Hormones or Testosterone

## POTENTIAL BENEFITS OF PT-141:

### Increased Sexual Desire

- Boosts libido in both men and women
- Especially effective for low desire and arousal issues

### Improved Physical Arousal

- Enhances blood flow to sexual organs
- Facilitates erections and lubrication



COMPREHENSIVE

# *Peptide Therapy Guide*

## POTENTIAL BENEFITS OF PT-141:



*Increased Sexual  
Desire*



*Fast-Acting &  
Flexible Use*



*Alternative to Oral ED  
Medications*

### **Orgasm Support**

- May increase ability to reach orgasm, especially in women
- Improves sexual satisfaction scores (studies show benefit for HSDD & FSAD)

### **Fast-Acting & Flexible Use**

- Typically works within 45-60 minutes
- Taken only as needed (not a daily medication)

### **Alternative to Oral ED Medications**

- May benefit those who do not respond well to PDE5 inhibitors
- Lower risk of common side effects like headaches and low blood pressure

## STANDARD PROTOCOL:

### **Injectable PT-141:**

- Dosage: 1mg (0.1ml or 10 units) SQ
- Timing: Inject ~1 hour before sexual activity
- Frequency: Max every 72 hours
- Adjustment: Lower dose if nausea or flushing occurs

### **Nasal Spray PT-141**

- Dosage: 0.5-1mg (1-2 sprays)
- Timing: Use ~1 hour before sexual activity
- Start with 1 spray, increase only if tolerated
- Note: Spray form may cause more nasal irritation



COMPREHENSIVE

# *Peptide Therapy Guide*

## SAFETY & SIDE EFFECTS

### Most Common:

- Facial flushing (warmth or redness)
- Nausea (especially at full 1mg dose)

### Less Common:

- Vomiting
- Dizziness or lightheadedness
- Blurred vision
- Nasal congestion or runny nose
- Fatigue or low energy
- Temporary darkening of gums or facial skin (usually fades)

Most symptoms are mild and short-lived. Lowering the dose typically reduces side effects.

### Important Disclosures:

- These statements have not been evaluated by the FDA
- PT-141 is a compounded research peptide
- Not intended to diagnose, treat, cure, or prevent disease
- Produced under quality-controlled pharmacy protocol

## RETATRUTIDE

Retatrutide (pronounced Ret-uh-true-tide) is a next-generation investigational peptide designed to treat obesity and type 2 diabetes. It's a once-weekly injectable that acts as a triple hormone receptor agonist, simultaneously targeting:

- GLP-1 (Glucagon-like peptide-1)
- GIP (Glucose-dependent insulintropic polypeptide)
- Glucagon receptors



COMPREHENSIVE

# Peptide Therapy Guide

By activating all three, Retatrutide addresses multiple metabolic pathways: appetite regulation, insulin secretion, energy expenditure, and fat metabolism, offering a more powerful therapeutic response than single or dual agonists like Semaglutide or Tirzepatide.

## POTENTIAL BENEFITS OF RETATRUTIDE:

### Significant Weight Loss

- Clinical trials showed average weight reduction of 24% over 48 weeks
- May outperform existing weight-loss medications like Semaglutide and Tirzepatide

### Fat-Burning & Metabolic Acceleration

- Activates glucagon receptors to promote lipolysis and thermogenesis
- Increases calorie burn and energy expenditure, not just appetite suppression

### Appetite & Craving Reduction

- Slows gastric emptying and activates satiety centers in the brain
- Reduces food cravings and portion sizes

### Improved Glycemic Control (Blood Sugar)

- Stimulates insulin release and improves insulin sensitivity
- Reduces HbA1c levels in individuals with type 2 diabetes

### Cardiovascular Health Support

- Decreases blood pressure and cholesterol
- Supports vascular function and may reduce heart disease risk

### Liver Health & NAFLD Management

- Reduces liver fat accumulation
- Potential therapeutic benefit for non-alcoholic fatty liver disease (NAFLD)

### Hormonal Reset & Set Point Reduction

- Helps lower your biological “set point” for weight over time
- Aids in long-term weight maintenance after weight loss

## POTENTIAL BENEFITS OF RETATRUTIDE:



*Significant Weight  
Loss*



*Fat-Burning &  
Metabolic Acceleration*



*Cardiovascular Health  
Support*



COMPREHENSIVE

## *Peptide Therapy Guide*

### STANDARD PROTOCOL:

Week Range	Recommended Dose
Weeks 1-2	2mg weekly
Weeks 3-6	2mg weekly
Weeks 7-10	4mg weekly
Weeks 11-14	6mg weekly
Weeks 15+	8mg weekly (maximum)

- Adjust based on tolerance and progress
- If side effects occur, drop back to the previous dose for 1-2 weeks
- Many patients maintain weight loss at lower doses and do not require 8mg

### SAFETY & SIDE EFFECTS

#### **Common (Usually Temporary):**

- Nausea or vomiting (especially during dose increase)
- Constipation or diarrhea
- Decreased appetite
- Headache or dizziness
- Facial flushing or fatigue
- Mild injection site irritation

#### **Less Common:**

- Gallbladder issues: Risk of gallstones increases with rapid fat loss
- Elevated heart rate: Should be monitored in heart patients
- Skin changes: Sagging or wrinkles from weight loss (not drug-specific)
- Potential hypoglycemia when combined with other glucose-lowering meds
- Neck swelling or difficulty swallowing (rare -seek medical help immediately)
- If you develop severe nausea, constipation, or abdominal pain, stop use and consult your provider or go to the emergency room.



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# *Peptide Therapy Guide*

## LIFESTYLE GUIDELINES FOR BEST RESULTS

- Eat high-protein meals (Aim for 1g protein per goal body weight in lbs)
- Stay hydrated, track calories, and avoid processed foods
- Exercise regularly and focus on strength training to maintain muscle
- Sleep 7-9 hours nightly - it regulates hunger hormones and metabolism
- Track your protein intake daily (most people underestimate it)

### Long-Term Use: Why 6+ Months Matter:

Weight loss isn't just about calories, it's about retraining your metabolism.

Your body has a "set point" weight it tries to maintain. Retatrutide helps reset that, but it takes months, not weeks. Staying on medication for 6 months or longer significantly improves your chance of keeping the weight off - especially if paired with lifestyle changes.

Using medication to manage weight is not cheating - it's medical treatment, like blood pressure or thyroid medications. Obesity is a chronic disease, not a willpower issue.

### Important Disclosures:

- Retatrutide is an investigational peptide, not yet FDA-approved
- Compounded versions may be available from qualified pharmacies under strict quality control
- Not intended to diagnose, treat, or cure any disease

## SELANK

Selank is a synthetic peptide developed by the Institute of Molecular Genetics of the Russian Academy of Sciences. It is an analog of tuftsin, a naturally occurring immune peptide. Selank has shown potential for reducing anxiety, enhancing cognition, and modulating neurotransmitters like serotonin, dopamine, and GABA.

## STANDARD PROTOCOL:

### Cognitive Support:

- 0.1-0.2mg (2-4 units) SQ in AM (fasted if possible); Cycle Length: 4- 6 weeks, 2- 4 week break

### Anxiety Reduction:

- 0.2-0.5mg (4-10 units) SQ in AM + PM (fasted if possible); 4-6 weeks, 2-4 week break



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## POTENTIAL BENEFITS OF SELANK:

- **Anti-Anxiety Effects:** Reduces anxiety without sedation or dependence
- **Cognitive Enhancement:** May support memory, learning, and focus
- **Mood Stabilization:** Modulates dopamine and serotonin for emotional balance
- **Immune Support:** Tuftsin analog action may support immune function
- **BDNF Boost:** Elevates brain-derived neurotrophic factor, supporting neuron health
- **Stress Reduction:** Helps regulate stress response and promote calm
- **Non-Addictive:** Low risk of tolerance or withdrawal compared to traditional anxiolytics

## POTENTIAL BENEFITS OF SELANK:



*Anti-Anxiety  
Effects*



*Cognitive  
Enhancement*



*Stress  
Reduction*

## SAFETY & SIDE EFFECTS

Most users tolerate Selank well. Reported side effects are rare and mild:

- Nasal or throat irritation (with intranasal use)
- Mild headaches
- Drowsiness or occasional insomnia
- Rare dizziness or mood fluctuations
- Rare allergic reactions (rash, itching, or shortness of breath)
- Possible interaction with CNS medications (consult your provider)

### Important Disclosures:

- These statements have not been evaluated by the FDA
- Selank is not intended to diagnose, treat, cure, or prevent any disease
- Compounded peptides are not FDA-approved, but may be produced under strict quality control standards



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# Peptide Therapy Guide

## SEMAGLUTIDE

Semaglutide is a once-weekly injectable peptide medication that belongs to the class of GLP-1 (Glucagon-like peptide-1) receptor agonists. Originally developed for type 2 diabetes, it has gained wide recognition for its role in chronic weight management. By mimicking the natural hormone GLP-1, semaglutide helps regulate blood sugar levels, slow gastric emptying, and reduce appetite. Its mechanism also impacts hunger-related hormones such as leptin and ghrelin.

### POTENTIAL BENEFITS OF SEMAGLUTIDE:

- **Sustained Weight Loss:** Clinical trials show 5-25% weight reduction within 6 months in both diabetic and non-diabetic individuals.
- **Improved Glycemic Control:** Enhances insulin secretion and suppresses glucagon to stabilize blood sugar levels.
- **Cardiovascular Protection:** Reduces risk of major adverse cardiovascular events (MACE), such as heart attack and stroke, particularly in high-risk patients.
- **Kidney Health Support:** May slow the progression of diabetic nephropathy by reducing cardiovascular risk factors and improving blood glucose control.
- **Better Lipid Profile:** Helps lower LDL cholesterol and triglycerides while increasing HDL cholesterol.
- **Lower Blood Pressure:** Some patients experience modest reductions in both systolic and diastolic BP.
- **Appetite Regulation:** Decreases hunger signals via central action on brain appetite centers, impacting both leptin and ghrelin signaling.

### POTENTIAL BENEFITS OF SEMAGLUTIDE:



*Sustained Weight  
Loss*



*Improved  
Glycemic Control*



*Lower Blood  
Pressure*



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# Peptide Therapy Guide

STANDARD PROTOCOL:

(Subcutaneous Injection, 1x Weekly)

Week Range	Recommended Dose
Weeks 1-4	0.25 mg weekly
Weeks 5-8	0.5 mg weekly
Weeks 9-12	0.75 mg weekly
Weeks 13-16	1.5 mg weekly
Weeks 17-20	2 mg weekly
Weeks 21 and on	2.5 mg weekly

Dosing can be adjusted based on tolerability and effectiveness. Most patients do not require the maximum dose.

SAFETY & SIDE EFFECTS

While semaglutide is generally well tolerated, certain side effects may occur:

- GI Symptoms: Nausea, vomiting, diarrhea, acid reflux, constipation, and abdominal pain are most common. Supplementation with B12 may ease GI symptoms.
- Muscle Loss Risk: Without sufficient dietary protein and resistance training, muscle loss may occur. Glycine is sometimes used to help mitigate this.
- Skin Laxity: Significant weight loss can lead to sagging skin and wrinkles, not due to semaglutide itself, but the loss of fat volume.
- Thyroid Cancer Risk: Contraindicated in individuals with a personal or family history of Medullary Thyroid Carcinoma or MEN2 syndrome.
- Pancreatitis: Rare, but possible. Past episodes of pancreatitis do not necessarily contraindicate future use.
- Other Risks: Dizziness, allergic reactions, and worsening of pre-existing kidney or hypoglycemic conditions.
- Not for Use In: Patients with type 1 diabetes, diabetic ketoacidosis, or concurrent use of other GLP-1 medications.



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## *Peptide Therapy Guide*

If patients experience intolerable nausea or GI distress, they may return to a previously tolerated dose and reattempt dose escalation after 1-2 weeks. It is not required to reach the maximum dose if results are satisfactory at a lower one.

### CLINICAL CONTEXT

- **Chronic Nature of Obesity:** Obesity is not merely aesthetic; it is a complex, chronic medical condition linked to cardiovascular disease, type 2 diabetes, cancer, sleep apnea, osteoarthritis, NAFLD, reproductive dysfunction, depression, and premature death.
- **Receptor Targets:**
  - GLP-1: Stimulates insulin, suppresses glucagon, and delays gastric emptying.
  - GIP (targeted by Tirzepatide): Enhances post-meal insulin release.
  - Glucagon (targeted by Retatrutide): Promotes lipolysis and increases metabolic rate.
- **Misconceptions:** Weight gain is not simply a result of poor discipline. Hormonal and metabolic imbalances contribute significantly. Using medication to address these imbalances is not “cheating”, it’s clinical care, much like using medication for hypertension.
- **Protein Intake:** To prevent muscle loss and maintain organ function, aim for 1g of protein per pound of goal body weight (not current weight). For example, a person with a target weight of 140 lbs should aim for ~140g of protein daily. Individuals with kidney conditions should consult their doctor.
- **Lifestyle Support:** For optimal results, patients should also:
  - Track calories and macronutrients
  - Maintain regular physical activity
  - Prioritize quality sleep
  - Commit to long-term habits, not short-term fixes
- **Set Point Theory:** The body often resists weight loss by trying to maintain a higher “set point.” Staying on medication for a minimum of 6 months helps establish a new, lower set point and improve long-term success.

#### **Disclaimers:**

- These statements have not been evaluated by the FDA.
- Semaglutide is not intended to diagnose, treat, cure, or prevent any disease.



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# Peptide Therapy Guide

## SEMEX

Semex is a synthetic peptide developed in the 1980s, derived from a fragment of adrenocorticotrophic hormone (ACTH). It is primarily known for its cognitive-enhancing and neuroprotective properties. In clinical practice across Russia and Ukraine, Semex is approved for the treatment of ischemic stroke, cognitive impairments, and optic nerve atrophy.

### How It Works:

Semex crosses the blood-brain barrier and acts directly on the central nervous system, modulating key neurotransmitters such as dopamine and serotonin. It also stimulates the expression of brain-derived neurotrophic factor (BDNF) and nerve growth factor (NGF), both essential for neural health, cognitive performance, and neuroregeneration.

## POTENTIAL BENEFITS OF SEMAX:

### Cognitive Support

- Enhances memory retention and recall
- Increases learning capacity and processing speed
- Improves concentration and sustained attention

### Mood & Emotional Well-Being

- May exhibit antidepressant-like effects via dopamine and serotonin modulation
- Reduces symptoms of mental fatigue and burnout

### Neuroprotective Action

- Promotes neuronal growth and protection via increased BDNF and NGF levels
- Used post-stroke to support functional neurological recovery

### Stress & Performance Enhancement

- Increases physical and mental stamina under pressure
- Commonly used by professionals in high-demand roles

### Ocular Health

- May support optic nerve regeneration
- Investigated for use in optic nerve atrophy therapies



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# Peptide Therapy Guide

## POTENTIAL BENEFITS OF SEMAX:



*Cognitive  
Support*



*Mood & Emotional  
Well-Being*



*Ocular  
Health*

## STANDARD PROTOCOL:

**General Cognitive Dose:** 0.5 - 1mg (0.03ml - 0.05ml or 3-5 units) subcutaneously (SQ) every morning in a fasted state.

- Optional: Split dose between morning and afternoon.
- Duration: 1 vial lasts 10-20 days
- **Post-Stroke Protocol: 1mg (0.05ml or 5 units) SQ 4 times daily for 10 days.**
- Total Required: 4 vials per 10-day cycle.

## SAFETY & SIDE EFFECTS

Semax is well-tolerated when used properly, but adverse effects may occur, especially at higher doses.

- **Blood Pressure Fluctuations:** Temporary elevation in blood pressure may occur, particularly in individuals with hypertension.
- **Mood or Emotional Sensitivity:** Some users report irritability or emotional changes as neurotransmitter levels shift.
- **Headaches:** Mild to moderate headaches, especially at the beginning of use or with dose changes.
- **Nasal Irritation (If intranasal):** May cause itching, sneezing, or runny nose.
- **Sleep Disruption:** When taken too close to bedtime, Semax may interfere with sleep due to its stimulating effect.
- **Digestive Discomfort (Rare):** Occasional nausea or upset stomach reported at higher doses.

Pro Tip: Begin with a lower dose and assess individual tolerance before increasing.

### Important Disclosures:

- These statements have not been evaluated by the U.S. Food and Drug Administration.
- Semax not intended to diagnose, treat, cure, or prevent any disease.
- As a research peptide, Semax is not FDA-approved, but it is produced under strict quality control standards.



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# Peptide Therapy Guide

## S E R M O R E L I N

Growth Hormone Peptides (GHPs) are bioactive compounds designed to stimulate the body's natural production of growth hormone (GH) by either mimicking Growth Hormone-Releasing Hormone (GHRH) or activating ghrelin receptors as Growth Hormone Secretagogues (GHS). These peptides are commonly used for their regenerative, fat-burning, and anti-aging properties, as well as their benefits for skin health, muscle tone, sleep, immunity, and cognitive function.

### TYPES OF GROWTH HORMONE PEPTIDES

#### GHRH Analogs (Direct Pituitary Stimulators):

- Sermorelin
- CJC-1295 (with or without DAC)
- Tesamorelin

#### GHS Peptides (Ghrelin Receptor Activators):

- Ipamorelin
- GHRP-2
- GHRP-6
- Hexarelin

### POTENTIAL BENEFITS OF STIMULATING GROWTH HORMONE PRODUCTION

#### Skin & Collagen Support

- Promotes collagen synthesis, improving skin elasticity and hydration
- Reduces the appearance of wrinkles and fine lines
- Enhances wound healing and skin repair after trauma or procedures

#### Joint & Bone Health

- Strengthens cartilage and connective tissue
- Improves tendon and ligament resilience
- May increase bone density and accelerate fracture recovery



COMPREHENSIVE

# Peptide Therapy Guide

## POTENTIAL BENEFITS OF SERMORELIN:



### *Muscle Growth & Recovery*



### *Cardiovascular Support*



### *Sleep Optimization*

#### **Muscle Growth & Recovery**

- Supports lean muscle development
- Reduces post-exercise muscle soreness
- Enhances strength and muscle integrity

#### **Cardiovascular Support**

- Strengthens vascular walls and reduces vascular fragility
- May lower risk of aneurysms and other vascular injuries

#### **Immune System Enhancement**

- Stimulates regeneration of the thymus gland, boosting T-cell production-especially important with aging
- Modulates cytokine balance, supporting immune regulation and reducing chronic inflammation
- Increases immunoglobulin levels, enhancing the body's ability to neutralize pathogens
- Activates Natural Killer (NK) cells, macrophages, and neutrophils, improving innate immune defense

#### **Sleep Optimization**

- GH secretion during sleep helps promote deeper, more restorative sleep
- Many users report fewer awakenings, improved sleep architecture, and more consistent rest patterns

#### **Cognitive Function & Brain Health**

- Neurogenesis & Synaptic Plasticity
- GH peptides promote the formation of new neurons and synaptic connections, particularly in the hippocampus, a key region for memory and learning
- Neuroprotection
- Protects neurons from oxidative stress and apoptosis, helping preserve cognitive function
- Neurotransmitter Modulation
- Supports balanced levels of dopamine, serotonin, and GABA, enhancing mood, focus, and reducing anxiety
- Cerebral Blood Flow
- May enhance brain perfusion, ensuring optimal delivery of oxygen and nutrients for brain performance
- Cognition in GH Deficiency
- In GH-deficient individuals, supplementation has shown improvements in attention, memory, and executive function
- Age-Related Cognitive Support
- Some studies suggest GH peptides may help slow cognitive decline associated with aging, though further research is warranted



COMPREHENSIVE

# *Peptide Therapy Guide*

## **Clinical Considerations:**

- Timing: GH peptides should be administered at least 1 hour post-meal to avoid insulin suppression.
- Best Time: Typically taken at bedtime due to GH's natural nighttime secretion, but may be adjusted if sleep disruption occurs.
- Variability: Individual response may depend on age, baseline GH levels, and pituitary function.
- Desensitization: Continuous use may lead to receptor fatigue. Recommended protocol:
  - 5 days on / 2 days off (e.g. Mon-Fri)
  - OR 6 weeks on / 6 weeks off cycle

## **S E R M O R E L I N**

Sermorelin is a synthetic analog of GHRH that stimulates the pituitary gland to naturally produce and release growth hormone. Though its muscle-building effects may be milder than other GH peptides, Sermorelin is widely used for its rejuvenating, energy-enhancing, and wellness-promoting properties.

## **POTENTIAL BENEFITS OF SERMORELIN:**

Includes all benefits associated with elevated natural growth hormone production (listed above), especially:

- Improved sleep quality
- Enhanced mood and focus
- Increased energy and vitality
- Healthier skin, joints, and metabolic profile

## **SAFETY & SIDE EFFECTS**

- Mild injection site irritation
- Flushing or warmth
- Headaches
- Dizziness

These effects are typically transient and resolve without intervention.



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*Peptide Therapy Guide*

**GROWTH HORMONE PEPTIDES:**

Peptide	Sermorelin	Ipamorelin	CJC-1295 w/DAC	Tesamorelin	Hexarelin
Receptor Type	GHRH	GHS-R, Ghrelin	GHRH	GHRH	GHS-R, Ghrelin
Advantages	- No GH spikes	↓ arrhythmias post-MI	Prolonged GH release	↓ visceral fat & TG	↓ scarring post-MI
	- Improves sleep		↓ injection frequency		
Acting Type	Short (½-life 11-12m)	Long (½-life ~2h)	Very Long (½-life 6-8days)	Medium (½-life 26-38min)	Long (½-life 55-70min)
Time to Peak	5-20 min	5-20 min	30-60 min	15-30 min	15-30 min
↑ Cortisol / Prolactin	No	No	No	No	Yes
↑ IGF-1	↑	↑↑	↑↑↑↑↑	↑↑↑	↑↑↑↑
Muscle Growth	+	++	+++++	+++	++++
Fat Burning	+	++	+++++	+++	++++
Healing / Recovery	+	++	++++	+++	++++
↑ Collagen Production	↑	↑↑	↑↑↑↑↑	↑↑↑↑	↑↑↑
Joint Pain / Water Ret.	+	++	++++	+++	+++++



COMPREHENSIVE

## *Peptide Therapy Guide*

- **Important Disclosures:**

- These statements have not been evaluated by the U.S. Food and Drug Administration.
- Sermorelin not intended to diagnose, treat, cure, or prevent any disease.
- As a research peptide, Sermorelin is not FDA-approved, but it is produced under strict quality control standards.

### STANDARD PROTOCOL:

- **Standard Protocol:** 0.2 mg SQ at bedtime, at least 1 hour after food
- **Frequency:** 5x per week (Mon-Fri)
- **Vial Duration:** 10 weeks per vial (at standard dosing)

### SS - 31 (ELAMIPRETIDE)

SS-31, also known as Elamipretide, is a synthetic tetrapeptide engineered to target and protect the mitochondria, often referred to as the “powerhouses” of the cell. This peptide selectively binds to cardiolipin, a key phospholipid found within the inner mitochondrial membrane, helping stabilize mitochondrial structure and function. Through this interaction, SS-31 helps mitigate oxidative stress, reduce mitochondrial dysfunction, and improve energy production at the cellular level.

Originally developed for research in mitochondrial-related diseases, SS-31 has shown therapeutic potential in addressing a wide range of chronic and age-related conditions, including cardiovascular disease, neurodegeneration, sarcopenia (age-related muscle loss), and metabolic dysfunction. Its core mechanism—restoring mitochondrial integrity—positions SS-31 as a powerful agent in cellular longevity and anti-aging interventions.

#### **Mechanism of Action:**

- Binds to Cardiolipin in mitochondrial membranes
- Reduces oxidative stress and mitochondrial damage
- Improves ATP production and mitochondrial efficiency
- Protects tissues from ischemia-reperfusion injury and cellular senescence



COMPREHENSIVE

# *Peptide Therapy Guide*

## POTENTIAL BENEFITS OF SS-31 (ELAMIPRETIDE):

### Cardiovascular Health

- Enhanced cardiac function by restoring mitochondrial health in heart muscle
- Protects against myocardial ischemia (damage caused by restricted blood flow)
- May improve endothelial function, supporting healthy blood pressure regulation

### • Neuroprotection

- Shields neurons from oxidative and mitochondrial damage
- May slow progression in conditions like Alzheimer's, Parkinson's, and Huntington's disease
- Supports memory and learning by enhancing brain cell energy metabolism

### • Muscle Health & Performance

- Preserves skeletal muscle function and delays sarcopenia
- Enhances endurance, strength, and recovery through better mitochondrial output
- May be beneficial for athletes or aging individuals experiencing fatigue or weakness

### • Kidney Function

- Protects against acute kidney injury (AKI)
- May slow progression in chronic kidney disease (CKD) by reducing mitochondrial damage in renal cells

### • Vision Support

- May offer protection in retinal diseases such as age-related macular degeneration (AMD)
- Helps preserve retinal function by mitigating oxidative stress

### • Anti-Aging & Longevity

- Reduces cellular senescence by improving mitochondrial efficiency
- May help restore energy, resilience, and vitality in aging cells

### • Mitochondrial Disorders

- Shows therapeutic promise in treating primary mitochondrial myopathies and other rare inherited mitochondrial diseases

### • Metabolic Health

- Enhances insulin sensitivity and may support metabolic syndrome management through improved mitochondrial activity

### • Skin Health

- Protects skin cells from oxidative damage, potentially reducing wrinkles, dryness, and loss of elasticity

### Oncology Support (Investigational)

- Being studied as a protective adjunct to chemotherapy or radiation, helping safeguard healthy cells during treatment



COMPREHENSIVE

# Peptide Therapy Guide

## POTENTIAL BENEFITS OF SS-31:



*Cardiovascular  
Health*



*Muscle Health &  
Performance*



*Anti-Aging &  
Longevity*

## STANDARD PROTOCOL:

### For Acute Conditions:

- 2 mg (0.2 ml or 20 units) SQ once daily, for 2 -4 days

### For Chronic Conditions:

- 2 mg (0.2 ml or 20 units) SQ once daily, for 2- 4 weeks

Note: Duration and frequency may be tailored based on clinical presentation and practitioner discretion.

### Important Disclosures:

- These statements have not been evaluated by the U.S. Food and Drug Administration (FDA).
- SS-31 is not intended to diagnose, treat, cure, or prevent any disease.

## SAFETY & SIDE EFFECTS

While SS-31 has shown excellent tolerability in early trials, side effects may still occur. Reported adverse effects include:

- Injection Site Reactions: Mild redness, swelling, or discomfort
- Gastrointestinal Upset: Nausea, vomiting, or diarrhea (transient)
- Headaches
- Fatigue, particularly at higher doses
- Dizziness possibly linked to systemic energy changes or blood pressure fluctuation
- Hypotension (low blood pressure in some cases)
- Allergic Reactions (rare): Including rash or hypersensitivity



COMPREHENSIVE

# Peptide Therapy Guide

## T B - 5 0 0

TB-500 is a synthetic peptide modeled after a naturally occurring protein in the body known as Thymosin Beta-4 (Tβ4). This protein plays a crucial role in tissue regeneration, inflammation modulation, and cellular repair. As natural Tβ4 levels decline with age, TB-500 offers a targeted therapeutic approach to enhance healing, particularly in cases of injury, chronic inflammation, or degenerative conditions.

By stimulating angiogenesis, enhancing collagen synthesis, promoting cell migration, and regulating the inflammatory response, TB-500 has become a go-to compound for medical professionals seeking to accelerate tissue recovery and support systemic healing.

### Key Mechanisms of Action:

- Promotes new blood vessel formation to injured tissues
- Enhances cellular repair and tissue regeneration
- Modulates immune response by balancing cytokine activity
- Increases collagen production, strengthening damaged tissues
- Supports neuroregeneration and reduces apoptosis

## POTENTIAL BENEFITS OF TB-500:

### Tissue Regeneration & Wound Healing

- Speeds up the repair of muscles, tendons, ligaments, and skin
- Enhances collagen synthesis, supporting stronger scar tissue and tissue remodeling
- Promotes epithelial regeneration, aiding wound closure and corneal healing
- Facilitates angiogenesis, improving oxygen and nutrient delivery to damaged tissues

### Inflammation Reduction

- Suppresses pro-inflammatory cytokines (e.g., TNF-α, IL-6)
- Boosts anti-inflammatory cytokines like IL-10
- Supports management of autoimmune diseases such as rheumatoid arthritis, inflammatory bowel disease, and psoriasis
- Reduces inflammatory damage post-injury, heart attack, or stroke

## POTENTIAL BENEFITS OF TB-500:



***Muscle Repair &  
Performance Recovery***



***Inflammation  
Reduction***



***Neuroprotection &  
Brain Recovery***



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# Peptide Therapy Guide

## Muscle Repair & Performance Recovery

- Activates satellite cells critical for muscle regeneration
- Enhances blood flow to muscle tissue via angiogenesis
- Supports muscle strength, endurance, and recovery
- Particularly effective for tendon injuries, which often heal slowly due to poor vascularization

## Neuroprotection & Brain Recovery

- Protects against neuronal damage after traumatic brain injury (TBI) or stroke
- Promotes neurogenesis and angiogenesis in brain tissue
- Reduces inflammation and supports myelin repair in conditions such as multiple sclerosis
- Inhibits neuronal apoptosis, preserving brain cell integrity

## Cardiovascular & Ocular Health

- Enhances cardiac repair following ischemic events such as heart attacks
- Aids in corneal healing, reducing inflammation and minimizing scar formation
- Supports treatment of bacterial eye infections, often improving the efficacy of antibiotics

## STANDARD PROTOCOL:

### Initial Phase (Post-Surgical or Acute Injury)

- Dose: 1 mg (0.1 ml or 10 units) injected subcutaneously (SQ) daily for 20 days
- Injection Site: Administer as close to the injury site as possible for maximum efficacy
- Supply Note: 1 vial lasts approximately 10 days

### Maintenance Phase

- Dose: 1 mg (0.1 ml or 10 units) administered SQ or intramuscularly (IM) 1-2 times per week
- Continue therapy until full recovery or incorporate into ongoing preventive care plans
- Supply Note: 1 vial lasts 5-10 weeks, depending on dosing frequency

### Combination Therapies

- May be co-administered with BPC-157 to synergistically enhance tissue repair and inflammation control
- The dosage of TB 500 may vary depending on the needs of the individual and the recommendations of a healthcare professional. Above is a general guide

## SAFETY & SIDE EFFECTS

- TB-500 is generally well tolerated with minimal side effects when used correctly
- Rare adverse effects include mild injection site swelling or allergic responses
- As with all peptides, it is important to monitor for individual sensitivities
- **Important Disclosures:**
  - These statements have not been evaluated by the FDA
  - TB-500 is not intended to diagnose, treat, cure, or prevent any disease



COMPREHENSIVE

# *Peptide Therapy Guide*

## TESAMORELIN

Tesamorelin is a synthetic analog of Growth Hormone-Releasing Hormone (GHRH) designed to enhance the natural release of growth hormone (GH) from the pituitary gland. As part of the broader category of growth hormone peptides (GHPs), Tesamorelin mimics the body's native hormone signaling to stimulate GH production. This increase in endogenous growth hormone offers numerous physiological benefits including improved body composition, enhanced tissue repair, better cognitive function, and anti-aging effects.

Growth Hormone Peptides (GHPs) are bioactive compounds designed to stimulate the body's natural production of growth hormone (GH) by either mimicking Growth Hormone-Releasing Hormone (GHRH) or activating ghrelin receptors as Growth Hormone Secretagogues (GHS). These peptides are commonly used for their regenerative, fat-burning, and anti-aging properties, as well as their benefits for skin health, muscle tone, sleep, immunity, and cognitive function.

## TYPES OF GROWTH HORMONE PEPTIDES

### **GHRH Analogs (Direct Pituitary Stimulators):**

- Sermorelin
- CJC-1295 (with or without DAC)
- Tesamorelin

### **GHS Peptides (Ghrelin Receptor Activators):**

- Ipamorelin
- GHRP-2
- GHRP-6
- Hexarelin

## POTENTIAL BENEFITS OF STIMULATING GROWTH HORMONE PRODUCTION

### **Skin & Collagen Support**

- Promotes collagen synthesis, improving skin elasticity and hydration
- Reduces the appearance of wrinkles and fine lines
- Enhances wound healing and skin repair after trauma or procedures

### **Joint & Bone Health**

- Strengthens cartilage and connective tissue
- Improves tendon and ligament resilience
- May increase bone density and accelerate fracture recovery



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*Peptide Therapy Guide*

**GROWTH HORMONE PEPTIDES:**

Peptide	Sermorelin	Ipamorelin	CJC-1295 w/DAC	Tesamorelin	Hexarelin
Receptor Type	GHRH	GHS-R, Ghrelin	GHRH	GHRH	GHS-R, Ghrelin
Advantages	- No GH spikes	↓ arrhythmias post-MI	Prolonged GH release	↓ visceral fat & TG	↓ scarring post-MI
	- Improves sleep		↓ injection frequency		
Acting Type	Short (½-life 11-12m)	Long (½-life ~2h)	Very Long (½-life 6-8days)	Medium (½-life 26-38min)	Long (½-life 55-70min)
Time to Peak	5-20 min	5-20 min	30-60 min	15-30 min	15-30 min
↑ Cortisol / Prolactin	No	No	No	No	Yes
↑ IGF-1	↑	↑↑	↑↑↑↑↑	↑↑↑	↑↑↑↑
Muscle Growth	+	++	+++++	+++	++++
Fat Burning	+	++	+++++	+++	++++
Healing / Recovery	+	++	++++	+++	++++
↑ Collagen Production	↑	↑↑	↑↑↑↑↑	↑↑↑↑	↑↑↑
Joint Pain / Water Ret.	+	++	++++	+++	+++++



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# *Peptide Therapy Guide*

## **Muscle Growth & Recovery**

- Supports lean muscle development
- Reduces post-exercise muscle soreness
- Enhances strength and muscle integrity

## **Cardiovascular Support**

- Strengthens vascular walls and reduces vascular fragility
- May lower risk of aneurysms and other vascular injuries

## **Immune System Enhancement**

- Stimulates regeneration of the thymus gland, boosting T-cell production-especially important with aging
- Modulates cytokine balance, supporting immune regulation and reducing chronic inflammation
- Increases immunoglobulin levels, enhancing the body's ability to neutralize pathogens
- Activates Natural Killer (NK) cells, macrophages, and neutrophils, improving innate immune defense

## **Sleep Optimization**

- GH secretion during sleep helps promote deeper, more restorative sleep
- Many users report fewer awakenings, improved sleep architecture, and more consistent rest patterns

## **Cognitive Function & Brain Health**

- Neurogenesis & Synaptic Plasticity
- GH peptides promote the formation of new neurons and synaptic connections, particularly in the hippocampus, a key region for memory and learning
- Neuroprotection
- Protects neurons from oxidative stress and apoptosis, helping preserve cognitive function
- Neurotransmitter Modulation
- Supports balanced levels of dopamine, serotonin, and GABA, enhancing mood, focus, and reducing anxiety
- Cerebral Blood Flow
- May enhance brain perfusion, ensuring optimal delivery of oxygen and nutrients for brain performance
- Cognition in GH Deficiency
- In GH-deficient individuals, supplementation has shown improvements in attention, memory, and executive function
- Age-Related Cognitive Support
- Some studies suggest GH peptides may help slow cognitive decline associated with aging, though further research is warranted



COMPREHENSIVE

# Peptide Therapy Guide

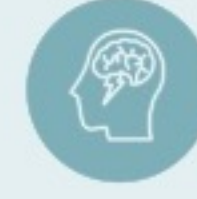
## POTENTIAL BENEFITS OF TESAMORELIN:



*Muscle Repair &  
Performance Recovery*



*Sleep  
Optimization*



*Cognitive Function  
& Brain Health*

### Reproductive Health & Fertility

Tesamorelin may outperform other GH peptides in fertility support due to:

- Reduction of visceral fat, improving hormone balance in both men and women.
- IGF-1 optimization, crucial for follicle maturation in women and spermatogenesis in men.
- Supports insulin sensitivity, aiding ovulatory and sperm health.
- Offers sustained GH stimulation through its targeted pituitary action, reducing desensitization risk..

## STANDARD PROTOCOL:

- **For Muscle Growth:** 1-2mg (0.2ml-0.4ml or 20-40 units) SQ every AM, Mon-Fri, before workout in a fasted state
- **Tesamorelin/Ipamorelin Blend:**
- For Muscle Growth: 0.3ml or 30 units SQ every AM, Mon-Fri, before workout in a fasted state.

## SAFETY & SIDE EFFECTS

- **Desensitization Risk:** Prolonged use may reduce receptor sensitivity. Breaks or cycling (e.g., 5 days on, 2 days off or 6-week cycles) are advised.
- **Dosing Time:** Best taken 1+ hour after meals due to insulin's suppressive effect on GH. Bedtime is preferred unless it disrupts sleep, in which case morning use is suggested.
- **Age-Related Pituitary Decline:** GH peptides may be less effective in older individuals due to reduced pituitary responsiveness.
- **Limited Clinical Trials:** Cognitive benefits show promise but require further long-term human studies.

### Potential Side Effects:

- Joint pain
- Injection site reactions
- Increased blood sugar levels



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## THYMOSIN ALPHA - 1

Thymosin Alpha-1 (Tα1) is a synthetic peptide fragment derived from prothymosin alpha, a protein highly expressed in the thymus gland. Tα1 plays a vital role in regulating immune function and is commonly classified as an immunomodulator due to its ability to restore immune balance and enhance the body's defense against infections, inflammation, and cellular stress.

### POTENTIAL BENEFITS

#### Immune System Optimization

- **Enhances T-Cell Activity:** Stimulates the production and activation of CD4+ and CD8+ T-cells, boosting the body's immune surveillance and infection-fighting capacity.
- **Balances Inflammation:** Downregulates excessive inflammatory responses while maintaining protective immune activity-especially important in autoimmune or chronic inflammatory conditions.

#### Antiviral Support

- **Chronic Viral Infections:** Shown effective as part of treatment protocols for hepatitis B and C by improving viral clearance through immune activation.
- **Respiratory Infections & COVID-19:** Investigated in clinical settings for improving immune response and reducing cytokine-related damage in viral pneumonias.

#### Oncology Support

- **Adjunct in Cancer Treatment:** Enhances natural killer (NK) cell and cytotoxic T-cell activity, helping the immune system better target and eliminate tumor cells.
- **Immune Modulation During Chemotherapy:** Supports immune resilience during radiation and chemotherapy regimens.

### POTENTIAL BENEFITS OF THYMOSIN ALPHA - 1:



*Immune System  
Optimization*



*Antiviral  
Support*



*Wound & Tissue  
Repair*



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# *Peptide Therapy Guide*

## **Autoimmune & Inflammatory Disorders**

- **Immune Tolerance Restoration:** Helps recalibrate overactive immune responses without full suppression-potential applications include lupus, multiple sclerosis, and rheumatoid arthritis.

## **Healthy Aging & Wellness**

- **Thymic Regeneration:** Compensates for age-related thymic decline, potentially improving immune function in older adults.
- **Reduced Infection Susceptibility:** May help lower infection rates in immunocompromised or elderly individuals.

## **Wound & Tissue Repair**

- **Accelerates Healing:** Promotes fibroblast proliferation, speeds up epithelial repair, and reduces infection risk in chronic wounds or post-surgical recovery.

## **Gut-Immune Axis Support**

- **Improves Gut Immune Function:** Modulates immune responses in the gastrointestinal tract and may aid in conditions such as inflammatory bowel disease (IBD).

### **STANDARD PROTOCOL:**

- **General Immune Support:** 1.5 mg (0.3ml or 30 units) SQ every 3-7 days
- **Chronic Viral Infections:** 1.5 mg (0.3ml or 30 units) SQ twice weekly for 6-12 months
- **Cancer Support:** 1.5-3 mg (0.3-0.6ml or 30-60 units) SQ 2-3x/week during treatment
- **Immune Deficiency States:** 1.5 mg (0.3ml or 30 units) SQ twice weekly for 3-6 months
- **Acute Viral Infections:** 1.5 mg (0.3ml or 30 units) SQ daily for 5-10 days (as in COVID protocols)
- **Vaccine Adjuvant Use:** 1.5 mg (0.3ml or 30 units) SQ on day of vaccination

## **Disclosures:**

- These statements have not been evaluated by the U.S. Food and Drug Administration (FDA).
- Thymosin Alpha-1 is not intended to diagnose, treat, cure, or prevent any disease.

### **SAFETY & SIDE EFFECTS**

Tα1 is generally regarded as safe and well-tolerated when used appropriately. However, certain individuals may experience side effects, particularly at higher doses or in sensitive populations.



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## Peptide Therapy Guide

### Common (Usually Mild):

- Redness, tenderness, or swelling at the injection site
- Mild fatigue or tiredness
- Occasional headache
- Nausea or digestive discomfort (rare)

### Uncommon or Rare:

- Allergic Reactions: Itching, rash, swelling - anaphylaxis is rare but possible.
- Flu-like Symptoms: Fever, chills, or body aches.
- Immune Overactivation: In very rare cases, Tα1 may trigger unwanted inflammation or exacerbate autoimmunity.
- Hypersensitivity Risk: Caution is advised in patients with known allergies to peptide compounds.

### Risk Factors That May Influence Side Effects:

- Dosage: Higher doses may increase likelihood of side effects.
- Pre-existing Conditions: Autoimmune or hypersensitivity issues can elevate risk.
- Medication Interactions: Should be used carefully alongside other immune-modulating therapies.

## TIRZEPATIDE

The Importance of Weight Management Maintaining a healthy weight is essential not only for aesthetic reasons but also for reducing the risk of chronic illness. Obesity is a serious medical condition that significantly elevates the risk of cardiovascular disease, type 2 diabetes, certain cancers, and other health issues. Tirzepatide, along with Semaglutide and Retatrutide, offers advanced pharmacological support to aid weight reduction and improve metabolic health.

### HEALTH RISKS ASSOCIATED WITH OBESITY

**Cardiovascular Disease:** Obesity raises the risk of coronary artery disease by 32%. Approximately 75% of hypertension cases are obesity-related.

**Type 2 Diabetes:** Nearly 90% of individuals with type 2 diabetes are overweight or obese. Each 1-point BMI increase raises diabetes risk by 7%.



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## *Peptide Therapy Guide*

**Cancer:** Excess weight is linked to 13+ types of cancer (e.g., postmenopausal breast, colorectal, endometrial, liver, pancreatic). Roughly 40% of cancers in the U.S. are obesity-related.

**Sleep Apnea:** 70% of people with obstructive sleep apnea are obese. A 10% weight gain increases sleep apnea risk sixfold.

**Osteoarthritis:** Every 5-point BMI rise increases osteoarthritis risk by 35%.

**NAFLD:** Up to 90% of obese individuals may develop non-alcoholic fatty liver disease.

**Reproductive Health:** Obesity contributes to menstrual irregularities and infertility in ~30% of cases. In men, it lowers testosterone and impairs fertility.

**Mental Health:** Obesity increases the risk of depression by 55%. There's a bidirectional link: people with depression are 58% more likely to become obese.

**Mortality:** Each 5-point BMI increase over 25 is linked to a 31% higher risk of early death.

### GLP-1 MEDICATIONS OVERVIEW

Tirzepatide, Semaglutide, and Retatrutide belong to the GLP-1 agonist class, a group of drugs initially developed for diabetes management but also highly effective for weight loss.

- GLP-1 (Glucagon-Like Peptide-1): Increases insulin, delays gastric emptying, reduces appetite.
- GIP (Glucose-Dependent Insulinotropic Polypeptide): Enhances insulin secretion post-meal and supports fat metabolism.
- Glucagon Receptors (Retatrutide only): Promote lipolysis and raise metabolic rate.

Tirzepatide uniquely acts on both GLP-1 and GIP receptors, providing dual-action weight loss and metabolic benefits.

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**Lifestyle Support Successful long-term weight loss requires:**

- High-protein diet (~1g per lb of goal body weight)
- Regular physical activity
- Sufficient sleep
- Calorie tracking and food journaling



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Tirzepatide is a once-weekly injectable peptide that targets both GLP-1 and GIP receptors. It enhances insulin secretion, suppresses glucagon, delays gastric emptying, and influences appetite-regulating hormones like leptin and ghrelin. Its molecular modification allows it to remain active in the body for an extended period.

## **Mechanism of Action:**

- Delays gastric emptying- increases satiety, reduces meal size.
- Dual receptor targeting- reduces blood sugar by decreasing hepatic glucose production and increasing insulin.
- Enhances leptin sensitivity and suppresses ghrelin- decreases appetite.
- Stimulates metabolism through GIP-induced energy expenditure.

**Documented Results** In a 2022 clinical trial, patients lost an average of 22% of their body weight using Tirzepatide.

## **POTENTIAL BENEFITS**

- **Improved Blood Sugar Control:** Tirzepatide enhances insulin secretion and reduces glucagon levels, leading to better regulation of blood glucose levels. This helps in achieving optimal glycemic control in individuals with type 2 diabetes.
- **Weight Loss:** Clinical trials have demonstrated significant weight loss in patients using tirzepatide. The medication slows gastric emptying and reduces appetite, contributing to decreased calorie intake and weight reduction.
- **Cardiovascular Benefits:** By improving glycemic control and promoting weight loss, tirzepatide may reduce cardiovascular risk factors such as high blood pressure and elevated cholesterol levels. Some studies suggest potential benefits in lowering the risk of heart disease.
- **Renal Protection:** Improved blood sugar control can slow the progression of diabetic nephropathy. Some evidence suggests tirzepatide may have direct beneficial effects on kidney function.
- **Improved Lipid Profile:** Tirzepatide has been shown to lower triglyceride levels and increase HDL (good) cholesterol, which contributes to a healthier lipid profile.
- **Potential Anti-Inflammatory Effects:** Preliminary research indicates that tirzepatide may have anti-inflammatory properties, which could have additional health benefits, although more studies are needed in this area.



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# Peptide Therapy Guide

## POTENTIAL BENEFITS OF TIRZEPATIDE:



*Weight Loss*



*Improved Blood  
Sugar Control*



*Cardiovascular  
Benefits*

## SAFETY & SIDE EFFECTS

The most common side effects are gastrointestinal (GI) and include nausea, vomiting, constipation, acid reflux, stomach pain, or diarrhea. These less commonly occur with tirzepatide than semaglutide. Occasionally, cyanocobalamin (B12) is added to reduce GI side effects.

May cause loss of muscle if you are not consuming an adequate amount of protein and doing resistance exercise. Glycine supplementation can help prevent muscle loss.

Significant weight loss may cause sagging skin and more pronounced wrinkles. This is not specific to GLP-1 medications. Anything that causes significant weight loss will cause more pronounced wrinkles and sagging skin because the underlying supporting structure of your skin has been stretched out from being overweight. The more overweight you are, the more pronounced this effect is when you lose weight.

Risk of thyroid C-cell tumors in patients with a personal/family history of MEN2 or medullary thyroid carcinoma.

Pancreatitis risk (rare).

Risk increases in individuals with renal dysfunction or allergies.

If you develop intolerable nausea or vomiting, go back to the previous dose for a few more weeks and try to increase again later. You do not have to increase to the maximum dose. If you are losing weight and not having significant side effects, you can maintain at that dose. If you develop severe constipation or abdominal pain, stop the medication and get evaluated by your PCP or Emergency Dept ASAP. If you develop swelling in your neck or difficulty swallowing, get evaluated by your PCP or Emergency Dept.

### Usage Warnings:

- Not insulin; contraindicated in type 1 diabetes or diabetic ketoacidosis.
- Should not be used with other GLP-1 medications.
- Gradual dose escalation helps minimize side effects.
- If GI symptoms are severe, reduce to the prior tolerated dose.

Protein Intake Guidance Use goal weight to calculate protein intake (e.g., 140 lbs = 140g daily). Protein is vital for preserving lean mass and supporting organ health during weight loss.



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# Peptide Therapy Guide

STANDARD PROTOCOL:

RESEARCH PEPTIDE DOSING

Week Range	Dose	Volume (ml)	Units (Insulin Syringe)	Frequency
Weeks 1-2	1.25 mg	0.06 ml	6 units	SQ once weekly
Weeks 3–6	2.5 mg	0.13 ml	13 units	SQ once weekly
Weeks 5-8	~5 mg	0.25 ml	25 units	SQ once weekly
Weeks 9-12	~7.5 mg	0.4 ml	40 units	SQ once weekly
Weeks 13-16	10 mg	0.5 ml	50 units	SQ once weekly
Weeks 17-20	12.5 mg	0.65 ml	65 units	SQ once weekly
Week 21+	15 mg	0.75 ml	75 units	SQ once weekly

Due to recent FDA regulations, dosing guidelines for compounded GLP receptor agonists are excluded. Clinics must consult with licensed prescribers and FDA-approved labeling.



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## SAFETY & SIDE EFFECTS

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## LL - 37

LL-37 is a naturally occurring human antimicrobial peptide derived from the precursor protein hCAP-18, which belongs to the cathelicidin family. It plays a foundational role in the innate immune system by offering broad-spectrum protection against bacteria, viruses, and fungi. LL-37 is produced by various immune and epithelial cells-including neutrophils and macrophages and is active in barrier tissues such as the skin, lungs, and gastrointestinal tract.

## POTENTIAL BENEFITS

### Immune Defense & Antimicrobial Activity

- LL-37 targets and destroys a wide range of microbial threats, including gram-positive and gram-negative bacteria, fungi, and enveloped viruses.
- It is particularly effective against antibiotic-resistant pathogens.
- LL-37 disrupts bacterial biofilms, making it useful in chronic infections where conventional treatments fail.

### Improved Wound Healing

- LL-37 promotes keratinocyte migration and proliferation, accelerating skin repair.
- Stimulates angiogenesis (new blood vessel formation) to enhance tissue regeneration.
- Effective in managing chronic wounds, diabetic ulcers, and burns.

### Anti-Inflammatory and Immunomodulatory Effects

- LL-37 reduces excessive inflammation, protecting against tissue damage.
- Modulates cytokine release, contributing to a more controlled immune response in inflammatory conditions.

### Enhanced Wound Healing

- Promotes migration and proliferation of keratinocytes for faster skin regeneration.
- Stimulates angiogenesis (formation of new blood vessels), improving tissue oxygenation and recovery.
- Shown effective in chronic wounds, diabetic ulcers, and thermal injuries.

### Anti-Inflammatory & Immunomodulatory Action

- Regulates cytokine activity, helping to suppress overactive inflammation.
- Provides immune balance in inflammatory conditions by downregulating pro-inflammatory responses like TNF- $\alpha$  and IL-6.



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# *Peptide Therapy Guide*

## **Gut Integrity & Microbiome Balance**

- Supports gastrointestinal mucosal health by maintaining barrier function.
- Helps manage "leaky gut" and may be beneficial in inflammatory bowel conditions.
- Selectively targets harmful bacteria while preserving beneficial flora.

## **Skin Health & Dermatologic Applications**

- Plays a protective role in the skin's immune defense.
- Dysregulation is linked to conditions like psoriasis, rosacea, and eczema-making LL-37 a therapeutic candidate.
- Enhances skin barrier function and may alleviate symptoms in atopic dermatitis.

## **Cancer Modulation**

- LL-37 may suppress tumor growth through enhanced immune surveillance and apoptotic effects.
- In some cancer types (e.g., breast, lung, ovarian), LL-37 may conversely promote tumor growth-requiring personalized clinical consideration.

## **Chronic Infection Management**

- Effective in treating biofilm-related infections, particularly those involving implanted medical devices.
- May benefit patients with chronic UTIs or lung infections associated with cystic fibrosis.

## **Respiratory Protection**

- Supports immune defense in the respiratory tract.
- Potential adjunct therapy for bronchitis, pneumonia, influenza, and other pulmonary infections.

## **Neuroimmune Protection**

- Emerging studies suggest LL-37 may play a role in mitigating neuroinflammation in Alzheimer's and Parkinson's disease.
- May offer protection against systemic inflammation affecting brain health.

## **Cardiovascular Support**

- By reducing systemic inflammation, LL-37 may lower the risk of atherosclerosis and other cardiovascular conditions.

## **Vaccine and Drug Adjuvant**

- LL-37 has been studied as a vaccine adjuvant for enhancing antigen presentation and immune activation.
- May improve vaccine efficacy, particularly in bacterial and viral immunization.



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# Peptide Therapy Guide

## POTENTIAL BENEFITS OF LL-37:



*Gut Integrity &  
Microbiome Balance*



*Skin  
Health*



*Cardiovascular  
Support*

## STANDARD PROTOCOL:

### Subcutaneous Injection

- Standard Protocol: 0.1mg (0.05ml or 5 units) administered subcutaneously daily.
- Duration: Typically used for 2 to 4 weeks depending on treatment goals and tolerance.

## SAFETY & SIDE EFFECTS

### Risk of Inflammation

- At high concentrations, LL-37 may upregulate cytokines like IL-6 and TNF- $\alpha$ , intensifying inflammatory responses.
- This can exacerbate existing inflammatory diseases such as rheumatoid arthritis or psoriasis.

### Autoimmune Implications

- In autoimmune conditions (e.g., lupus), LL-37 may form complexes with self-DNA, contributing to disease progression through immune complex formation.

### Cancer Risk Variability

- While LL-37 may suppress certain tumors, it may promote growth and metastasis in others, such as breast and lung cancers.
- Its oncological impact is context-dependent and must be monitored in clinical use.

### Cytotoxicity at High Doses

- Excessive concentrations can damage host cells by disrupting their membranes, particularly in the lungs and GI tract.



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# *Peptide Therapy Guide*

## **Allergic/Hypersensitivity Reactions**

- Therapeutic use of LL-37 may cause immune hypersensitivity in some patients, requiring pre-screening

## **Microbiome Disruption**

- Overuse may disturb the skin or gut microbiome, potentially leading to dysbiosis and secondary complications.

## **Resistance Concerns**

- As with antibiotics, overuse of LL-37 may drive resistance in certain microbial populations.

## **Off-Target Immune Activation**

- LL-37 can bind Toll-like receptors (TLRs) and other immune modulators, potentially triggering systemic inflammatory effects.

## **Chronic Disease Exacerbation**

- In conditions where LL-37 is already overexpressed, additional exposure may worsen symptoms.

## **Key Usage Considerations:**

- Dose Matters: Low doses may be ineffective; high doses carry toxicity risk.
- Route of Delivery: Localized use (e.g., topical) carries fewer risks than systemic administration.
- Patient Variability: Response to LL-37 may differ depending on genetics, environment, and preexisting immune status.

## **Important Disclaimers**

- This information is for educational purposes only.
- These statements have not been evaluated by the U.S. Food and Drug Administration (FDA).
- LL-37 is not intended to diagnose, treat, cure, or prevent any disease.



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## **P L E A S E   N O T E :**

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