

PEPTIDE REFERENCE GUIDE

Consolidated Dose, Reconstitution, and Cycles

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BPC-157 / TB-500 / KPV Blend (10/10/10)

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5-Amino-1MQ

5-Amino-1MQ inhibits NNMT and, as a result, boosts NAD⁺ and enhances metabolic performance.

Uses: Fat Loss, Energy Production, Anti-Aging

Mechanism of Action

5-Amino-1MQ blocks an enzyme called NNMT (nicotinamide N-methyltransferase), which sits at high levels inside fat cells and becomes more active with age and with obesity. NNMT burns through nicotinamide, one of the raw materials your body uses to build NAD⁺. By blocking that enzyme, 5-Amino-1MQ leaves more nicotinamide available for NAD⁺ production and appears to push fat cells toward burning energy rather than simply storing it. It works upstream, preserving the precursor, rather than supplying NAD⁺ directly.

Benefits

- Raises intracellular NAD⁺ by preserving nicotinamide rather than supplying it directly
- Reduced fat mass in preclinical obesity models without a change in food intake
- Supports metabolic rate and cellular energy production
- Orally bioavailable: one of the few compounds in this guide that works taken by mouth
- Investigated for muscle stem-cell function and age-related muscle decline

Side Effects & Cautions

- Evidence is almost entirely preclinical (rodent); there are no published human clinical trials
- Long-term human safety is unknown; NNMT has roles in tissues beyond fat
- Injectable protocols are extrapolated from oral data and vary widely between sources
- Mild GI upset or a stimulatory, jittery feeling reported anecdotally
- Not FDA-approved for any indication

Best Disease Processes / Applications

Fat-loss plateaus in patients who already have nutrition and training in place, metabolic support during caloric restriction, and as an oral option for patients who will not inject. Most often positioned as NAD⁺ support that works upstream of NAD⁺ itself, and used alongside a fat-loss protocol rather than as a standalone weight-loss agent.

Dosing & Cycling

Reconstitution Cheat Sheet

Vial Size	Dosage	Units to Draw
5mg vial BAC: 1mL (100 units)	250mcg (0.25mg)	5 units
	500mcg (0.5mg)	10 units
	750mcg (0.75mg)	15 units
10mg vial BAC: 2mL (200 units)	1000mcg (1mg)	20 units
	250mcg (0.25mg)	5 units
	500mcg (0.5mg)	10 units

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Vial Size	Dosage	Units to Draw
	750mcg (0.75mg)	15 units
	1000mcg (1mg)	20 units
50mg vial BAC: 2.5mL (250 units)	1000mcg (1mg)	5 units
	2000mcg (2mg)	10 units
	3000mcg (3mg)	15 units
	4000mcg (4mg)	20 units

Dosage and Timing

Format: Oral or Injectable

Common Dosages:

Oral: 50–150mg daily. Typically, capsules are 50mg each.

Injectable: 0.5–20mg daily. Start low around 0.5–1mg to assess tolerance and increase as needed. There is less data on injectable 5-Amino, so protocols can vary.

Timing:

Oral: Morning or midday/early afternoon is best since it can increase energy levels. Can be taken with or without food.

Injectable: Typically in the morning. Some prefer to take prior to fasted cardio sessions.

Alternative Protocols:

Can be done 5 days on, 2 days off or every other day. Both protocols work well and depend on individual preference.

Cycle Length

On-Cycle	4–12 weeks
Off-Cycle	2–8 weeks
Tapering	Not required

Why Cycle: Cost effectiveness. Mitigate potential adaptation and diminishing returns.

Pairs Well With

- NAD+ or NMN (converging on the same NAD+ pool from opposite directions: one preserves the precursor, the other supplies it)
- AOD-9604 and L-Carnitine (fat mobilization and oxidation while 5-Amino-1MQ raises cellular energy capacity)
- MOTS-c (mitochondrial and AMPK support during a caloric deficit)

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Adamax

Adamax is an analog of Semax with an adamantane group that can increase BDNF levels and improve cognitive performance.

Uses: Neuroplasticity, Cognitive Enhancement

Mechanism of Action

Adamax is a chemically modified version of Semax, built with an extra adamantane group attached that helps it last longer in the body and cross into the brain more easily. It works through the same BDNF brain-growth pathway that Semax uses, but the modification means it can be taken once a day instead of the multiple daily doses Semax usually requires.

Benefits

- Extended duration of action versus standard Semax (hours rather than minutes-to-an-hour)
- Supports focus, memory, and neuroplasticity via BDNF/TrkB signaling
- More convenient once-daily dosing schedule
- Considered more potent per microgram than Semax, so lower doses are typically sufficient

Side Effects & Cautions

- Similar profile to Semax: nasal irritation, possible overstimulation, irritability, or headache
- Very limited independent clinical trial data; much of the available information comes from research-chemical suppliers rather than peer-reviewed literature, so this compound should be approached with more caution than Semax itself
- Higher potency means it is easier to overshoot the dose; start at the low end
- Not FDA-approved for any indication

Best Disease Processes / Applications

Patients wanting Semax's cognitive-support profile with a more convenient dosing schedule; framed as a next-generation Semax analog rather than a distinct clinical entity. Used for focus, mental clarity, and neuroplasticity support.

Dosing & Cycling

Reconstitution Cheat Sheet

Note: This peptide is best used intranasally. See intranasal reconstitution guidelines.

Dosage and Timing

Format: Nasal Spray

Common Dosages:

Intranasal: 100–200mcg daily is usually sufficient for most. The dosage range can go higher, but it is considered more potent than Semax, so higher amounts are not always necessary.

Timing:

Best used in the morning or before mentally demanding tasks. Some may divide dosages to 2x daily (one morning, one midday).

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Alternative Protocols:

Can be done 5 days on, 2 days off, every other day, or as needed. Using as needed is often the best approach.

Cycle Length

On-Cycle	6–12 weeks
Off-Cycle	2–8 weeks
Tapering	Not required

Why Cycle: Maintain BDNF receptor responsiveness. Cost efficiency.

Pairs Well With

- Selank (calming complement, the same rationale as the classic Semax + Selank pairing)
- Semax (typically used as an alternative to Semax rather than combined with it; they work through the same pathway)
- P-21 (different neurotrophic mechanism; both support BDNF/TrkB signaling from different angles)

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AICAR

AICAR is an AMPK activator that can help with cellular energy balance, fat loss, endurance, and metabolic health.

Uses: Endurance, Fatty Acid Oxidation

Mechanism of Action

AICAR is converted inside the cell into a molecule that closely resembles AMP, the chemical alarm your cells produce when energy is running low. That tricks the cell's master energy sensor, AMPK, into switching on as though you had just finished a hard training session: burning fat for fuel, pulling glucose into muscle, and building new mitochondria. It is often described as "exercise in a pill," though that description oversells what has actually been shown in humans.

Benefits

- Activates AMPK directly, increasing fatty-acid oxidation and glucose uptake
- Improved endurance in preclinical models even without training
- Supports mitochondrial biogenesis and metabolic flexibility
- Investigated clinically for protection against cardiac ischemia-reperfusion injury

Side Effects & Cautions

- Users commonly report negative effects after two to three weeks, which is why the cycle length here is deliberately short
- Poor bioavailability and a very short half-life mean large doses are needed, making it expensive and difficult to dose consistently
- AMPK activation is not selective; the consequences of chronic, unregulated activation in humans are unclear
- Prohibited by WADA at all times as a metabolic modulator; disqualifying for tested athletes
- Human efficacy data for endurance or fat loss is essentially absent; the reputation rests on rodent studies

Best Disease Processes / Applications

Endurance and fatty-acid oxidation support in short, defined blocks, typically in athletes or hybrid-training populations who already have a training stimulus for it to amplify, rather than as a standalone fat-loss tool. Its actual clinical research history is in cardiac protection, not body composition.

Dosing & Cycling

Reconstitution Cheat Sheet

Vial Size	Dosage	Units to Draw
50mg vial BAC: 5mL (500 units)	1000mcg (1mg)	10 units
	2000mcg (2mg)	20 units
	3000mcg (3mg)	30 units
	4000mcg (4mg)	40 units

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Vial Size	Dosage	Units to Draw
	5000mcg (5mg)	50 units

Note: It is HIGHLY RECOMMENDED to start at the lowest amount first and work up over time. AICAR may need PBS (Phosphate Buffered Saline) in addition to bacteriostatic water to properly reconstitute. This is not always the case, but it is a consideration.

Dosage and Timing

Format: Injectable

Common Dosages:

Injectable: 1–5mg daily or every other day.

Timing:

Injectable: 30–60 minutes before activity.

Alternative Protocols:

Some have used 25mg, 50mg, or higher per day. However, many users report negative effects after a couple of weeks. Limit use to a maximum of 2–3 weeks at a time with a 4–8 week break or longer to prevent negative issues.

Cycle Length

On-Cycle	2–3 weeks (4 maximum)
Off-Cycle	4–8 weeks minimum
Tapering	Not required

Why Cycle: Mitigate side effects. Many users report negative effects after extended use.

Pairs Well With

- L-Carnitine (shuttles the fatty acids AMPK activation liberates into the mitochondria to be burned)
- MOTS-c (also works through AMPK; the two are additive rather than complementary, so run lower doses if combining, or use one at a time)
- AOD-9604 (fat mobilization alongside the metabolic shift)

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AOD-9604

AOD-9604 is a modified fragment of human growth hormone (176-191) that stimulates lipolysis.

Uses: Fat Loss, Weight Loss Stalls

Mechanism of Action

AOD-9604 is just the tail end of the human growth hormone molecule, amino acids 176 to 191, which is the specific fragment that carries the fat-burning signal. By using only that piece, it stimulates the breakdown of stored fat and discourages fat cells from taking on new fat, without the blood-sugar effects or tissue-growth effects that come with the whole growth hormone molecule. It does not bind the growth hormone receptor at all.

Benefits

- Stimulates lipolysis and inhibits lipogenesis without raising IGF-1 or blood glucose
- Does not bind the GH receptor, so it carries none of the growth-related effects of GH itself
- Very favorable side-effect profile; well tolerated across human trials
- Holds GRAS status as a food ingredient in the US and has been studied orally as well as by injection

Side Effects & Cautions

- The phase 2b human obesity trial did not produce statistically significant weight loss versus placebo; this is the central honest caveat for this compound
- FDA has issued warning letters regarding AOD-9604 marketed as a drug; it is not an approved weight-loss agent
- Because it releases fat rather than burning it, results depend on an energy deficit and physical activity
- Benefits reported in practice are largely anecdotal rather than trial-supported

Best Disease Processes / Applications

Used in practice to break fat-loss stalls in patients already in a deficit, and as a low-risk addition for patients who want a fat-loss agent without appetite suppression or growth-hormone-axis effects. Best suited to patients who can pair it with fasted activity, since the compound mobilizes fat and activity is what clears it.

Dosing & Cycling

Reconstitution Cheat Sheet

Vial Size	Dosage	Units to Draw
5mg vial BAC: 2.5mL BAC water + 0.5mL acetic acid (3mL total, preferred)	250mcg (0.25mg)	15 units
	300mcg (0.3mg)	18 units
	500mcg (0.5mg)	30 units
10mg vial BAC: 2.5mL BAC water + 0.5mL acetic acid (3mL total)	250mcg (0.25mg)	7.5 units
	300mcg (0.3mg)	9 units

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Vial Size	Dosage	Units to Draw
	500mcg (0.5mg)	15 units

Note: AOD has a tendency to gel. Using Hospira bacteriostatic water combined with acetic acid solution can mitigate this.

Dosage and Timing

Format: Injectable (preferred)

Common Dosages:

Injectable: 250–500mcg daily. Preferred dosage is 300mcg per day (or 5 on, 2 off for cost effectiveness).

Timing:

Best taken fasted in the morning, followed by fasted cardio to help burn fat. AOD mobilizes and releases fat, and physical activity in a fasted state helps burn it off.

Alternative Protocols:

Can be done every other day. Dosages can go higher, but AOD has essentially no observed negative side effects. If 250–500mcg doesn't help, higher doses likely won't either.

Some may split the dose to morning and afternoon, or morning and pre-workout.

Some may pair with L-Carnitine. L-Carnitine helps shuttle free fatty acids to the mitochondria to be used as fuel, complementing AOD's fat-releasing mechanism.

Cycle Length

On-Cycle	4–12 weeks
Off-Cycle	4–8 weeks
Tapering	Not required

Why Cycle: Cost effectiveness. Great to introduce to break a stall, then come off and save for the next one.

Pairs Well With

- L-Carnitine (the most logical pairing: AOD mobilizes free fatty acids, carnitine shuttles them into the mitochondria to be used as fuel)
- Tesamorelin or CJC-1295/Ipamorelin (GH-axis fat loss from a different direction)
- GLP-1/GIP agents (appetite control alongside a non-appetite fat-loss mechanism)

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ARA-290

ARA-290 is derived from erythropoietin (EPO) and targets innate repair receptors (IRR) to help reduce inflammation and promote tissue regeneration.

Uses: Small Fiber Neuropathy, Tissue Repair, Pain Modulation

Mechanism of Action

ARA-290 is an eleven-amino-acid piece of erythropoietin (EPO), the hormone that normally tells your body to make red blood cells. It was designed to keep EPO's tissue-repair signal while removing the red-blood-cell effect entirely. It does this by binding a different target, the innate repair receptor, which sits on nerve, immune, and vascular cells and switches on repair while switching off inflammation.

Benefits

- Non-erythropoietic; does not raise hematocrit or carry EPO's clotting risk
- Phase 2 human data in sarcoidosis-related small fiber neuropathy showed improved corneal nerve fiber measures and patient-reported pain
- Studied in diabetic peripheral neuropathy with improvement in neuropathic symptom scores
- Anti-inflammatory and tissue-protective without broad immune suppression

Side Effects & Cautions

- Injection-site reactions
- Human data comes from small phase 2 trials; not FDA-approved for any indication
- Reconstitution is genuinely difficult (see the note above); poor reconstitution is a common reason patients report no effect
- Long-term safety beyond trial durations is not established

Best Disease Processes / Applications

Small fiber neuropathy is the best-evidenced use, particularly sarcoidosis-associated and diabetic neuropathy. Also used for neuropathic pain more broadly, chronic inflammatory conditions with a neural component, and tissue repair where inflammation is the limiting factor rather than the injury itself.

Dosing & Cycling

Reconstitution Cheat Sheet

Vial Size	Dosage	Units to Draw
10mg vial BAC: 1.0mL (100 units)	1000mcg (1mg)	10 units
	2000mcg (2mg)	20 units
	3000mcg (3mg)	30 units
	4000mcg (4mg)	40 units
16mg vial BAC: 1.6mL (160 units)	1000mcg (1mg)	10 units
	2000mcg (2mg)	20 units

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Vial Size	Dosage	Units to Draw
	3000mcg (3mg)	30 units
	4000mcg (4mg)	40 units

Note: ARA-290 can be tricky. Use BAC water with Phosphate Buffered Saline (at least a 50/50 blend) or add 10–20 units of Sodium Bicarbonate Solution to significantly improve reconstitution outcomes.

Dosage and Timing

Format: Injectable

Common Dosages:

Injectable: 1–4mg per day. Some observe benefits at 500mcg (0.5mg) daily. Start low and increase as needed.

Timing:

Once daily, any time of day.

Alternative Protocols:

Some may split it to 2x daily, similar to BPC-157 (e.g., 250mcg morning, 250mcg evening).

Cycle Length

On-Cycle	4–6 weeks
Off-Cycle	2–4 weeks
Tapering	Not required

Why Cycle: Prevent overstimulation of repair receptors.

Pairs Well With

- BPC-157 (tissue repair through a separate mechanism; both reduce inflammation at the site)
- KPV (anti-inflammatory without immune suppression: complementary in inflammatory-driven pain)
- NAD+ or SS-31 (neuropathy with a mitochondrial component, where nerve energy metabolism is also impaired)

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BPC-157

BPC-157 is a peptide derived from gastric proteins that promotes angiogenesis, accelerates healing, and reduces inflammation.

Uses: Gut Health (IBS, etc.), Tendon, Ligament, and Muscle Healing, Anti-Inflammatory

Mechanism of Action

BPC-157 is a small piece of a protein your stomach naturally makes to help protect and heal its lining. As a supplement, it works by telling your body to grow more blood vessels and send more repair cells (like fibroblasts, which help rebuild tissue) to an injured area. It also boosts nitric oxide, a molecule that helps widen blood vessels so more blood, and more healing nutrients, can reach the injury.

Benefits

- Accelerates healing of tendons, ligaments, and muscle tears
- Supports gut lining repair and reduces GI inflammation
- May protect against NSAID-induced gastric ulceration
- Anti-inflammatory effects at the site of soft-tissue injury
- Some evidence for accelerated bone-tendon junction healing
- Upregulates growth hormone receptors, supporting tissue repair signaling

Side Effects & Cautions

- Generally well tolerated in available data
- Mild injection-site redness or irritation with subcutaneous use
- Theoretical concern: the angiogenic mechanism warrants caution in patients with active malignancy
- Long-term human safety data remains limited
- Not FDA-approved; placed on the FDA's bulk compounding restricted list, which limits US compounding pathways

Best Disease Processes / Applications

Subcutaneous BPC-157 is best suited for anything needing systemic repair: soft-tissue injuries such as tendinopathy, ligament sprains, and muscle strains; post-surgical orthopedic recovery; cardiac repair after a heart attack; and neuronal repair after a stroke. Oral BPC-157 is best suited for anything involving the GI tract, specifically the stomach and intestines, including a history of stomach ulcers and inflammatory bowel disease such as ulcerative colitis or Crohn's disease. Intranasal dosing is used where central nervous system effects are the goal.

Dosing & Cycling

Reconstitution Cheat Sheet

Vial Size	Dosage	Units to Draw
5mg vial BAC: 1mL (100 units)	250mcg (0.25mg)	5 units
	500mcg (0.5mg)	10 units
	750mcg (0.75mg)	15 units

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Vial Size	Dosage	Units to Draw
	1000mcg (1mg)	20 units
10mg vial BAC: 2mL (200 units)	250mcg (0.25mg)	5 units
	500mcg (0.5mg)	10 units
	750mcg (0.75mg)	15 units
	1000mcg (1mg)	20 units
15mg vial BAC: 1.5mL (150 units)	250mcg (0.25mg)	5 units
	500mcg (0.5mg)	10 units
	750mcg (0.75mg)	15 units
	1000mcg (1mg)	20 units
20mg vial BAC: 2mL (200 units)	500mcg (0.5mg)	5 units
	750mcg (0.75mg)	7.5 units
	1000mcg (1mg)	10 units

Dosage and Timing

Format: Injectable, Oral, or Intranasal

Common Dosages:

Injectable: 250–500mcg daily. Some have administered up to 5mg/day with no adverse effects, though that is cost-inefficient.

Oral: 500–1000mcg daily.

Intranasal: 250–500mcg daily.

Timing:

Injectable: Once per day is fine, but splitting the dose to half in the morning and half in the evening is optimal for continuous inflammation reduction due to the short half-life.

Oral and Intranasal: Same as injectable.

Alternative Protocols:

Can be done 5 days on, 2 days off or every other day. Daily use is recommended due to the short half-life.

Cycle Length

On-Cycle	4–8 weeks
Off-Cycle	2–4 weeks
Tapering	Not required

Why Cycle: Avoid unnecessary continuous use. Cost effectiveness.

Pairs Well With

- TB-500 (synergistic soft-tissue repair; BPC drives local vascular and fibroblast repair while TB-500 aids cell migration and flexibility)

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- GHK-Cu (collagen synthesis and wound remodeling)
- Tesamorelin or Ipamorelin (BPC-157 upregulates growth hormone receptors, which pairs naturally with agents that stimulate growth hormone release)
- KPV (gut protocols; BPC repairs the lining while KPV calms the inflammatory signaling driving the damage)

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Bremelanotide (PT-141)

PT-141 is a melanocortin receptor agonist that can enhance sexual arousal and libido.

Uses: Increased Libido (men and women), Erectile Dysfunction

Mechanism of Action

PT-141 works on melanocortin receptors in the brain, specifically MC3R and MC4R in the hypothalamus, rather than on blood flow. Unlike Viagra-type drugs, which work on the plumbing, PT-141 works on desire itself, acting on the brain pathways that generate sexual arousal. That is why it works in both men and women, and why it can work in patients for whom vascular drugs do nothing.

Benefits

- FDA-approved (as Vyleesi) for acquired, generalized hypoactive sexual desire disorder in premenopausal women
- Central mechanism: addresses desire, not just erectile function
- Effective in both men and women
- Can work in patients who do not respond to PDE5 inhibitors, and can be combined with them

Side Effects & Cautions

- Nausea is the most common side effect and is dose-dependent: roughly 40% of patients at the approved dose in trials
- Flushing and headache
- Transient increase in blood pressure with a decrease in heart rate; not for patients with uncontrolled hypertension or known cardiovascular disease
- Focal hyperpigmentation (darkening of skin, gums, or face) with frequent or repeated dosing
- Onset is unpredictable; effects may appear in 30 minutes or up to 8 hours later, which is why starting very low matters

Best Disease Processes / Applications

Low libido and hypoactive sexual desire in both men and women; erectile dysfunction where the limiting factor is desire rather than blood flow, or where PDE5 inhibitors have failed; and loss of desire following SSRI use or after menopause.

Dosing & Cycling

Reconstitution Cheat Sheet

Vial Size	Dosage	Units to Draw
5mg vial BAC: 1mL (100 units)	250mcg (0.25mg)	5 units
	500mcg (0.5mg)	10 units
	750mcg (0.75mg)	15 units
	1000mcg (1mg)	20 units
	1250mcg (1.25mg)	25 units

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Vial Size	Dosage	Units to Draw
	1500mcg (1.5mg)	30 units
	1750mcg (1.75mg)	35 units
10mg vial BAC: 2mL (200 units)	250mcg (0.25mg)	5 units
	500mcg (0.5mg)	10 units
	750mcg (0.75mg)	15 units
	1000mcg (1mg)	20 units
	1250mcg (1.25mg)	25 units
	1500mcg (1.5mg)	30 units
	1750mcg (1.75mg)	35 units

Note: It is HIGHLY RECOMMENDED to start at the lowest amount first and work up over time.

Dosage and Timing

Format: Injectable or Intranasal

Common Dosages:

Injectable: 0.5–1.75mg as needed.

Intranasal: 0.5–1.75mg as needed.

Timing:

Injectable or Intranasal: 30–60 minutes before activity.

Alternative Protocols:

Some take smaller amounts more frequently (e.g., 0.25mg daily) to maintain libido-boosting effects.

Response timing varies; effects may hit 30 minutes or up to 8 hours later. Start very low (0.25mg) to assess tolerance and response, then increase as needed.

Cycle Length

On-Cycle	As needed or 2–3x weekly for 4–6 weeks
Off-Cycle	1–2 weeks
Tapering	Not required

Why Cycle: Prevent receptor desensitization. Maintain effectiveness.

Pairs Well With

- Kisspeptin (both act upstream on the brain and hormonal side of arousal through separate mechanisms)
- PDE5 inhibitors (desire plus blood flow; confirm cardiovascular safety before combining, given PT-141's blood pressure effect)
- Melanotan 2 shares the libido effect through the same receptor family, combining them stacks the same nausea and pigmentation burden, so they are generally used as alternatives rather than together

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Cagrilintide

Cagrilintide is an amylin analogue that works by slowing gastric emptying and reducing food intake.

Uses: Appetite Suppression, Weight Loss

Mechanism of Action

Amylin is a hormone released alongside insulin that slows down digestion and signals fullness to the brain through a different pathway than GLP-1 medications use. Cagrilintide is a long-lasting, lab-made version of amylin, designed for once-weekly injections. It gives the body a second, separate way to feel full, distinct from the pathway GLP-1 drugs use.

Benefits

- Additive weight-loss effect when combined with GLP-1 agonists (e.g., the cagrilintide/semaglutide co-formulation)
- Reduces food intake through amylin-specific central satiety signaling
- May slow gastric emptying complementary to, but mechanistically distinct from, GLP-1 effects
- Useful for holding patients at a lower GLP-1 dose while still increasing appetite suppression

Side Effects & Cautions

- GI effects: nausea, vomiting, constipation; similar class profile to GLP-1 agents
- Injection-site reactions
- Theoretical additive GI burden when combined with a GLP-1/GIP agonist; titration should be conservative
- Long-term human data is more limited than for established GLP-1 monotherapies
- Not FDA-approved as a standalone agent. The cagrilintide/semaglutide combination (CagriSema) has been filed with FDA, with a decision expected in late 2026; verify current status before relying on it

Best Disease Processes / Applications

Patients who have plateaued on GLP-1/GIP monotherapy and need an additional, mechanistically distinct satiety pathway; patients who want to stay on a lower GLP-1 dose for tolerability or cost reasons while still gaining appetite suppression; and as part of an emerging dual amylin/incretin protocol.

Dosing & Cycling

Reconstitution Cheat Sheet

Vial Size	Dosage	Units to Draw
5mg vial BAC: 2mL (200 units)	250mcg (0.25mg)	10 units
	500mcg (0.5mg)	20 units
	750mcg (0.75mg)	30 units
	1000mcg (1mg)	40 units
	1250mcg (1.25mg)	50 units

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Vial Size	Dosage	Units to Draw
	1500mcg (1.5mg)	60 units
10mg vial BAC: 2mL (200 units)	250mcg (0.25mg)	5 units
	500mcg (0.5mg)	10 units
	750mcg (0.75mg)	15 units
	1000mcg (1mg)	20 units
	1250mcg (1.25mg)	25 units
	1500mcg (1.5mg)	30 units
	1750mcg (1.75mg)	35 units

Note: It is HIGHLY RECOMMENDED to start at the lowest amount first and work up over time.

Dosage and Timing

Format: Injectable

Common Dosages:

Injectable: 0.25mg up to 4.5mg once weekly. Has a titration schedule similar to GLP-1s. Start VERY LOW (even 0.125mg) and move up as needed.

Timing:

Typically injected once per week (or less, since it has an 8-day half-life). No requirement for time of day.

Alternative Protocols:

Some take this halfway through the week between GLP-1 dosages for continued appetite suppression.

Important: Use tdeecalculator.net to ensure sufficient caloric intake before introducing Cagrilintide. Many who feel hungry and stalled are actually undereating (e.g., 1000 calories/day), which means Cagrilintide is not the solution.

Cycle Length

On-Cycle	8–16 weeks
Off-Cycle	4–6 weeks
Tapering	Could be useful to mitigate appetite rebound

Why Cycle: Prevent adaptation of appetite suppression. Cost effectiveness.

Pairs Well With

- Tirzepatide or retatrutide (the primary intended pairing: distinct satiety pathways)
- Semaglutide (the co-formulation pairing under FDA review)
- Not typically stacked with additional appetite-suppressing agents beyond an incretin, given cumulative GI burden

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CJC-1295 with DAC

CJC-1295 w/ DAC is a long-acting growth hormone releasing hormone analogue that stimulates the pituitary to release growth hormone. The addition of DAC extends the half-life of the compound.

Uses: Muscle Growth and Recovery, Fat Loss, Anti-Aging, Sleep Improvement

Mechanism of Action

CJC-1295 is a modified version of GHRH, the natural hormone your brain uses to tell the pituitary to release growth hormone. The DAC version ("drug affinity complex") carries a chemical hook that latches onto albumin, a protein circulating in your blood, which stretches its effect from minutes out to days. The result is a steady, sustained elevation in growth hormone and IGF-1: more of a continuous bleed than the sharp natural pulses the body normally produces.

Benefits

- Sustained increase in GH and IGF-1 levels
- Supports lean mass accrual and fat loss over time
- Improved sleep quality reported by many users
- The DAC modification reduces injection frequency to once or twice weekly

Side Effects & Cautions

- Because DAC raises GH continuously rather than in pulses, it moves further from the body's natural rhythm than short-acting GHRH agents; this is the central trade-off
- Water retention, paresthesia (tingling), and flushing; the DAC form produces more pronounced water retention than the non-DAC form
- Injection-site reactions
- Elevated IGF-1 requires periodic lab monitoring
- Carpal tunnel symptoms and joint stiffness are class effects of sustained GH/IGF-1 elevation
- Theoretical IGF-1 and malignancy surveillance concerns with chronic use

Best Disease Processes / Applications

Body recomposition, recovery support, and sleep quality improvement; most commonly used as the GHRH half of the CJC-1295/ipamorelin combination protocol. Also used in patients with osteoarthritis, since it can support cartilage repair, and to help preserve muscle and minimize muscle loss while in a calorie deficit on a GLP-1 medication.

Dosing & Cycling

Reconstitution Cheat Sheet

Vial Size	Dosage	Units to Draw
5mg vial BAC: 2mL (200 units)	200mcg (0.2mg)	8 units
	250mcg (0.25mg)	10 units
	300mcg (0.3mg)	12 units

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Vial Size	Dosage	Units to Draw
	500mcg (0.5mg)	20 units
	1000mcg (1mg)	40 units
	2000mcg (2mg)	80 units
10mg vial BAC: 3mL (300 units)	200mcg (0.2mg)	6 units
	250mcg (0.25mg)	7.5 units
	300mcg (0.3mg)	9 units
	500mcg (0.5mg)	15 units
	1000mcg (1mg)	30 units
	2000mcg (2mg)	60 units

Note: CJC-1295 with DAC has a longer half-life and is typically administered less frequently.

Dosage and Timing

Format: Injectable

Common Dosages:

Injectable: Typically 1–2mg per week.

Timing:

2mg 1x weekly fasted before bed.

1mg 2x weekly fasted before bed.

200–300mcg 5 nights per week fasted before bed.

Alternative Protocols:

All alternative protocols are described in the timing options above.

Cycle Length

On-Cycle	8–16 weeks
Off-Cycle	4–8 weeks
Tapering	Not required

Why Cycle: Prevent receptor desensitization. Allow IGF levels to return to baseline.

Pairs Well With

- Ipamorelin (the standard pairing; CJC provides the sustained GHRH signal, ipamorelin provides the clean GHRP pulse)
- Not combined with Tesamorelin or Mod-GRF; all three are GHRH-class agents and only one is used at a time
- BPC-157/TB-500 (injury recovery, which the GH axis supports)

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DSIP (Delta-Sleep-Inducing Peptide)

DSIP is a neuropeptide that helps with sleep regulation by promoting deep sleep and reducing stress-related cortisol spikes.

Uses: Improved Sleep Quality, Stress Reduction, Anxiety Relief

Mechanism of Action

DSIP is a nine-amino-acid peptide first isolated from the blood of sleeping rabbits, named for the sleep-like state it produced. Despite the name, its exact mechanism is still not well defined; it appears to modulate several systems at once, including opioid, GABA, and stress-hormone (ACTH/cortisol) pathways, rather than acting as a sedative on any single receptor the way a sleeping pill does.

Benefits

- May improve sleep onset and sleep quality without sedation or next-day grogginess
- Non-habit-forming; no dependence or withdrawal syndrome reported
- Studied in chronic pain and in alcohol and opioid withdrawal in older European literature
- May blunt the stress-hormone response

Side Effects & Cautions

- The mechanism is genuinely poorly understood and results are inconsistent: a meaningful share of users report no effect at all
- Very short half-life in circulation
- Human evidence is limited and comes mostly from small, older studies conducted outside the US
- Occasional reports of headache, vivid dreams, or paradoxical alertness

Best Disease Processes / Applications

Sleep quality and sleep-onset difficulty, particularly stress-driven insomnia, and as a non-sedating option for patients who want to avoid benzodiazepines or Z-drugs. Historically studied in withdrawal syndromes and chronic pain rather than in primary insomnia.

Dosing & Cycling

Reconstitution Cheat Sheet

Vial Size	Dosage	Units to Draw
5mg vial BAC: 2mL (200 units)	100mcg (0.1mg)	4 units
	150mcg (0.15mg)	6 units
	200mcg (0.2mg)	8 units
	250mcg (0.25mg)	10 units
	500mcg (0.5mg)	20 units
10mg vial BAC: 3mL (300 units)	200mcg (0.2mg)	6 units
	250mcg (0.25mg)	7.5 units
	500mcg (0.5mg)	15 units

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Dosage and Timing

Format: Injectable or Intranasal

Common Dosages:

Injectable: 100–250mcg (0.1–0.25mg) daily.

Intranasal: 100–250mcg (0.1–0.25mg) daily.

Timing:

Typically taken 2–3 hours before bed.

Can also be taken earlier in the day; many still report sleep benefits even if taken in the morning.

Alternative Protocols:

Some take this daily for 1 week, then reduce to 1–2x weekly and still see good results.

Can also be taken as needed.

Cycle Length

On-Cycle	4–6 weeks
Off-Cycle	2–4 weeks
Tapering	Not required

Why Cycle: Prevent adaptation. Sleep improvement may be longer lasting even off-cycle. Maintain responsiveness.

Pairs Well With

- Epitalon (both affect the sleep-wake cycle: Epitalon on circadian timing, DSIP on sleep quality itself)
- Selank (calming complement for stress-driven sleep disruption)
- Ipamorelin or CJC-1295 (growth hormone is released during slow-wave sleep, so deeper sleep and GH-axis support reinforce each other)

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Epithalon

Epitalon activates telomerase and can support pineal gland function and regulate circadian rhythm.

Uses: Anti-Aging and Longevity, Sleep Improvement, Cellular Repair

Mechanism of Action

Epitalon is a lab-made version of a substance your pineal gland (a small gland in the brain) naturally produces. In laboratory studies it has been shown to activate telomerase, an enzyme that helps maintain telomeres, the protective caps on the ends of your chromosomes. It also appears to help regulate your body's melatonin release and sleep-wake cycle.

Benefits

- May support telomere maintenance in laboratory and animal studies
- Regulates pineal gland function and circadian rhythm/melatonin secretion
- Anecdotally reported to improve sleep quality during and after use
- Studied in Russian aging research for potential lifespan-extension effects in animal models

Side Effects & Cautions

- Injection-site reactions
- Generally reported as well tolerated in available (mostly non-US) trial data
- Long-term human outcome data, particularly on actual lifespan or the cancer-risk implications of telomerase activation, is not established
- There is a great deal of misinformation online about Epitalon dosing, largely because many circulating protocols are outdated ones based on Epithalamin, a different and significantly weaker peptide

Best Disease Processes / Applications

Circadian rhythm and sleep-quality support, and as part of longevity-focused protocols where telomere biology is a stated goal: with the caveat that human outcome data remains preliminary.

Dosing & Cycling

Reconstitution Cheat Sheet

Vial Size	Dosage	Units to Draw
10mg vial BAC: 2mL (200 units)	200mcg (0.2mg)	4 units
	500mcg (0.5mg)	10 units
	1000mcg (1mg)	20 units
	2000mcg (2mg)	40 units
	2500mcg (2.5mg)	50 units
	5000mcg (5mg)	100 units
50mg vial BAC: 2.5mL (250 units)	10000mcg (10mg)	200 units
	1000mcg (1mg)	5 units

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Vial Size	Dosage	Units to Draw
	2000mcg (2mg)	10 units
	2500mcg (2.5mg)	12.5 units
	5000mcg (5mg)	25 units
	10000mcg (10mg)	50 units

Dosage and Timing

Format: Injectable

Common Dosages:

Dosage is widely debated. Some protocols recommend 100–300mcg, but in practical application most people need a minimum of 1mg, with some going to 3–10mg+ to get sleep benefits.

Start at a level you feel comfortable with for the first cycle (100mcg–10mg). The cycle length is often 10–20 days.

If no benefits are observed, try another cycle a couple months later at a higher dosage.

Timing:

Typically taken once per day at night before bed. Can be split to morning and night, but once at night is usually sufficient.

Alternative Protocols:

1mg daily for 50 days.

2mg daily for 25 days.

Cycle Length

On-Cycle	10–20 days (1–2x yearly)
Off-Cycle	4–6 months
Tapering	Not required

Why Cycle: Prevent unnecessary overuse.

Pairs Well With

- NAD+ (both are frequently combined in longevity-focused protocols, targeting different aging pathways)
- DSIP (sleep architecture support alongside circadian timing)
- GHK-Cu (both target cellular aging pathways from different angles)

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FLGR-242

FLGR-242 is an engineered follistatin construct with an albumin binder that selectively inhibits myostatin (GDF-8) to remove the biological brake on skeletal muscle growth.

Uses: Lean Muscle Growth, Strength, Body Recomposition, Lean Mass Preservation

Mechanism of Action

Myostatin is a regulatory protein that acts as a biological brake on skeletal muscle growth, and follistatin is the body's own myostatin blocker. FLGR-242 is a modified FST-344 fragment engineered to fix the three problems that limited earlier follistatin compounds. First, it avoids the strong heparin binding that trapped older constructs in blood vessel walls, so it circulates freely and reaches skeletal muscle throughout the body rather than only near the injection site. Second, it binds myostatin preferentially while minimizing interaction with activins and bone morphogenetic proteins, which is what keeps it from disrupting other growth and endocrine pathways. Third, it carries an albumin binder that protects it from rapid clearance and keeps it near peak levels for roughly 19 days per injection. The growth it produces comes from existing muscle fibers getting larger, not from uncontrolled cell proliferation.

Benefits

- Selective myostatin (GDF-8) inhibition with minimal activin and BMP binding, leaving other growth-regulating systems intact
- Albumin binding holds levels near peak for about 19 days, allowing weekly or every-other-week dosing
- Systemic distribution reaches skeletal muscle body-wide rather than only near the injection site
- Reported increases in lean skeletal muscle mass, strength output, and muscle thickness
- Favorable body recomposition (lean mass gain alongside fat reduction)
- Lean mass preservation during caloric restriction, including alongside GLP-1 therapy
- Works through hypertrophy of existing fibers rather than new cell proliferation, which is the more favorable safety profile of the two
- Mechanistic relevance to age-related muscle loss and the metabolic consequences that follow it

Side Effects & Cautions

- SUBCUTANEOUS ONLY, and this is not a preference. The albumin binder expands in muscle tissue and causes two to three days of severe pain if injected intramuscularly, and nothing stops it once it happens. Abdomen, love handles, and back of the arm are subcutaneous sites. Hip and thigh are muscle.
- Injection-site reaction (mild redness, swelling, or tenderness) is the most commonly reported effect, especially on the first one or two injections. It reflects the albumin binder doing its job and typically resolves as the body adapts. Rotate sites, inject slowly, and stay in true subcutaneous fat.
- Mild water retention in the first few weeks, as rapidly building muscle tissue draws water into the muscle cells
- Fatigue if caloric intake and sleep do not keep up with the increased anabolic demand
- No published human clinical trials exist for this construct. The underlying follistatin and myostatin literature is substantial, but the data specific to FLGR-242 is preclinical and early user experience

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- The broader caution on this drug class: pharmaceutical myostatin inhibitor programs have repeatedly failed in phase 2 and phase 3 trials for lack of functional benefit despite producing measurable muscle growth. Bigger muscle has not reliably meant stronger or more functional muscle
- Tendon and connective tissue adaptation can lag behind rapid muscle growth, which is a theoretical injury risk during aggressive cycles
- Caution in active malignancy or a history of cancer, given the growth-signaling mechanism
- Not FDA-approved and sold for research use only
- Prohibited by WADA as a myostatin inhibitor; disqualifying for tested athletes

Best Disease Processes / Applications

Lean mass accrual and strength in training populations is the most common use. The more clinically interesting applications are lean mass preservation during aggressive caloric restriction, particularly alongside GLP-1/GIP therapy where muscle loss is a well-documented problem, and age-related muscle loss, where declining skeletal muscle drives insulin resistance, falls, and loss of independence. Also used during recovery phases where muscle has been lost to illness, injury, or prolonged immobilization. Because skeletal muscle is a primary site of glucose disposal, the metabolic rationale extends beyond body composition.

Dosing & Cycling

Reconstitution Cheat Sheet

Vial Size	Dosage	Units to Draw
5mg vial BAC: 1mL (100 units)	500mcg (0.5mg)	10 units
	1250mcg (1.25mg)	25 units
	2500mcg (2.5mg)	50 units
	5000mcg (5mg)	100 units
5mg vial BAC: 2mL (200 units)	500mcg (0.5mg)	20 units
	1250mcg (1.25mg)	50 units
	2500mcg (2.5mg)	100 units
10mg vial BAC: 1mL (100 units)	1250mcg (1.25mg)	12.5 units
	2500mcg (2.5mg)	25 units
	5000mcg (5mg)	50 units
	10000mcg (10mg)	100 units
10mg vial BAC: 2mL (200 units)	1250mcg (1.25mg)	25 units
	2500mcg (2.5mg)	50 units
	5000mcg (5mg)	100 units

Dosage and Timing

Format: Injectable (subcutaneous only)

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Common Dosages:

Entry: 1.25–2.5mg per week, as a single injection or split.

Standard: 2.5–5mg per week, once or twice weekly.

Advanced: 2.5–10mg per week, twice weekly, or a daily micro-dose of 0.5–1.5mg per day.

Men: weeks 1–12 at 2.5mg weekly or 5mg every two weeks. Weeks 13–24 at 5mg weekly, split as 2.5mg Tuesday and 2.5mg Friday. Optional weeks 25–36 at 10mg weekly maximum.

Women: starting dose 1.25mg weekly or 2.5mg every two weeks. Weeks 13–24 at 2.5mg weekly, split as 1.25mg Tuesday and 1.25mg Friday. Optional weeks 25–36 at 5mg weekly maximum.

Timing:

Time of day does not matter. Because follistatin stays near peak levels for roughly 19 days, the schedule is flexible: once every two weeks, weekly, three times weekly, or daily for advanced users. Start conservatively regardless of experience with other compounds, since this is most patients' first exposure to myostatin inhibition, and build gradually so gains are retained after coming off.

Injection Technique:

Subcutaneous fat only: abdomen (one to two inches from the navel), love handles, or back of the arm. Swab the site and let it dry fully. Pinch the skin, insert at a 45 degree angle, aspirate briefly, and inject slowly over 5 to 10 seconds. Withdraw, apply light pressure, and do not rub. Rotate sites every injection.

Alternative Protocols:

The full weekly dose can be taken as one injection or split across the week. Advanced users may dose every other day or daily, and early feedback from users dosing more frequently suggests faster results in both fat loss and muscle gain. Caloric intake should be adjusted upward as metabolism shifts, or fatigue and stalled progress follow.

Cycle Length

On-Cycle	12–24 weeks (up to 36 weeks in three phases)
Off-Cycle	6–12 weeks
Tapering	Not required

Why Cycle: Reset receptor sensitivity after extended myostatin suppression. Running 24 to 36 weeks on requires a 6 to 12 week break before starting a new cycle.

Pairs Well With

- MK-677, Ipamorelin, or CJC-1295 (growth hormone axis support alongside myostatin removal, which are different levers on the same outcome)
- BPC-157 and TB-500 (tendon and connective tissue support, which matters specifically because muscle size can outpace tendon adaptation during rapid gain)
- Tirzepatide, retatrutide, or semaglutide (lean mass preservation during a GLP-1 driven deficit is one of the strongest rationales for using this compound at all)
- IGF-1 LR3 (both are direct anabolic signals, so review the cautions on the IGF-1 LR3 entry before stacking; this combination compounds the risk profile of each)

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FOXO4-DRI

FOXO4-DRI is a senolytic peptide that causes senescent (non-functional, aging) cells to undergo apoptosis without harming healthy cells.

Uses: Anti-Aging and Longevity, Tissue Regeneration

Mechanism of Action

As cells age and accumulate damage, some stop dividing but refuse to die; these are "senescent" cells, and they sit in tissue leaking inflammatory signals. They survive because a protein called FOXO4 holds p53 (the cell's self-destruct switch) hostage inside the nucleus. FOXO4-DRI is a mirror-image peptide built to break that grip, freeing p53 so the senescent cell finally dies, while healthy cells are left alone.

Benefits

- Selective senolytic: targets senescent cells rather than healthy dividing cells
- In aged mice, restored fur density, kidney function, and exercise capacity
- Theoretically reduces the chronic inflammatory burden senescent cells create

Side Effects & Cautions

- This is the least human-validated compound in this guide; the evidence is a small number of mouse studies and essentially no human data
- Freeing p53 systemically is a serious intervention, and the consequences of doing it in humans are unknown
- Circulating dosing protocols are extrapolated from mouse studies, not derived from human research
- Should not be used by anyone with an active malignancy or a history of cancer without oncology input
- Cost is very high relative to the strength of the evidence

Best Disease Processes / Applications

Used in longevity-focused protocols as an intermittent senolytic "clearing" cycle rather than continuous therapy. The honest framing: this is experimental, and the gap between the mouse data and human application is wider here than anywhere else in this guide.

Dosing & Cycling

Reconstitution Cheat Sheet

Vial Size	Dosage	Units to Draw
10mg vial BAC: 1mL (100 units)	1000mcg (1mg)	10 units
	2000mcg (2mg)	20 units
	3000mcg (3mg)	30 units
	4000mcg (4mg)	40 units
	5000mcg (5mg)	50 units
14mg vial BAC: 1.4mL (140 units)	1000mcg (1mg)	10 units

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Vial Size	Dosage	Units to Draw
	2000mcg (2mg)	20 units
	3000mcg (3mg)	30 units
	4000mcg (4mg)	40 units
	5000mcg (5mg)	50 units

Dosage and Timing

Format: Injectable

Common Dosages:

No standardized dosage range exists. Common protocols include:

3mg every other day for 6 days, repeated 1–3x yearly.

300mcg–1mg subcutaneously every other day, 1 week on, 1 week off for 1 month total.

2mg daily for 7 days.

Timing:

Timing does not matter significantly. Morning is a common preference.

Alternative Protocols:

All alternative protocols are listed above. Note that this compound has no human clinical data; everything is experimental.

Cycle Length

On-Cycle	5–10 days
Off-Cycle	6+ months (as needed)
Tapering	Not required

Why Cycle: Occasional dosing is sufficient. Reduces risk of off-target effects.

Pairs Well With

- Generally used alone, in short senolytic pulses, rather than stacked
- NAD+ and Epitalon (longevity protocols targeting different pathways, typically run in separate blocks rather than simultaneously)

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GHK-Cu

GHK-Cu is a copper-binding peptide that can promote collagen production and tissue remodeling.

Uses: Collagen and Skin Repair, Hair Growth

Mechanism of Action

GHK-Cu is a small protein that naturally binds to copper in the body, and its levels drop as we age. It tells skin cells to make more collagen and elastin, the proteins that keep skin firm and stretchy. It also switches on the body's antioxidant defenses, which fight off cell damage.

Benefits

- Stimulates collagen and elastin production (skin firmness, wound healing)
- Antioxidant and anti-inflammatory activity
- Promotes hair follicle health and may support hair density
- Accelerates wound healing and reduces scar formation
- May improve skin thickness and reduce fine lines with topical use

Side Effects & Cautions

- Skin irritation with topical or high-concentration use
- Injection-site reactions with subcutaneous dosing; copper is the main driver of the sting, which is why some patients prefer GHK base
- Copper accumulation is a theoretical concern with excessive or prolonged high-dose use
- Should be used cautiously in Wilson's disease or other copper-handling disorders

Best Disease Processes / Applications

Subcutaneous GHK-Cu is best suited for hair thinning and general connective-tissue repair, such as recovery after an injury or surgery. Topical GHK-Cu is best suited for cosmetic dermatology, including anti-aging: in practice, this is primarily used for psoriasis and eczema.

Dosing & Cycling

Reconstitution Cheat Sheet

Vial Size	Dosage	Units to Draw
50mg vial (with 3mL BAC) BAC: 3mL BAC water	1000mcg (1mg)	6 units
	2000mcg (2mg)	12 units
	2500mcg (2.5mg)	15 units
50mg vial (with 10mL BAC) BAC: 10mL BAC water (preferred)	1000mcg (1mg)	20 units
	2000mcg (2mg)	40 units
	2500mcg (2.5mg)	50 units
100mg vial (with 3mL BAC) BAC: 3mL BAC water	1000mcg (1mg)	3 units

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Vial Size	Dosage	Units to Draw
	2000mcg (2mg)	6 units
	2500mcg (2.5mg)	7.5 units
100mg vial (with 10mL BAC) BAC: 10mL BAC water (preferred)	1000mcg (1mg)	10 units
	2000mcg (2mg)	20 units
	2500mcg (2.5mg)	25 units

Note: The PREFERRED method is to get an empty 10mL vial to transfer into. Reconstitute with 2–3mL until fully dissolved, transfer into the sterile 10mL vial, then add more BAC water for a total of 10mL. This reduces the burning sensation and makes it easier to draw accurate doses.

Dosage and Timing

Format: Injectable, Oral, Topical, or Intranasal

Common Dosages:

Injectable, Oral, Intranasal: 1–2mg daily for 4–12 weeks on, followed by 4–8 weeks off. Preferred protocol: 2mg daily for 4–8 weeks.

Topical: 1% for facial use, 2% for body application, 3% for promoting hair growth.

Timing:

Injectable, Oral, Topical: Once daily. Time of day does not matter.

Topical: Apply after cleansing in the morning and/or night. Allow it to fully absorb before applying other products.

Alternative Protocols:

Can be done 5 days on, 2 days off or every other day.

Cycle Length

On-Cycle	4–8 weeks
Off-Cycle	2–8 weeks
Tapering	Not required

Why Cycle: Prevent copper buildup. Cost effectiveness. Allow benefits to continue in the off-cycle.

Pairs Well With

- BPC-157 and TB-500 (rounds out a full soft-tissue and skin repair stack)
- SNAP-8 (a topical peptide that supports skin elasticity and firmness: commonly combined with topical GHK-Cu)
- NAD+ (both target cellular aging pathways from different angles)

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GHK Base (no Copper)

GHK Base is the same tripeptide as GHK-Cu but without the copper ion. It can promote collagen production and tissue remodeling.

Uses: Collagen and Skin Repair, Hair Growth

Mechanism of Action

GHK base is the same three-amino-acid peptide as GHK-Cu, just supplied without copper already attached. GHK has a very high natural affinity for copper and will recruit it from the body's own stores once administered. The signaling effects (collagen, elastin, and antioxidant gene expression), are the same; what changes is that you are not adding copper along with the peptide.

Benefits

- Same collagen, elastin, and antioxidant signaling profile as GHK-Cu
- Does not add to the body's copper load, which matters in patients with elevated copper or copper sensitivity
- Often better tolerated at the injection site, since copper is the main cause of GHK-Cu injection sting
- Allows the peptide to work with the patient's existing copper status rather than adding to it

Side Effects & Cautions

- Because it recruits copper from the body, it does not avoid copper biology entirely; it redistributes it rather than eliminating the issue
- Less anecdotal and clinical use data than GHK-Cu, which dominates the literature
- Same potential for skin irritation with topical use
- Still warrants caution in Wilson's disease or other copper-handling disorders

Best Disease Processes / Applications

Patients who want GHK's collagen and repair signaling but have elevated copper, are sensitive to copper, or find GHK-Cu injections too painful to stay consistent with. Otherwise the applications mirror GHK-Cu: connective-tissue repair, hair density, skin quality, and wound healing.

Dosing & Cycling

Reconstitution Cheat Sheet

Vial Size	Dosage	Units to Draw
50mg vial (with 3mL BAC) BAC: 3mL BAC water	1000mcg (1mg)	6 units
	2000mcg (2mg)	12 units
	2500mcg (2.5mg)	15 units
50mg vial (with 10mL BAC) BAC: 10mL BAC water (preferred)	1000mcg (1mg)	20 units
	2000mcg (2mg)	40 units

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Vial Size	Dosage	Units to Draw
	2500mcg (2.5mg)	50 units
100mg vial (with 3mL BAC) BAC: 3mL BAC water	1000mcg (1mg)	3 units
	2000mcg (2mg)	6 units
	2500mcg (2.5mg)	7.5 units
100mg vial (with 10mL BAC) BAC: 10mL BAC water (preferred)	1000mcg (1mg)	10 units
	2000mcg (2mg)	20 units
	2500mcg (2.5mg)	25 units

Note: The PREFERRED method is to get an empty 10mL vial to transfer into. Reconstitute with 2–3mL until fully dissolved, transfer into the sterile 10mL vial, then add more BAC water for a total of 10mL. Since this is GHK Base (no Cu), it will not cause the burning associated with GHK-Cu, but maintaining the same reconstitution method with higher BAC water volume makes it easier to draw from high-mg vials.

Dosage and Timing

Format: Injectable, Oral, Topical, or Intranasal

Common Dosages:

Injectable, Oral, Intranasal: 1–2mg daily for 4–12 weeks on, followed by 4–8 weeks off. Preferred protocol: 2mg daily for 4–8 weeks.

Timing:

Injectable, Oral, Topical: Once daily. Time of day does not matter.

Alternative Protocols:

Can be done 5 days on, 2 days off or every other day.

Cycle Length

On-Cycle	4–8 weeks
Off-Cycle	2–8 weeks
Tapering	Not required

Why Cycle: Cost effectiveness. Allow benefits to continue in the off-cycle.

Pairs Well With

- BPC-157 and TB-500 (soft-tissue and skin repair stack)
- SNAP-8 (topical skin elasticity and firmness)
- Zinc status should be assessed alongside copper, since the two compete: relevant when manipulating copper in either direction

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GHRP-2

GHRP-2 is a growth hormone releasing peptide that stimulates growth hormone by binding to the ghrelin receptor.

Uses: Growth Hormone Pulse, Muscle Growth and Recovery, Anti-Aging, Appetite Stimulation

Mechanism of Action

GHRP-2 binds the ghrelin receptor in the pituitary, the same switch the hunger hormone uses, and triggers a pulse of growth hormone. It is more potent at releasing GH than GHRP-6, but it also nudges cortisol and prolactin upward, which is the trade-off compared with cleaner modern secretagogues like ipamorelin.

Benefits

- Strong, reliable GH pulse
- Moderate appetite stimulation: useful when weight gain is the goal
- Synergistic with GHRH-class agents in the standard GHRH + GHRP combination
- Inexpensive relative to newer secretagogues

Side Effects & Cautions

- Raises cortisol and prolactin, particularly at higher doses: the main reason ipamorelin largely replaced it in practice
- Appetite stimulation is unwanted in fat-loss patients
- Water retention, tingling, and joint stiffness (class effects of elevated GH/IGF-1)
- Receptor desensitization with continuous high-dose use
- Elevated IGF-1 requires periodic lab monitoring; theoretical malignancy surveillance concerns with chronic use

Best Disease Processes / Applications

Growth hormone axis support where appetite stimulation is a benefit rather than a problem: underweight patients, patients struggling to eat enough, and recovery or mass-gain phases. Largely a legacy option now that ipamorelin offers a cleaner profile.

Dosing & Cycling

Reconstitution Cheat Sheet

Vial Size	Dosage	Units to Draw
5mg vial BAC: 2mL (200 units)	100mcg (0.1mg)	4 units
	150mcg (0.15mg)	6 units
	200mcg (0.2mg)	8 units
	250mcg (0.25mg)	10 units
	300mcg (0.3mg)	12 units

Dosage and Timing

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Format: Injectable

Common Dosages:

Injectable: 100–300mcg per day, can be split into 2–3x per day.

Timing:

Best taken in a fasted state (at least 60–90 minutes away from food). If once daily, before bed is best. If splitting, morning and night or morning, midday, and night. Can be done 5–7 days weekly.

Alternative Protocols:

Standard protocol is 5–7 days per week. No significant alternative protocols.

Cycle Length

On-Cycle	8–16 weeks
Off-Cycle	4–8 weeks
Tapering	Not required

Why Cycle: Prevent receptor desensitization. Maintain GH response over time.

Pairs Well With

- Mod-GRF (1-29) or CJC-1295 (GHRH + GHRP is the standard combination: one of each class)
- Not combined with ipamorelin, GHRP-6, or hexarelin; all act on the same receptor, so combining is redundant and stacks the side effects
- BPC-157/TB-500 (recovery-focused stacking)

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GHRP-6

GHRP-6 is a growth hormone releasing peptide that stimulates growth hormone by binding to the ghrelin receptor.

Uses: Growth Hormone Pulse, Muscle Growth and Recovery, Anti-Aging, Appetite Stimulation

Mechanism of Action

GHRP-6 also works on the ghrelin receptor to trigger a growth hormone pulse, but it is by far the most powerful appetite stimulant in this class; hunger after an injection can be dramatic and typically arrives within 20 to 30 minutes. It raises cortisol and prolactin as well, and gram-for-gram it is less potent at releasing GH than GHRP-2.

Benefits

- Strong appetite stimulation: usually the primary reason it is chosen
- Produces a growth hormone pulse alongside the appetite effect
- Gut-protective effects reported through ghrelin signaling
- Inexpensive

Side Effects & Cautions

- The hunger can be overwhelming and will derail a fat-loss protocol
- Raises cortisol and prolactin
- Water retention, tingling, and joint stiffness
- Receptor desensitization with continuous high-dose use
- Elevated IGF-1 requires periodic lab monitoring

Best Disease Processes / Applications

Patients who need to eat more: cachexia, poor appetite, recovery from illness or surgery, and hardgainer mass phases. Not appropriate for fat loss or for any patient whose appetite is already the problem.

Dosing & Cycling

Reconstitution Cheat Sheet

Vial Size	Dosage	Units to Draw
5mg vial BAC: 2mL (200 units)	100mcg (0.1mg)	4 units
	150mcg (0.15mg)	6 units
	200mcg (0.2mg)	8 units
	250mcg (0.25mg)	10 units
	300mcg (0.3mg)	12 units

Dosage and Timing

Format: Injectable

Common Dosages:

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Injectable: 100–300mcg per day, can be split into 2–3x per day.

Timing:

Best taken in a fasted state (at least 60–90 minutes away from food). If once daily, before bed is best. If splitting, morning and night or morning, midday, and night. Can be done 5–7 days weekly.

Alternative Protocols:

Standard protocol is 5–7 days per week. No significant alternative protocols.

Cycle Length

On-Cycle	8–16 weeks
Off-Cycle	4–8 weeks
Tapering	Not required

Why Cycle: Prevent receptor desensitization. Maintain GH response over time.

Pairs Well With

- Mod-GRF (1-29) or CJC-1295 (the standard GHRH + GHRP combination)
- Not combined with other GHRP-class agents (ipamorelin, GHRP-2, hexarelin): same receptor, redundant and additive for side effects
- BPC-157 (gut-focused protocols, where the ghrelin-mediated gastroprotective effect is complementary)

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Glutathione

Glutathione is a tripeptide that supports detoxification, reduces oxidative stress, and can help with immune regulation.

Uses: Antioxidant Support, Liver Detoxification, Immune System Regulation, Skin Brightening

Mechanism of Action

Glutathione is a three-amino-acid molecule your body makes in every cell, and it is the body's primary internal antioxidant. It works by donating an electron to neutralize free radicals, then being recycled back to its active form. It is also the workhorse of phase II liver detoxification, binding to toxins and drug metabolites so they can be excreted. Levels fall with age, illness, oxidative stress, and chronic alcohol use.

Benefits

- Primary intracellular antioxidant: neutralizes oxidative stress at the source
- Central to phase II liver detoxification and toxin clearance
- Supports immune cell function, particularly lymphocyte activity
- Inhibits tyrosinase, which is the basis for its skin-brightening reputation
- Recycles and regenerates other antioxidants such as vitamins C and E

Side Effects & Cautions

- Oral glutathione is poorly absorbed; much of it is broken down in the gut, which is why injectable and liposomal forms are preferred
- FDA has warned against IV glutathione marketed for skin lightening; serious adverse events including Stevens-Johnson syndrome and thyroid dysfunction have been reported with unregulated IV skin-lightening products
- Injection-site irritation; a sulfur smell or taste is common and normal
- Rare hypersensitivity reactions
- Sulfur sensitivity can cause GI upset or headache in some patients

Best Disease Processes / Applications

Oxidative stress and antioxidant support, liver support during detoxification or in fatty liver disease, immune support during or after significant illness, and adjunctive use in chronic inflammatory conditions and chemical or heavy-metal exposure. Skin brightening is a common cosmetic use, with the caution above.

Dosing & Cycling

Reconstitution Cheat Sheet

Vial Size	Dosage	Units to Draw
600mg vial (with 3mL BAC) BAC: 3mL BAC water	100mg	50 units
	200mg	100 units
	250mg	125 units

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Vial Size	Dosage	Units to Draw
	300mg	150 units
1500mg vial (with 7.5mL BAC) BAC: 7.5mL BAC water	100mg	50 units
	200mg	100 units
	250mg	125 units
	300mg	150 units

Note: Glutathione typically comes in a larger vial (10mL or 20mL). If doing higher doses like 200mg+, reconstitute with 7.5mL of BAC water to reduce the volume needed per dose.

Dosage and Timing

Format: Injectable (IM or SQ), Oral, or Intranasal

Common Dosages:

Injectable: Typically 100–200mg per injection for a total of 600–800mg/week. Can be dosed higher depending on the goal.

Oral: 250–500mg daily.

Intranasal: 100–200mg per dose, total of 600–800mg/week.

Timing:

Injectable and Intranasal: 2–3x weekly. Can be used daily if needed; for longer-term use, 2–3x weekly is best.

Oral: Taken daily.

Alternative Protocols:

Biggest variance is in frequency and cycle length. For skin lightening, longer-term use is most beneficial as it takes time.

Cycle Length

On-Cycle	2–12 weeks (can be used longer term)
Off-Cycle	2–4 weeks
Tapering	Not required

Why Cycle: Cost effectiveness. Not always necessary depending on goals.

Pairs Well With

- NAD+ (both are core cellular-maintenance molecules; oxidative stress and mitochondrial energy are closely linked)
- Vitamin C (regenerates glutathione and is frequently co-administered)
- SS-31 and MOTS-c (mitochondrial protection: glutathione handles the oxidative byproducts these compounds help reduce)

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Hexarelin

Hexarelin is a GHRP that stimulates growth hormone release.

Uses: Muscle Growth and Strength, Fat Loss, Sleep Improvement

Mechanism of Action

Hexarelin is the most potent growth hormone releasing peptide of the GHRP group; it produces the largest GH pulse per microgram. It also binds CD36, a separate receptor found on heart tissue, which is the basis for the cardioprotective effects seen in preclinical studies. The trade-off is that it raises cortisol and prolactin more than any other agent in this class, and the pituitary desensitizes to it faster.

Benefits

- The strongest GH release of the GHRP class
- Cardioprotective signaling through CD36, independent of growth hormone
- Supports lean mass, strength, and recovery
- Improved sleep quality reported by users

Side Effects & Cautions

- Raises cortisol and prolactin more than GHRP-2 or ipamorelin: the most significant drawback
- Desensitization develops faster than with other secretagogues, which is why cycles are kept short and doses conservative
- Water retention, joint stiffness, and tingling
- Elevated IGF-1 requires periodic lab monitoring
- Prolactin elevation can affect libido and mood if it goes unaddressed

Best Disease Processes / Applications

Short, defined blocks for strength and mass where maximum GH release is the goal and the patient accepts the cortisol/prolactin trade-off. The CD36 cardioprotective signal has drawn research interest in cardiac contexts, though that remains preclinical.

Dosing & Cycling

Reconstitution Cheat Sheet

Vial Size	Dosage	Units to Draw
5mg vial BAC: 2mL (200 units)	100mcg (0.1mg)	4 units
	150mcg (0.15mg)	6 units
	200mcg (0.2mg)	8 units
	250mcg (0.25mg)	10 units
	300mcg (0.3mg)	12 units

Dosage and Timing

Format: Injectable

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Common Dosages:

Injectable: 200–300mcg, 5–7x weekly.

Timing:

Best taken in a fasted state. Can be split into multiple injections per day, up to 3x daily.

Alternative Protocols:

The only variation is in frequency (5–7 days per week, with optional multi-dose splitting).

Cycle Length

On-Cycle	6–16 weeks
Off-Cycle	4–8 weeks
Tapering	Not required

Why Cycle: Minimize receptor desensitization. Preserve GH responsiveness.

Pairs Well With

- Mod-GRF (1-29) or CJC-1295 (GHRH + GHRP combination)
- Not combined with ipamorelin, GHRP-2, or GHRP-6: same receptor class
- BPC-157/TB-500 (recovery support during a strength block)

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Humanin

Humanin is a mitochondrial-derived peptide with a variety of potential benefits.

Uses: Longevity, Cardiovascular Support, Neuroprotection

Mechanism of Action

Humanin is a mitochondrial-derived peptide; it is encoded by DNA inside your mitochondria rather than in the cell nucleus, the same unusual origin as MOTS-c. It acts as a cell-survival signal: when cells are under severe stress, humanin helps block the self-destruct pathway, protecting neurons, heart muscle, and blood vessel lining from dying. Levels decline with age, and higher circulating levels have been observed in long-lived populations.

Benefits

- Cytoprotective: blocks apoptosis in neurons, cardiomyocytes, and endothelial cells under stress
- Studied preclinically in Alzheimer's models for protection against amyloid toxicity
- Cardiovascular protective signal in ischemia-reperfusion models
- Associated with longevity in animal models and in human centenarian studies
- Improves insulin sensitivity in preclinical work

Side Effects & Cautions

- Human trial data is essentially absent; the evidence base is preclinical and observational
- Injection-site reactions
- Blocking apoptosis is a double-edged mechanism; the long-term implications of doing so systemically are unknown
- Dosing protocols in circulation are extrapolated rather than trial-derived
- Not FDA-approved for any indication

Best Disease Processes / Applications

Longevity protocols, neuroprotection in patients concerned about cognitive decline, and cardiovascular support; all with the understanding that the human evidence is not yet there. Most coherently used as part of a mitochondrial-support strategy rather than as a standalone intervention.

Dosing & Cycling

Reconstitution Cheat Sheet

Vial Size	Dosage	Units to Draw
10mg vial BAC: 2mL (200 units)	250mcg (0.25mg)	5 units
	500mcg (0.5mg)	10 units
	1000mcg (1mg)	20 units

Dosage and Timing

Format: Injectable

Common Dosages:

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Injectable: 0.25–1mg, 5–7x weekly.

Timing:

Time of day does not matter. Some may divide dosage into 2x daily.

Alternative Protocols:

Very limited data and anecdotal usage. No established alternative protocols.

Cycle Length

On-Cycle	Up to 4 weeks
Off-Cycle	4–8 weeks
Tapering	Not required

Why Cycle: Limited human data. Mitigating potential risks.

Pairs Well With

- MOTS-c (the other well-characterized mitochondrial-derived peptide: complementary, different targets)
- SS-31 and NAD⁺ (completes a mitochondrial-support approach covering membrane integrity, energy substrate, and cell survival)
- Epitalon (longevity-focused protocols)

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IGF-1 LR3

IGF-1 LR3 is a long-acting analog of insulin-like growth factor 1 that promotes muscle growth by increasing cell differentiation and protein synthesis.

Uses: Muscle Growth, Fat Loss, Recovery

Mechanism of Action

IGF-1 is the growth factor your liver produces in response to growth hormone; it is the molecule that actually does most of the work people attribute to GH. LR3 is a modified version with an extra 13 amino acids and one substitution that stop it from being captured by the binding proteins that normally hold IGF-1 inactive in the blood. The result is a molecule that stays free and active roughly 20 to 30 hours instead of minutes, and is substantially more potent than natural IGF-1.

Benefits

- Directly stimulates muscle protein synthesis and satellite cell activity
- Promotes hyperplasia (new muscle cell formation) in preclinical models, not just hypertrophy
- Improves nutrient partitioning and glucose uptake into muscle
- Supports connective tissue and recovery

Side Effects & Cautions

- Hypoglycemia is the acute risk; IGF-1 has insulin-like activity, and symptomatic low blood sugar can occur, particularly at higher doses or when dosed fasted
- This is the most significant risk profile in this guide alongside FOXO4-DRI: IGF-1 is a growth signal, and unregulated elevation raises real concerns about tissue proliferation and cancer risk
- Organ growth (including cardiac and visceral tissue) with prolonged high-dose use
- Absolutely contraindicated in active malignancy or a history of cancer without oncology clearance
- Bypasses the body's own feedback control entirely: unlike secretagogues, there is no natural brake
- Prohibited by WADA; disqualifying for tested athletes

Best Disease Processes / Applications

Used almost exclusively in performance and mass-gain contexts rather than clinical ones. Where there is a legitimate clinical rationale it is in severe IGF-1 deficiency, and that is a specialist setting with prescription rhIGF-1, not this compound. Given the risk profile, this is a compound where the burden of justification should be high and monitoring should be routine.

Dosing & Cycling

Reconstitution Cheat Sheet

Vial Size	Dosage	Units to Draw
1mg vial BAC: 3mL (300 units) BAC water (if using within 1–2	20mcg (0.02mg)	6 units

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Vial Size	Dosage	Units to Draw
weeks) or acetic acid (if using longer than 2 weeks)		
	30mcg (0.03mg)	9 units
	40mcg (0.04mg)	12 units
	50mcg (0.05mg)	15 units
	60mcg (0.06mg)	18 units
	80mcg (0.08mg)	24 units
	100mcg (0.1mg)	30 units

Note: Understand potential adverse effects of this compound, especially at high dosage amounts.

Dosage and Timing

Format: Injectable

Common Dosages:

Injectable: 20–100mcg per day. To mitigate potential risks, stay within the 20–50mcg range and use in short cycles.

Timing:

Typically taken around workout time. If not training, morning is fine.

Alternative Protocols:

Some inject into the muscle being trained that day for localized growth. Not necessary.

Cycle Length

On-Cycle	4–6 weeks
Off-Cycle	4–8 weeks
Tapering	Not required

Why Cycle: Reduce risk of hypoglycemia. Avoid suppression of natural IGF-1 production.

Pairs Well With

- GH secretagogues (CJC-1295/Ipamorelin) are the more conservative alternative; they raise IGF-1 through the body's own regulated pathway rather than bypassing it
- BPC-157/TB-500 (connective tissue support, since rapid muscle gain outpaces tendon adaptation)
- Careful glucose monitoring and carbohydrate availability matter more than any peptide pairing here

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Ipamorelin

Ipamorelin is a GHRP that stimulates growth hormone release by binding to the ghrelin receptor.

Uses: Muscle Growth and Recovery, Fat Loss, Anti-Aging and Longevity, Sleep Support

Mechanism of Action

Ipamorelin attaches to the same receptor in the pituitary gland that the hunger hormone ghrelin uses, which triggers a release of growth hormone. What makes it stand out is that it does this without raising stress hormones like cortisol or other hormones like prolactin, which older growth-hormone-boosting peptides tended to do.

Benefits

- Clean pulsatile GH release with minimal off-target hormone effects
- Supports lean mass, recovery, and sleep quality
- May improve skin and connective tissue quality over time
- Low reported appetite stimulation compared to older secretagogues

Side Effects & Cautions

- Injection-site reactions
- Water retention and mild joint stiffness (class effect of elevated GH/IGF-1)
- Headache in some users
- Increased hunger, though less than with GHRP-2 or GHRP-6
- Theoretical IGF-1 and malignancy surveillance concerns with chronic use

Best Disease Processes / Applications

Sleep and recovery optimization, lean body composition support, and as the GHRP half of a combination protocol for patients seeking growth-hormone-axis support with minimal side-effect burden. It is the default first choice in this class for most patients because of its clean profile.

Dosing & Cycling

Reconstitution Cheat Sheet

Vial Size	Dosage	Units to Draw
5mg vial BAC: 2mL (200 units)	100mcg (0.1mg)	4 units
	150mcg (0.15mg)	6 units
	200mcg (0.2mg)	8 units
	250mcg (0.25mg)	10 units
10mg vial BAC: 3mL (300 units)	300mcg (0.3mg)	12 units
	150mcg (0.15mg)	4.5 units
	200mcg (0.2mg)	6 units
	250mcg (0.25mg)	7.5 units
	300mcg (0.3mg)	9 units

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Dosage and Timing

Format: Injectable

Common Dosages:

Injectable: 100–300mcg per day, 5 days on, 2 days off.

Timing:

Best taken in a fasted state.

Can be split into multiple doses per day (e.g., 100mcg morning, 100mcg night or 150mcg morning, 150mcg night).

Alternative Protocols:

Can be taken daily or 6 days on, 1 day off.

Cycle Length

On-Cycle	8–16 weeks
Off-Cycle	4–8 weeks
Tapering	Not required

Why Cycle: Prevent receptor downregulation. Maintain GH pulse sensitivity.

Pairs Well With

- CJC-1295 (the classic combination; CJC provides the sustained GHRH signal, ipamorelin provides the clean GHRP pulse)
- Tesamorelin (less common combination; typically only one GHRH-class agent is used at a time)
- BPC-157/TB-500 (recovery-focused stacking)
- Tirzepatide or retatrutide (the GLP-1 agonist helps blunt the increased hunger that ipamorelin can cause, and helps preserve lean mass in a deficit)

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Alpha-Klotho (α -Klotho LR)

Alpha-Klotho is an endogenous longevity protein that regulates mitochondrial function, endothelial health, mineral balance, and cognition; alphaKlothoLR is an albumin-bound recombinant form engineered for an extended half-life.

Uses: Longevity, Kidney and Vascular Health, Cognitive Function, Muscle Preservation, Metabolic Rate

Mechanism of Action

Alpha-Klotho is a protein your body produces mostly in the kidneys and brain, and its levels fall steadily from roughly age 35 onward. It works as an upstream regulator rather than by hitting one receptor. It serves as the required co-receptor for FGF23, which is how the body controls phosphate and vitamin D. It supports mitochondrial density, meaning new mitochondria, rather than only making existing ones work harder. It helps endothelial cells produce nitric oxide, which keeps blood vessels flexible and protects against calcification. And it switches on antioxidant defenses through the Nrf2 and FoxO pathways. The catch with native soluble Klotho is that it only lasts a few hours in circulation. alphaKlothoLR attaches a small albumin-binding peptide to a truncated Klotho, so the molecule rides on serum albumin, which itself has a half-life of about 19 days in humans. That stretches exposure from hours to days while keeping FGF23 binding affinity close to native.

Benefits

- Acts upstream across several aging-sensitive systems at once rather than on a single receptor or symptom
- Supports mitochondrial biogenesis (building new mitochondria) rather than only improving the efficiency of existing ones, which is what separates it from the other mitochondrial compounds in this guide
- Regulates phosphate and vitamin D through its FGF23 co-receptor role, the pathway that protects against ectopic vascular calcification
- Supports endothelial nitric oxide production, vascular elasticity, and arterial compliance
- Activates Nrf2-mediated antioxidant defenses and modulates FoxO stress-resistance pathways
- Renal protective signaling; the kidney is both the primary source of circulating Klotho and a primary target of its effects
- Associated with preserved cognitive function and synaptic plasticity in aging populations
- Low plasma Klotho is associated with reduced grip strength and poorer physical performance in human cohort data (InCHIANTI, Semba 2011)
- Klotho-overexpressing mice show meaningful lifespan extension; Klotho-deficient mice show an accelerated aging phenotype, which establishes the causal link rather than just the correlation
- Albumin binding extends half-life from roughly 7.5 hours to as long as 19 days, so dosing is every two to four weeks rather than daily
- Unlike most compounds in this guide, circulating levels can be measured directly by ELISA, so response is verifiable rather than inferred

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Side Effects & Cautions

- DOSE UNITS ARE THE SINGLE LARGEST RISK WITH THIS COMPOUND. The protocol dose is micrograms, not milligrams. 1mg equals 1,000mcg, so a unit or decimal error delivers roughly 100 times the intended dose. Triple-check every calculation before drawing.
- More is not better here, and this is the clearest example of that principle in this guide. Supraphysiological Klotho reportedly produces the opposite of its benefits: vascular calcification, hyperphosphatemia, hypophosphatemia, hypokalemia, kidney damage, cardiac arrhythmia, and endothelial dysfunction. The body produces only about 4mcg per day natively.
- FGF23 co-receptor activity increases phosphate and potassium excretion. Magnesium, potassium, and sodium support is part of the protocol rather than optional, and electrolytes should be monitored throughout.
- Injection-site reactions (mild erythema, swelling, or tenderness), typically self-resolving with site rotation
- Elevated energy at night, since increased mitochondrial biogenesis can leave patients feeling wired. Target seven to eight hours of sleep and use melatonin if needed.
- A warming or burning sensation reflects basal metabolic rate rising and is expected. Increase caloric intake if losing muscle.
- No completed human clinical trials exist. Safety data comes from preclinical models and in vitro characterization; formal human safety and toxicology studies have not been published.
- Anti-drug antibody formation has not been characterized for this construct. Claims that Klotho does not provoke an immune response are not established, and immunogenicity is a genuine theoretical risk with any repeatedly administered recombinant protein.
- Whether exogenous Klotho suppresses the body's own production is still unknown. It is assumed not to, on the reasoning that Klotho is a circulating protein rather than a classical hormone, but that has not been confirmed in humans.
- Chronic kidney disease requires specialist involvement. The FGF23-Klotho axis is already disrupted in CKD, so exogenous Klotho can produce unpredictable phosphate and mineral effects in exactly the population that appears to need it most.
- Active malignancy requires careful consideration. Klotho acts as a tumor suppressor in some cancers, including breast, pancreatic, and non-small cell lung, but its role in other malignancies is not characterized.
- Do not combine with drugs that modulate FGF23 or PTH signaling, such as burosumab or active vitamin D analogs, without specialist oversight.
- No safety data in pregnancy, lactation, or pediatric populations.
- Cold chain integrity matters more than with the small peptides in this guide. This is a recombinant protein and it degrades with heat and repeated freeze-thaw cycles.

Best Disease Processes / Applications

Longevity protocols are the primary use, and this is the most upstream compound in that category. The applications with the strongest supporting rationale are kidney health and chronic kidney disease (with specialist oversight, given the mineral risks), vascular stiffness and arterial calcification, age-related cognitive decline, and sarcopenia or age-related loss of muscle and strength. Patients with declining renal function, diabetes, or cardiovascular disease show accelerated Klotho decline, which is where the deficiency rationale is strongest and where older patients tend to report the clearest effects. Because serum Klotho is measurable by ELISA,

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baseline and follow-up levels can be tracked: roughly 930 pg/mL is typical at ages 18 to 35, around 800 pg/mL at 35 to 55, and around 610 pg/mL at 55 to 65.

Dosing & Cycling

Reconstitution Cheat Sheet

Vial Size	Dosage	Units to Draw
10mcg vial BAC: 1mL (100 units)	2.5mcg	25 units
	5mcg	50 units
10mcg vial BAC: 2mL (200 units)	2.5mcg	50 units
	5mcg	100 units

Dosage and Timing

Format: Injectable (subcutaneous preferred; intramuscular acceptable)

Common Dosages:

Induction (months 0 to 6): 1mcg every 2 weeks.

Maintenance (ongoing after month 6): 1mcg every 4 weeks.

Do not exceed 1 mcg every two weeks. This is a ceiling, not a starting point, and exceeding it is the documented route to the harms listed above rather than to better results.

Source conflict worth knowing: the product protocol specifies 1mcg with an explicit ceiling, while the accompanying research writeup lists a research dose range of 2mcg per administration. That is a difference of roughly 100-fold. This entry follows the 1mcg protocol, which is the conservative reading and the one the supplier's own safety warning supports. Verify the intended dose against your vial and source before use.

Timing:

No time-of-day requirement. Albumin binding gives a half-life of up to 19 days, so the schedule is every two to four weeks rather than daily or weekly. Subcutaneous is preferred for ease of administration; intramuscular is acceptable and may give slightly faster onset.

Expected Timeline:

Week 1: endothelial changes in otherwise healthy adults, often noticed as enhanced sensitivity and improved blood flow. Weeks 2 to 4: energy and endurance gains, often with a warming sensation as mitochondrial biogenesis activates, plus improvements in mental clarity, focus, and libido. Weeks 4 to 8: patients with renal issues, higher age, or metabolic disease tend to see the largest improvements, and often feel effects sooner because their baseline Klotho is lower.

Alternative Protocols:

Magnesium, potassium, and sodium support should run throughout to offset FGF23-driven mineral excretion. Useful baseline and follow-up labs: serum phosphate, calcium, FGF23, PTH, 25-OH and 1,25-dihydroxy vitamin D, a kidney function panel, inflammatory markers (CRP and IL-6), and serum Klotho by ELISA. Functional measures such as grip strength, a six-minute walk test, and cognitive assessment give useful endpoints alongside the labs.

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Cycle Length

On-Cycle	Continuous (induction months 0–6, then ongoing maintenance)
Off-Cycle	None required
Tapering	Not required

Why Cycle: Cycling is not required with this compound. Exogenous Klotho is not thought to suppress the body's own production, though that has not been confirmed in humans. Levels return to baseline after stopping, so plan for long-term use rather than a short block, and do not stop abruptly without a plan.

Pairs Well With

- NAD⁺, MOTS-c, and SS-31 (a genuine division of labor rather than overlap: Klotho supports building new mitochondria while these three support the function and efficiency of the ones already there)
- Magnesium, potassium, and sodium (required rather than optional, to offset the mineral excretion FGF23 co-receptor activity drives)
- FLGR-242 (longevity and body composition: metabolic rate support alongside skeletal muscle gain)
- GLP-1/GIP agents (Klotho's metabolic rate effect amplifies a GLP-1 driven deficit; commonly added at the start of a GLP-1 cycle)
- Ipamorelin and CJC-1295 (GH peptides pair with Klotho's mitochondrial biogenesis and muscle preservation effects)
- Epitalon (both are longevity-focused and target different aging pathways)
- Not combined with burosumab, active vitamin D analogs, or other FGF23 or PTH-modulating therapies without specialist oversight, given the potential for unpredictable mineral metabolism effects

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KLOW (GHK-Cu + BPC-157 + TB-500 + KPV Blend)

KLOW is a peptide combo that targets inflammation, injury repair, and tissue regeneration. The addition of KPV can also help with immune modulation, eczema, psoriasis, and acne.

Uses: Tissue Healing, Inflammation Reduction, Hair and Skin

Mechanism of Action

KLOW is a four-peptide blend that layers complementary repair mechanisms into one injection. GHK-Cu drives collagen and elastin production and switches on antioxidant defenses. BPC-157 builds new blood vessels and recruits fibroblasts to the injury. TB-500 binds actin so repair cells can migrate into the tissue and reorganize it. KPV shuts down the inflammatory signaling (NF- κ B) that otherwise slows healing. The idea is to hit vascular supply, cell migration, matrix construction, and inflammation at the same time.

Benefits

- Covers four distinct repair mechanisms in a single injection
- Reduces injection burden and cost versus dosing four peptides separately
- GHK-Cu adds skin and hair benefits that the repair-only stacks lack
- KPV adds an anti-inflammatory arm without immune suppression

Side Effects & Cautions

- Fixed ratios mean you cannot adjust one component without adjusting all of them: if a patient needs more BPC and less GHK, a blend is the wrong tool
- Inherits the cautions of every component: GHK-Cu's copper considerations, and the theoretical angiogenic/malignancy concern shared by BPC-157 and TB-500
- Injection-site irritation is more common than with single peptides, largely from the GHK-Cu component
- Blend quality and actual ratios vary by source: more variables to get wrong than with single-peptide vials
- No trial data exists on the blend as a blend; the evidence is for the individual components

Best Disease Processes / Applications

Comprehensive soft-tissue repair where skin, hair, and inflammation are all part of the picture: post-surgical recovery, chronic injury with an inflammatory component, and patients who want a single simplified injection rather than a four-vial protocol. For a targeted single-tissue injury, individual peptides dosed to that tissue are usually the better choice.

Dosing & Cycling

Reconstitution Cheat Sheet

Vial Size	Dosage	Units to Draw
50mg/10mg/10mg/10mg blend BAC: 3mL (300 units) BAC water	1mg GHK-Cu / 0.2mg each others	6 units

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Vial Size	Dosage	Units to Draw
	1.5mg GHK-Cu / 0.3mg each others	9 units
	2mg GHK-Cu / 0.4mg each others	12 units
	2.5mg GHK-Cu / 0.5mg each others	15 units

Dosage and Timing

Format: **Injectable**

Common Dosages:

Administered daily. See blends reference for full KLOW and GLOW protocols.

Timing:

Daily administration. Some may do 5 days on, 2 days off.

Alternative Protocols:

5 on, 2 off for cost effectiveness.

Cycle Length

On-Cycle	4–12 weeks (4–8 weeks preferred)
Off-Cycle	4–8 weeks
Tapering	Not required

Why Cycle: Allow benefits to continue post-use. Cost effectiveness.

Pairs Well With

- Tesamorelin or Ipamorelin (GH-axis support during a repair phase; BPC-157 upregulates GH receptors)
- MOTS-c or NAD⁺ (cellular energy to support the metabolic demand of active tissue repair)
- Generally not combined with additional standalone BPC-157 or TB-500; check total dose of each component first

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Kisspeptin

Kisspeptin stimulates GnRH release, which in turn stimulates LH and FSH production.

Uses: [Hormonal Support \(LH/FSH stimulation\)](#), [Fertility Support](#)

Mechanism of Action

Kisspeptin is the upstream master switch of the reproductive hormone system. It acts on neurons in the hypothalamus that release GnRH, which in turn tells the pituitary to release LH and FSH, which then tell the testes or ovaries to produce testosterone or estrogen. Because it works at the very top of that chain, it stimulates the body's own hormone production through the normal pathway rather than replacing hormones from outside.

Benefits

- Stimulates the body's own LH and FSH release through the natural HPG axis
- Does not suppress the axis the way exogenous testosterone does
- Human research at academic centers has examined it for fertility and for hypoactive sexual desire
- May improve libido and sexual response through central pathways
- Used in research as a more physiologic alternative to hCG for testicular stimulation

Side Effects & Cautions

- Very short half-life: the effect is a pulse, not sustained elevation, which limits practical protocols
- Continuous or excessive stimulation can desensitize GnRH neurons and paradoxically suppress the axis: pulsatile dosing matters
- Human data comes from small academic studies; not FDA-approved for any indication
- Injection-site reactions
- Effects on fertility and hormones warrant baseline and follow-up lab work, not guesswork

Best Disease Processes / Applications

Fertility support and hormonal stimulation in patients where preserving the body's own axis matters, particularly men who want testicular function maintained, or patients coming off suppressive therapy. Also used for libido where the underlying issue is central rather than vascular.

Dosing & Cycling

Reconstitution Cheat Sheet

Vial Size	Dosage	Units to Draw
10mg vial (with 2mL) BAC: 2mL (200 units); use 1.6mL BAC + 0.4mL acetic acid	250mcg (0.25mg)	5 units
	500mcg (0.5mg)	10 units
10mg vial (with 5mL) BAC: 5mL (500 units); use 4mL BAC + 1mL acetic acid (transfer to sterile 5 or 10mL vial)	100mcg (0.1mg)	5 units

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Note: Kisspeptin may require acetic acid to reconstitute correctly.

Dosage and Timing

Format: Injectable

Common Dosages:

Injectable: 100–250mcg daily, 2x weekly, or 3x weekly. Response varies; monitor labs to assess LH, FSH, and hormone changes. Start at the lowest amount and frequency and adjust from there.

Timing:

Time of day does not matter.

Alternative Protocols:

Some have used up to 500mcg. Reduce frequency if going this high.

Cycle Length

On-Cycle	4–8 weeks
Off-Cycle	4–8 weeks
Tapering	Not required

Why Cycle: Prevent desensitization (more frequent use requires more frequent breaks). Labs from 3x weekly users showed minimal desensitization after 4 weeks.

Pairs Well With

- PT-141 (both act centrally on desire through separate mechanisms)
- Generally not combined with exogenous testosterone, which suppresses the very axis kisspeptin is being used to stimulate
- Baseline and follow-up LH, FSH, and total/free testosterone are more important than any peptide pairing

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KPV

KPV is a tripeptide that can provide anti-inflammatory benefits, immune modulation, and assist with gut inflammation.

Uses: Gut Inflammation (IBS, Crohn's), Skin Conditions (eczema, psoriasis, acne), Inflammation, Immune Regulation

Mechanism of Action

KPV is the last three amino acids of alpha-MSH, a natural anti-inflammatory hormone. What makes it unusual is that it does not appear to work by binding melanocortin receptors on the cell surface; it gets inside the cell and directly interferes with NF- κ B and MAPK, the master switches that turn on inflammatory gene expression. That means it calms inflammation without suppressing the immune system the way a steroid does, and without the pigmentation effects of full alpha-MSH.

Benefits

- Anti-inflammatory without broad immune suppression
- Strong preclinical data in colitis models: reduced inflammation and improved mucosal healing
- Antimicrobial activity reported against bacteria and fungi
- Effective topically for inflammatory skin conditions
- No pigmentation effect, unlike full-length alpha-MSH or the melanotans

Side Effects & Cautions

- Human clinical trial data is limited; most evidence is preclinical or anecdotal
- Injection-site reactions
- Oral formulations vary widely in quality and delivery; enteric or targeted delivery matters for gut indications
- Generally well tolerated, with few reported adverse effects
- Not FDA-approved for any indication

Best Disease Processes / Applications

Gut inflammation is the strongest use case: IBS, ulcerative colitis, and Crohn's disease, typically alongside BPC-157. Also used for inflammatory skin conditions including eczema, psoriasis, and acne (topically or by injection), and as a general anti-inflammatory for patients who need inflammation reduced without immune suppression.

Dosing & Cycling

Reconstitution Cheat Sheet

Vial Size	Dosage	Units to Draw
5mg vial BAC: 1mL (100 units)	250mcg (0.25mg)	5 units
	500mcg (0.5mg)	10 units
	750mcg (0.75mg)	15 units
	1000mcg (1mg)	20 units

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Vial Size	Dosage	Units to Draw
10mg vial BAC: 2mL (200 units)	250mcg (0.25mg)	5 units
	500mcg (0.5mg)	10 units
	750mcg (0.75mg)	15 units
	1000mcg (1mg)	20 units
20mg vial BAC: 3mL (300 units)	500mcg (0.5mg)	5 units
	750mcg (0.75mg)	7.5 units
	1000mcg (1mg)	10 units

Dosage and Timing

Format: Injectable or Oral

Common Dosages:

Injectable: 250–500mcg, 1–2x daily.

Oral: 500–1000mcg, 1–2x daily.

Timing:

Oral: Can be taken on an empty stomach.

If once daily, time does not matter. Can split morning and night for continuous inflammation reduction.

Alternative Protocols:

Some use 5 on, 2 off or every other day. Daily is usually best. Can be run up to 1mg/day if needed, but going over 0.5mg is often not necessary.

Cycle Length

On-Cycle	4–8 weeks
Off-Cycle	2–8 weeks
Tapering	Not required

Why Cycle: Prevent over-suppression of natural immune signaling. Optimize effectiveness.

Pairs Well With

- BPC-157 (the standard gut pairing; BPC repairs the lining while KPV calms the inflammatory signaling driving the damage)
- GHK-Cu (skin protocols: anti-inflammatory plus collagen remodeling)
- Thymulin or Thymosin Alpha-1 (autoimmune and chronic inflammatory conditions, where immune modulation and inflammation control are both needed)

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L-Carnitine

L-Carnitine is an amino acid derivative that can transport fatty acids to the mitochondria for energy production.

Uses: Fat Loss, Energy and Athletic Performance, Recovery, Mitochondrial Function, Cardiovascular Health

Mechanism of Action

L-Carnitine is not a peptide; it is an amino acid derivative, and its job is transport. Fatty acids cannot cross into the mitochondria to be burned on their own; carnitine is the shuttle that carries them across the membrane via the CPT1 enzyme. If fat is being released into the bloodstream but carnitine is limiting, that fat gets re-stored rather than burned. It also helps clear metabolic byproducts that accumulate during hard training.

Benefits

- Transports long-chain fatty acids into mitochondria for oxidation: the rate-limiting step in fat burning
- Supports recovery and reduces markers of exercise-induced muscle damage
- Improves exercise capacity in patients with carnitine deficiency and in cardiovascular disease populations
- Supports mitochondrial function and energy production broadly
- Injectable forms bypass the poor absorption that limits oral dosing

Side Effects & Cautions

- Oral carnitine is converted by gut bacteria into TMAO, which has been associated with cardiovascular risk in observational research; this concern applies mainly to chronic high-dose oral use and is debated
- Injectable L-Carnitine is notoriously painful; volume and injection technique matter
- Fishy body odor is a well-known side effect at higher doses
- GI upset, nausea, and cramping with oral dosing
- Case reports of thyroid hormone antagonism at high doses: relevant in hypothyroid patients

Best Disease Processes / Applications

Fat loss where the goal is to actually oxidize mobilized fatty acids rather than just release them, athletic recovery, and mitochondrial support. Clinically it has the strongest evidence in genuine carnitine deficiency, dialysis patients, and cardiovascular populations: the body-composition use is more extrapolation than trial data.

Dosing & Cycling

Reconstitution Cheat Sheet

Vial Size	Dosage	Units to Draw
500mg/mL (pre-made liquid) BAC: Comes in liquid form	100mg	20 units
	250mg	50 units
	500mg	100 units

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Vial Size	Dosage	Units to Draw
600mg/mL (pre-made liquid) BAC: Comes in liquid form	100mg	16 units
	250mg	42 units
	300mg	50 units
	600mg	100 units

Note: L-Carnitine comes pre-made in liquid form. No reconstitution required.

Dosage and Timing

Format: Oral or Injectable

Common Dosages:

Oral: 2000–4000mg per day.

Injectable: 200–1000mg per day.

Timing:

Oral or Injectable: 30–60 minutes before fasted cardio or resistance training.

Alternative Protocols:

Can be done 5 days on, 2 days off, every other day, or only on training days.

Some take it in the morning if not training, or split to half in the morning and half before physical activity.

Cycle Length

On-Cycle	6–12 weeks (can be run longer term)
Off-Cycle	2–4 weeks
Tapering	Not required

Why Cycle: Prevent dependency. Use when most needed for maximum results.

Pairs Well With

- AOD-9604 (the most logical pairing: AOD releases fatty acids, carnitine shuttles them in to be burned)
- MOTS-c and NAD⁺ (mitochondrial capacity alongside substrate delivery)
- GLP-1/GIP agents (supports fat oxidation during a caloric deficit)

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LL-37

LL-37 is an antimicrobial peptide that can help with immune defense and has antiviral and antifungal properties.

Uses: Chronic Infections (bacterial, viral, and fungal), Immune System Modulation

Mechanism of Action

LL-37 is the only human cathelicidin: an antimicrobial peptide your own immune system produces at skin and mucosal surfaces. It kills bacteria, viruses, and fungi physically rather than biochemically, punching holes in their membranes, which is why resistance to it is rare. It also disrupts biofilms and acts as a signaling molecule that recruits immune cells to a site of infection.

Benefits

- Broad-spectrum antimicrobial activity: bacterial, viral, and fungal
- Disrupts biofilms, which conventional antibiotics often cannot penetrate
- Membrane-disrupting mechanism makes resistance development unlikely
- Immunomodulatory: recruits and activates immune cells
- Neutralizes bacterial endotoxin (LPS)

Side Effects & Cautions

- LL-37 is pro-inflammatory by design, and elevated LL-37 is implicated in the pathogenesis of psoriasis and rosacea; it acts as an autoantigen in psoriasis. Patients with these conditions can flare significantly
- Can worsen autoimmune conditions in susceptible patients
- Herxheimer-type reactions (feeling worse before better) are commonly reported as pathogens die off
- Injection-site reactions, which can be pronounced
- Human clinical data is limited; most evidence is in vitro or preclinical

Best Disease Processes / Applications

Chronic, treatment-resistant infections (bacterial, viral, or fungal), particularly biofilm-associated infections where conventional antibiotics have failed. Also used in chronic inflammatory response contexts and gut dysbiosis. Its use should be time-limited and the psoriasis/autoimmune caution taken seriously in patient selection.

Dosing & Cycling

Reconstitution Cheat Sheet

Vial Size	Dosage	Units to Draw
4mg vial BAC: 3mL (300 units)	50mcg (0.05mg)	3.75 units
	75mcg (0.075mg)	5.5 units
	100mcg (0.1mg)	7.5 units
	125mcg (0.125mg)	10 units
5mg vial BAC: 5mL (500 units)	50mcg (0.05mg)	5 units

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Vial Size	Dosage	Units to Draw
	75mcg (0.075mg)	7.5 units
	100mcg (0.1mg)	10 units
	125mcg (0.125mg)	12.5 units

Dosage and Timing

Format: Injectable

Common Dosages:

Injectable: 50–125mcg daily.

Timing:

Every day. Time of day does not matter.

Alternative Protocols:

Can be done 5 on, 2 off or every other day.

Some run this 2 weeks on, 2 weeks off in short stints.

Cycle Length

On-Cycle	2–4 weeks
Off-Cycle	4–8 weeks
Tapering	Not required

Why Cycle: Minimize immune overstimulation. Use for acute treatment of issues.

Pairs Well With

- Thymosin Alpha-1 (immune support during an infection-clearing protocol, balancing LL-37's pro-inflammatory push)
- BPC-157 and KPV (gut protocols: repair and anti-inflammatory support while LL-37 addresses the pathogen load)
- Generally not combined with other pro-inflammatory agents, and used cautiously alongside anything that may flare autoimmunity

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Mazdutide

Mazdutide is a GLP-1/glucagon dual receptor agonist used for weight management.

Uses: Weight Loss, Appetite Suppression, Metabolic Health

Mechanism of Action

Mazdutide is built on oxyntomodulin, a natural gut hormone, and activates two receptors: GLP-1 and glucagon. The GLP-1 side slows gastric emptying and signals fullness the same way semaglutide does. The glucagon side is what differentiates it, activating the glucagon receptor increases energy expenditure and drives fat breakdown in the liver, so the body burns more rather than only eating less.

Benefits

- Dual GLP-1/glucagon mechanism: appetite suppression plus increased energy expenditure
- GLORY-2 trial reported up to roughly 20% weight loss at the 9 mg dose in Chinese adults with obesity
- Glucagon receptor activity drives hepatic fat reduction, with particular relevance to fatty liver disease
- Approved by China's NMPA for chronic weight management
- Improvements in liver fat, lipids, blood pressure, and uric acid reported alongside weight loss

Side Effects & Cautions

- GI effects are the dose-limiting issue: nausea, vomiting, diarrhea, constipation; typically dose-dependent and improving over time
- Glucagon receptor activity can raise heart rate and, at higher doses, affect glycemic control, monitoring matters more than with GLP-1-only agents
- Approved in China but not FDA-approved; no US filing as of this writing; verify current status
- Injection-site reactions
- Same theoretical thyroid C-cell/MEN2 class caution as other incretin agents
- Long-term safety data is shorter than for semaglutide or tirzepatide

Best Disease Processes / Applications

Obesity and overweight with cardiometabolic risk, particularly where fatty liver disease is part of the picture; the glucagon arm gives it a liver advantage over GLP-1-only agents. Also used in patients who have plateaued on a GLP-1-only agent and need a different mechanism rather than a higher dose.

Dosing & Cycling

Reconstitution Cheat Sheet

Vial Size	Dosage	Units to Draw
5mg vial BAC: 1mL (100 units)	1500mcg (1.5mg)	30 units
	2500mcg (2.5mg)	50 units
	3000mcg (3mg)	60 units

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Vial Size	Dosage	Units to Draw
	5000mcg (5mg)	100 units
6mg vial BAC: 1.2mL (120 units)	1500mcg (1.5mg)	30 units
	2500mcg (2.5mg)	50 units
	3000mcg (3mg)	60 units
	6000mcg (6mg)	120 units
10mg vial BAC: 1mL (100 units)	1500mcg (1.5mg)	15 units
	3000mcg (3mg)	30 units
	5000mcg (5mg)	50 units
	9000mcg (9mg)	90 units

Dosage and Timing

Format: Injectable

Common Dosages:

Injectable: Has a titration schedule. Most start at 1.5mg or 3mg weekly. Example titration: 1.5mg, 3mg, 4.5mg, 6mg, 7.5mg, 9mg.

Timing:

Time of day does not matter. Once per week. Some prefer to take at night to sleep off side effects and wake up feeling the appetite suppression.

Alternative Protocols:

Some split the dose throughout the week (e.g., 2.5mg Monday, 2.5mg Thursday for 5mg/week, or 1mg daily Monday through Friday).

Cycle Length

On-Cycle	No standard cycle (GLP-1 class). Minimum 16 weeks if cycling.
Off-Cycle	Lifestyle change required to maintain results after discontinuation
Tapering	Recommended to taper down rather than abrupt cessation

Why Cycle: GLP-1 agonists do not typically require cycling. Use until desired results are achieved, then transition to maintenance.

Pairs Well With

- Cagrilintide (amylin satiety pathway is additive to the incretin/glucagon mechanism)
- Tesamorelin or MOTS-c (lean mass preservation and mitochondrial support during aggressive fat loss)
- Not combined with tirzepatide, retatrutide, semaglutide, or survodutide; these are alternatives to one another, not a stack

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Melanotan 1 (MT-1)

Melanotan 1 stimulates melanocortin receptors to promote skin pigmentation and tanning.

Uses: Tanning and UV Protection

Mechanism of Action

Melanotan 1 (afamelanotide) is a modified version of alpha-MSH, the hormone that tells skin cells to produce melanin. Unlike MT-2, it is selective for the MC1R receptor, the one specifically responsible for pigmentation, which is why it produces tanning without the libido, appetite, and nausea effects that come with MT-2's broader receptor activity. The melanin it produces is real pigment, which provides genuine UV protection.

Benefits

- FDA-approved (as SCENESSE, an implant) for erythropoietic protoporphyria: the only melanotan with an approved indication
- Receptor-selective: markedly fewer side effects than MT-2
- Produces genuine eumelanin, which provides real photoprotection rather than cosmetic color
- Reduces UV-induced DNA damage in treated skin
- No significant libido or appetite effects

Side Effects & Cautions

- Darkening of existing moles and new nevus formation: a full skin check before starting and regular dermatologic monitoring afterward is not optional
- Does not remove melanoma risk; any changing lesion needs evaluation, and pigmentation can make that harder
- Nausea and flushing, though much less than with MT-2
- Injectable MT-1 for cosmetic tanning is unapproved and unregulated: the approved product is an implant with a specific rare-disease indication
- Long-term safety data for cosmetic use does not exist

Best Disease Processes / Applications

Photoprotection in light-sensitive conditions is the evidence-backed use: erythropoietic protoporphyria, polymorphic light eruption, and similar photodermatoses. Cosmetic tanning is the common real-world use, particularly in fair-skinned patients who burn easily, and MT-1 is the safer of the two melanotans for that purpose because of its receptor selectivity.

Dosing & Cycling

Reconstitution Cheat Sheet

Vial Size	Dosage	Units to Draw
5mg vial BAC: 2mL (200 units)	100mcg (0.1mg)	4 units
	150mcg (0.15mg)	6 units
	200mcg (0.2mg)	8 units
	250mcg (0.25mg)	10 units

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Vial Size	Dosage	Units to Draw
	500mcg (0.5mg)	20 units
10mg vial BAC: 3mL (300 units)	100mcg (0.1mg)	3 units
	200mcg (0.2mg)	6 units
	250mcg (0.25mg)	7.5 units
	500mcg (0.5mg)	15 units

Note: For 50mcg starting dose, transfer to an empty sterile vial and add more BAC water.

Dosage and Timing

Format: Injectable or Intranasal

Common Dosages:

Injectable or Intranasal: 50–200mcg daily for the first week. After the first week, 100–200mcg 2–3x weekly.

Timing:

Best taken 15–30 minutes before sun exposure. Fine to take on days without sun exposure, but sun is needed for maximum benefit.

Alternative Protocols:

Some use higher amounts, but staying low is preferred as they work well at lower doses. Avoids tan dysmorphia.

Cycle Length

On-Cycle	4–6 weeks
Off-Cycle	8–12 weeks
Tapering	Not required

Why Cycle: Extended use can result in excessive darkening. Avoid overstimulation of the system.

Pairs Well With

- Generally used alone; there is no mechanistic reason to stack it
- Not combined with MT-2 (same pathway, and MT-2 adds the side effects MT-1 was designed to avoid)
- GHK-Cu (skin quality and repair, complementary to photoprotection)

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Melanotan 2 (MT-2)

Melanotan 2 stimulates melanocortin receptors to promote skin pigmentation, tanning, libido, and appetite suppression.

Uses: Tanning and UV Protection, Libido Increase, Appetite Suppression

Mechanism of Action

Melanotan 2 is a shortened, cyclic version of alpha-MSH that activates melanocortin receptors broadly: MC1R for pigmentation, MC3R and MC4R for sexual arousal and appetite suppression. That lack of selectivity is both why it does more than MT-1 and why it causes more problems. The libido effect is the same mechanism PT-141 uses; PT-141 is in fact a metabolite of MT-2.

Benefits

- Produces tanning with less UV exposure, through real melanin production
- Significant libido enhancement in both men and women
- Appetite suppression via MC4R
- Effective at lower doses than MT-1 for pigmentation

Side Effects & Cautions

- Nausea is common and often significant, especially on the first few doses
- Spontaneous erections and, rarely, priapism: a urologic emergency
- Darkening of existing moles and development of new nevi; case reports link MT-2 use to melanoma diagnosis. Baseline and ongoing dermatologic monitoring is essential
- Case reports of rhabdomyolysis and posterior reversible encephalopathy syndrome
- Flushing, facial and gum hyperpigmentation, and lethargy after dosing
- Entirely unapproved and unregulated; no human safety trials support cosmetic use

Best Disease Processes / Applications

Used almost entirely cosmetically for tanning, with the libido and appetite effects as secondary reasons patients choose it over MT-1. Given the side-effect and monitoring burden, MT-1 is the more defensible choice when tanning is the actual goal, and PT-141 is the more defensible choice when libido is.

Dosing & Cycling

Reconstitution Cheat Sheet

Vial Size	Dosage	Units to Draw
5mg vial BAC: 2mL (200 units)	100mcg (0.1mg)	4 units
	150mcg (0.15mg)	6 units
	200mcg (0.2mg)	8 units
	250mcg (0.25mg)	10 units
	500mcg (0.5mg)	20 units
10mg vial BAC: 3mL (300 units)	100mcg (0.1mg)	3 units
	200mcg (0.2mg)	6 units

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Vial Size	Dosage	Units to Draw
	250mcg (0.25mg)	7.5 units
	500mcg (0.5mg)	15 units

Note: For 50mcg starting dose, transfer to an empty sterile vial and add more BAC water.

Dosage and Timing

Format: Injectable or Intranasal

Common Dosages:

Injectable or Intranasal: 50–200mcg daily for the first week. After the first week, 100–200mcg 2–3x weekly.

Timing:

Best taken 15–30 minutes before sun exposure. Fine on days without sun, but sun exposure is needed for maximum benefit.

Alternative Protocols:

Some use higher amounts. Staying low is preferred. Avoids tan dysmorphia.

Cycle Length

On-Cycle	4–6 weeks
Off-Cycle	8–12 weeks
Tapering	Not required

Why Cycle: Extended use can result in excessive darkening. Avoid overstimulation of the system.

Pairs Well With

- Generally used alone
- Not combined with PT-141: same receptor family, additive nausea and pigmentation burden
- Not combined with MT-1

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Mod-GRF (1-29) / CJC-1295 no DAC

CJC-1295 no DAC is a short-acting growth hormone releasing hormone analogue that stimulates the pituitary to release growth hormone. The absence of DAC shortens the half-life of the compound.

Uses: Muscle Growth and Recovery, Fat Loss, Anti-Aging, Sleep Improvement

Mechanism of Action

Mod-GRF (1-29) is the first 29 amino acids of GHRH, the active fragment, with four amino acid substitutions that stop it from being broken down as quickly. Unlike the DAC version, it has no albumin hook, so it lasts about 30 minutes rather than days. That short window is the point: it produces a sharp, clean pulse of growth hormone that mimics the body's natural pattern, then clears, letting the axis reset.

Benefits

- Produces a sharp, natural-pattern GH pulse rather than a sustained elevation
- Closer to physiologic GH rhythm than the DAC version, with less water retention
- Synergistic with a GHRP such as ipamorelin; the two together produce a larger pulse than either alone
- Shorter duration means faster clearance if side effects appear
- Supports lean mass, recovery, sleep, and fat loss

Side Effects & Cautions

- Requires more frequent injections than the DAC version, typically once to three times daily
- Must be dosed fasted (roughly two hours either side of food, insulin especially) or the GH pulse is blunted
- Injection-site reactions, flushing, tingling
- Water retention and joint stiffness, though generally less than with DAC
- Elevated IGF-1 requires periodic lab monitoring; theoretical malignancy surveillance concerns with chronic use

Best Disease Processes / Applications

Body recomposition, recovery, and sleep support in patients who want GH-axis stimulation that stays closer to the body's natural pulsatile rhythm. Generally preferred over CJC-1295 with DAC when physiologic patterning matters more than injection convenience.

Dosing & Cycling

Reconstitution Cheat Sheet

Vial Size	Dosage	Units to Draw
5mg vial BAC: 2mL (200 units)	200mcg (0.2mg)	8 units
	250mcg (0.25mg)	10 units
	300mcg (0.3mg)	12 units
	500mcg (0.5mg)	20 units
10mg vial BAC: 3mL (300 units)	200mcg (0.2mg)	6 units

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Vial Size	Dosage	Units to Draw
	250mcg (0.25mg)	7.5 units
	300mcg (0.3mg)	9 units
	500mcg (0.5mg)	15 units

Note: CJC-1295 no DAC has a shorter half-life and is typically administered more frequently than the DAC version.

Dosage and Timing

Format: Injectable

Common Dosages:

Injectable: 100–300mcg per day.

Timing:

Best taken in a fasted state (60–90 minutes away from a meal). At night is best for 1x daily. If splitting to multiple times per day, morning and night work well. 5 days on, 2 days off is the preferred protocol.

Alternative Protocols:

Can also be done 6 days on, 1 day off, 7 days per week, or 3 days on, 2 days off.

Cycle Length

On-Cycle	8–16 weeks
Off-Cycle	4–8 weeks
Tapering	Not required

Why Cycle: Prevent receptor desensitization. Allow IGF levels to return to baseline.

Pairs Well With

- Ipamorelin (the standard GHRH + GHRP pairing; this is the most common and best-tolerated combination in the class)
- Not combined with CJC-1295 with DAC or Tesamorelin; all are GHRH-class agents and only one is used at a time
- BPC-157/TB-500 (recovery-focused stacking)

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MOTS-C

MOTS-C is a mitochondrial peptide that can help with metabolic flexibility, insulin sensitivity, energy, and fat oxidation.

Uses: Metabolic Health, Fat Loss, Energy

Mechanism of Action

MOTS-c is unusual because it is made from the DNA inside your mitochondria (the energy-producing part of the cell) instead of the DNA in the cell's nucleus. When the body is under metabolic stress, like during exercise, MOTS-c travels to the nucleus and switches on a pathway called AMPK, which improves how well muscles respond to insulin and take up sugar for fuel.

Benefits

- Improves insulin sensitivity and glucose metabolism
- Supports exercise capacity and metabolic adaptation to training
- May help preserve mitochondrial function with aging
- Complements fat-loss protocols by supporting metabolic flexibility

Side Effects & Cautions

- Injection-site reactions
- Mild flushing or lightheadedness reported anecdotally
- Human trial data remains preliminary; most evidence is preclinical or early-phase
- Not FDA-approved for any indication
- High-dose protocols used in chronic illness are based on clinical experience rather than trial data

Best Disease Processes / Applications

Metabolic optimization alongside GLP-1/GIP-based weight loss, insulin resistance, and athletic or hybrid-training populations wanting mitochondrial and exercise-adaptation support. Also used at higher doses in patients with severe chronic illness where mitochondria are damaged: long COVID, chronic fatigue syndrome, and severe inflammatory disease.

Dosing & Cycling

Reconstitution Cheat Sheet

Vial Size	Dosage	Units to Draw
5mg vial BAC: 1mL (100 units)	500mcg (0.5mg)	10 units
	1000mcg (1mg)	20 units
	2500mcg (2.5mg)	50 units
10mg vial BAC: 2mL (200 units)	500mcg (0.5mg)	10 units
	1000mcg (1mg)	20 units
	2500mcg (2.5mg)	50 units

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Vial Size	Dosage	Units to Draw
	5000mcg (5mg)	100 units
40mg vial BAC: 2mL (200 units)	1000mcg (1mg)	5 units
	2500mcg (2.5mg)	12.5 units
	5000mcg (5mg)	25 units

Dosage and Timing

Format: Injectable

Common Dosages:

Injectable: 0.5–5mg per injection. Start low to assess individual response, then increase if needed. If you respond well at 0.5mg, great: you save money.

Timing:

Best in the morning or pre-workout since it typically gives energy. Can be done daily, every other day, or 5 days on, 2 days off.

Alternative Protocols:

All protocol variances are in the timing section above.

Cycle Length

On-Cycle	4–6 weeks
Off-Cycle	4–8 weeks
Tapering	Not required

Why Cycle: Prevent tolerance. Cost effectiveness.

Pairs Well With

- NAD+ and SS-31 (the mitochondrial-support trio: each targets a different node of the same system)
- Tirzepatide or retatrutide (supporting metabolic flexibility and lean mass during weight loss)
- AICAR also works through AMPK: additive rather than complementary, so the two are generally not run together at full dose

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NAD⁺ (Nicotinamide Adenine Dinucleotide)

NAD⁺ is a coenzyme that helps with energy production, DNA repair, and cell signaling and can replenish depleted stores in the body.

Uses: Cellular Energy, Cognitive Function, Anti-Aging

Mechanism of Action

NAD⁺ is a molecule found in every cell of your body, and it is essential for turning food into usable energy inside your mitochondria (the "powerhouses" of your cells). It is also needed by enzymes that repair damaged DNA and help regulate how cells age. NAD⁺ levels drop substantially as we get older.

Benefits

- Supports mitochondrial energy production and reduces fatigue in deficient states
- Cofactor for DNA repair enzymes and sirtuin activity (cellular "longevity" pathways)
- May support cognitive clarity and mood in some users
- Often used adjunctively in metabolic and addiction-recovery protocols

Side Effects & Cautions

- IV infusion: flushing, chest tightness, nausea, cramping; typically dose- and rate-dependent, and improved by slowing the infusion
- Subcutaneous or IM: injection-site discomfort, which can be significant
- Headache reported with rapid infusion
- Long-term optimal dosing and safety data in healthy (non-deficient) populations is still limited
- Theoretical concern about fueling existing malignancy given NAD⁺'s role in cell proliferation: warrants caution in active cancer

Best Disease Processes / Applications

Age-related fatigue, mitochondrial support during metabolic optimization, and adjunctive support in patients undergoing significant weight loss or high physiologic stress where cellular energy demand is elevated. Along with the other mitochondrial peptides in this guide, NAD⁺ can be remarkably helpful in patients with chronic diseases that damage mitochondria, such as long COVID and chronic inflammatory conditions, as well as after a traumatic acute event: a heart attack, stroke, or a prolonged hospitalization from an illness like pneumonia.

Dosing & Cycling

Reconstitution Cheat Sheet

Vial Size	Dosage	Units to Draw
500mg vial (with 10mL BAC) BAC: 10mL BAC water	25mg	50 units
	50mg	100 units
	100mg	200 units
	200mg	400 units

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Vial Size	Dosage	Units to Draw
700mg vial (with 7mL BAC) BAC: 7mL BAC water	25mg	25 units
	50mg	50 units
	100mg	100 units
	200mg	200 units
1000mg vial (with 10mL BAC) BAC: 10mL BAC water	25mg	25 units
	50mg	50 units
	100mg	100 units
	200mg	200 units

Note: Due to solubility of NAD⁺, it is recommended to use an empty 10mL sterile vial for transfer after initial reconstitution with 3mL of BAC water. Once transferred, add remaining BAC water to reach 10mL total. NAD⁺ may crystallize if insufficient liquid is added.

Dosage and Timing

Format: Injectable

Common Dosages:

Injectable ramp-up protocol: Weeks 1–2: 25mg twice weekly. Weeks 3–4: 50mg twice weekly. Weeks 5–6: 100mg twice weekly. Week 7+: 200mg up to 3x weekly, based on individual response.

Timing:

Best taken in the morning since it typically gives energy.

Alternative Protocols:

Some do a smaller amount daily. Even 25mg per day can work well.

Cycle Length

On-Cycle	4–12 weeks (can be run longer term)
Off-Cycle	4–8 weeks
Tapering	Not required

Why Cycle: Allow the body's natural processes to resume. Cost effectiveness. Desensitization to effects.

Pairs Well With

- MOTS-c and SS-31 (all three converge on mitochondrial function from different angles)
- GLP-1/GIP therapy (supporting energy and mitochondrial adaptation during a caloric deficit)
- Epitalon (broader cellular-aging-pathway stack)
- 5-Amino-1MQ (preserves the nicotinamide precursor while NAD⁺ supplies the molecule directly)

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P-21

P-21 is a nootropic peptide that can help with memory, focus, and neuroplasticity.

Uses: Memory Enhancement, Focus and Mental Clarity, Neuroprotection

Mechanism of Action

P-21 is a small peptide built to copy part of BDNF, a protein that is important for brain cell growth. The catch is that full-size BDNF cannot cross into the brain from the bloodstream, but P-21 is small enough to get through and can still switch on the same growth signal (called TrkB) once inside.

Benefits

- Direct TrkB receptor activation supporting neuroplasticity
- Preclinical data suggests neuroprotective effects in models of cognitive decline and stroke
- May support memory and learning consolidation
- Does not carry the stimulant profile of conventional nootropics

Side Effects & Cautions

- Human safety and side-effect data is very limited; most evidence is preclinical (animal-model) at this stage
- Theoretical concern given BDNF's broad role in neuronal growth signaling over undefined long-term human use
- Injection-site reactions
- Not FDA-approved for any indication

Best Disease Processes / Applications

In practice, the most common clinical use for P-21 is Alzheimer's dementia and post-stroke care; it is not primarily used for general nootropic benefit or mental clarity, and there is not significant clinical experience using it for that purpose. For dementia and post-stroke pathology, it is typically used in conjunction with Semax and Cerebrolysin.

Dosing & Cycling

Reconstitution Cheat Sheet

Vial Size	Dosage	Units to Draw
10mg vial BAC: 1mL (100 units)	1000mcg (1mg)	10 units
	1500mcg (1.5mg)	15 units
	2000mcg (2mg)	20 units
	3000mcg (3mg)	30 units
	4000mcg (4mg)	40 units
12mg vial BAC: 1.2mL (120 units)	1000mcg (1mg)	10 units
	1500mcg (1.5mg)	15 units
	2000mcg (2mg)	20 units

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Vial Size	Dosage	Units to Draw
	3000mcg (3mg)	30 units
	4000mcg (4mg)	40 units

Dosage and Timing

Format: Injectable or Intranasal

Common Dosages:

Injectable or Intranasal: 250–500mcg for general use. Can go into the 1–5mg range daily for cognitive impairment. Start at the lowest amount and increase until desired effects are achieved.

Timing:

Any time of day; focus is on long-term effects of the compound.

Alternative Protocols:

Can be taken 5 days on, 2 days off, or every other day.

Cycle Length

On-Cycle	4–8 weeks
Off-Cycle	4–8 weeks
Tapering	Not required

Why Cycle: Allow brain to reset regarding BDNF. Prevent desensitization; save for times of maximum need.

Pairs Well With

- Semax and Cerebrolysin (the combination typically used for Alzheimer's dementia and post-stroke care)
- Adamax (both support BDNF/TrkB signaling through different routes)
- Selank (calming complement in a cognitive stack)

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PE-22-28

PE-22-28 is a peptide that can provide antidepressant effects and promote neurogenesis.

Uses: Depression and Mood Support, Anxiety Reduction, Neurogenesis

Mechanism of Action

PE-22-28 is a modified fragment of spadin, a peptide your body produces naturally. It works by blocking a potassium channel in the brain called TREK-1, which is the same target SSRIs eventually act on downstream, but by hitting it directly, PE-22-28 produced antidepressant effects in animal models within a few days rather than the four to six weeks SSRIs typically take. It also promotes the growth of new neurons in the hippocampus.

Benefits

- Rapid-onset antidepressant effect in preclinical models: days rather than weeks
- Promotes hippocampal neurogenesis and synaptic plasticity
- Does not carry the sexual side effects, weight gain, or emotional blunting associated with SSRIs in preclinical work
- Studied preclinically for neuroprotection after stroke

Side Effects & Cautions

- Evidence is entirely preclinical; there are no published human clinical trials, and this is the central caveat
- Dosing protocols in circulation are extrapolated from animal studies
- Should not be treated as a substitute for established treatment in a patient with significant depression; any change to prescribed psychiatric medication must be discussed with a prescriber first
- Intranasal irritation; injection-site reactions
- Long-term effects of chronic TREK-1 blockade in humans are unknown

Best Disease Processes / Applications

Mood support and depressive symptoms in patients exploring options beyond conventional antidepressants, and anxiety with a neuroplasticity-focused rationale. This is an area where the gap between preclinical promise and human evidence is wide, and where the stakes of getting it wrong are high; it belongs in a supervised setting alongside, not instead of, established care.

Dosing & Cycling

Reconstitution Cheat Sheet

Vial Size	Dosage	Units to Draw
8mg vial BAC: 3mL (300 units)	100mcg (0.1mg)	3.75 units
	150mcg (0.15mg)	5.75 units
	200mcg (0.2mg)	7.5 units

Dosage and Timing

Format: Injectable or Intranasal

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Common Dosages:

Injectable: 100–300mcg per day.

Intranasal: Can increase slightly higher, closer to the 600mcg range.

Timing:

Morning (for anxiety and mood relief throughout the day) or before bed (if anxiety relief at night is needed).

Alternative Protocols:

Can be split into morning and evening dosing for sustained effects throughout the day.

Some do 5 days on, 2 days off or as needed.

Cycle Length

On-Cycle	4–6 weeks
Off-Cycle	2–4 weeks
Tapering	Not required

Why Cycle: Prevent adaptation. Provide targeted treatment as needed and allow for continued benefits off-cycle.

Pairs Well With

- Selank (anxiolytic complement without sedation)
- Semax or Adamax (BDNF-driven neuroplasticity from a different mechanism)
- Not combined with SSRIs or SNRIs without prescriber involvement: the mechanisms converge and the interaction is not characterized

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Retatrutide

Retatrutide is a triple agonist (GLP-1/GIP/glucagon) used for weight management.

Uses: Weight Loss, Appetite Suppression, Metabolic Health

Mechanism of Action

Retatrutide works like tirzepatide but adds a third target: the glucagon receptor. Activating this receptor helps the body burn more energy and break down fat in the liver, which seems to be why retatrutide has produced the biggest weight-loss results seen so far in this class of medication.

Benefits

- Largest weight-loss magnitude reported among GLP-1-class agents: the TRIUMPH phase 3 program reported roughly 28% mean weight loss at 80 weeks at the top dose in obesity without diabetes
- Improves glycemic parameters and lipid profile
- Additional energy-expenditure effect from glucagon receptor agonism, distinct from tirzepatide
- Notable hepatic fat reduction from the glucagon arm
- Dose-titration flexibility allows individualized optimization (commonly discussed around a 4 mg maintenance range in clinical practice, though titration should always be individualized)

Side Effects & Cautions

- GI effects (nausea, vomiting, diarrhea): generally the dose-limiting side effect, similar to or slightly more pronounced than tirzepatide in some data
- Heart rate increase has been observed more than with GLP-1-only agents, attributable to glucagon receptor activity: warrants monitoring
- Injection-site reactions
- Same theoretical thyroid C-cell/MEN2 caution as other incretin agents
- Not FDA-approved. As of this writing Eli Lilly has stated it plans to submit for US approval in Q1 2027, with manufacturing rather than clinical data driving the timeline, filing is not approval, and status should be verified
- Long-term postmarketing safety data does not yet exist, unlike tirzepatide and semaglutide

Best Disease Processes / Applications

Patients with obesity who need maximal weight-loss efficacy and do not have a contraindication to the added glucagon-receptor-driven heart rate effect: often considered after a plateau on a dual agonist. The hepatic fat reduction also makes it relevant in fatty liver disease.

Dosing & Cycling

Reconstitution Cheat Sheet

Vial Size	Dosage	Units to Draw
5mg vial BAC: 1mL (100 units)	1000mcg (1mg)	20 units
	2000mcg (2mg)	40 units
	4000mcg (4mg)	80 units

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Vial Size	Dosage	Units to Draw
10mg vial BAC: 1mL (100 units)	1000mcg (1mg)	10 units
	2000mcg (2mg)	20 units
	4000mcg (4mg)	40 units
	8000mcg (8mg)	80 units
30mg vial BAC: 3mL (300 units)	1000mcg (1mg)	10 units
	4000mcg (4mg)	40 units
	8000mcg (8mg)	80 units
	12000mcg (12mg)	120 units

Note: Available in many vial sizes (5mg through 60mg). See full reconstitution tables for all sizes.

Dosage and Timing

Format: Injectable

Common Dosages:

Injectable: Has a titration schedule. Most start between 0.5–2mg weekly. Example titration: 1mg, 2mg, 4mg, 6mg, 8mg, 10mg, 12mg.

Timing:

Time of day does not matter. Once per week. Some prefer to take at night to sleep off side effects.

Alternative Protocols:

Some split the dose throughout the week (e.g., 2.5mg Monday and Thursday for 5mg/week, or 1mg daily Monday through Friday).

Cycle Length

On-Cycle	No standard cycle (GLP class). Minimum 16 weeks if cycling.
Off-Cycle	Lifestyle change required to maintain results
Tapering	Recommended to taper down

Why Cycle: GLP agonists do not typically require cycling. Use until desired results are achieved.

Pairs Well With

- Cagrilintide (amylin pathway is additive to the incretin/glucagon mechanism)
- MOTS-c and Tesamorelin (mitigating lean mass loss and supporting mitochondrial capacity during aggressive fat loss)
- Not typically combined with tirzepatide, semaglutide, mazdutide, or survodutide: used as an alternative or switch-to agent

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Selank

Selank is a nootropic peptide that can help with mood, anxiety, and depression and generally does not create dependence.

Uses: Anxiety, Stress Relief, Depression

Mechanism of Action

Selank is a lab-made version of tuftsin, a peptide your immune system naturally produces. It affects GABA, the brain's main calming chemical, and adjusts the balance of other brain chemicals like serotonin and dopamine, but without the drowsiness or addiction risk that comes with drugs like Xanax. It also has mild effects on inflammation markers in the body.

Benefits

- Anxiolytic effect without sedation or cognitive dulling
- May support mood stability and stress resilience
- No reported dependence or withdrawal syndrome in available data (unlike benzodiazepines)
- Some evidence for a mild immunomodulatory effect

Side Effects & Cautions

- Nasal irritation with intranasal dosing
- Mild fatigue in some users
- Limited Western regulatory and trial data; most evidence originates from Russian research
- Not FDA-approved for any indication

Best Disease Processes / Applications

Anxiety and stress-response support, particularly for patients seeking a non-sedating, non-dependence-forming option, and as the calming complement in a cognitive-performance peptide stack. Primarily used in practice for patients with severe anxiety, or those already on addictive prescription medications such as Xanax or Valium. Many patients have been able to successfully come off these prescriptions, or significantly reduce their dose, while on Selank. Any changes to prescribed medications should always be discussed with a medical provider or psychiatrist first.

Dosing & Cycling

Reconstitution Cheat Sheet

Vial Size	Dosage	Units to Draw
5mg vial BAC: 1mL (100 units)	200mcg (0.2mg)	4 units
	250mcg (0.25mg)	5 units
	300mcg (0.3mg)	6 units
	400mcg (0.4mg)	8 units
	500mcg (0.5mg)	10 units
10mg vial BAC: 2mL (200 units)	200mcg (0.2mg)	4 units

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Vial Size	Dosage	Units to Draw
	250mcg (0.25mg)	5 units
	300mcg (0.3mg)	6 units
	400mcg (0.4mg)	8 units
	500mcg (0.5mg)	10 units

Dosage and Timing

Format: Injectable or Intranasal

Common Dosages:

Injectable or Intranasal: 200–400mcg daily. Can go higher if needed.

Timing:

Can be taken morning or night. Best used as needed before stressful situations.

Alternative Protocols:

Can also be taken 5 on, 2 off, every other day, or split into multiple doses per day.

Cycle Length

On-Cycle	4–8 weeks
Off-Cycle	2–4 weeks
Tapering	Not required

Why Cycle: Avoid receptor adaptation for maximum results. Assess baseline mood and anxiety after a period of use.

Pairs Well With

- Semax (the standard focus + calm combination)
- Adamax (same rationale as the Semax pairing, with once-daily convenience)
- DSIP or Epitalon (stress-driven sleep disruption)

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Semaglutide

Semaglutide is a GLP-1 receptor agonist used for weight management and metabolic health.

Uses: Weight Loss, Appetite Suppression, Blood Sugar Regulation

Mechanism of Action

Semaglutide is a modified version of GLP-1, a hormone your gut releases after eating. It slows how fast your stomach empties, sends fullness signals to the brain, and helps the pancreas release insulin at the right times while suppressing glucagon. The structural modifications let it last about a week in the body instead of the few minutes natural GLP-1 survives.

Benefits

- Robust weight loss: the STEP trial program reported roughly 15% mean body weight reduction at 68 weeks
- Strong glycemic control in type 2 diabetes (SUSTAIN trial program)
- Proven cardiovascular benefit: SELECT demonstrated reduction in major adverse cardiovascular events in patients with obesity and established cardiovascular disease without diabetes
- Benefit demonstrated in chronic kidney disease (FLOW) and in obstructive sleep apnea
- The longest postmarketing safety record of any agent in this class
- Available in both injectable and oral formulations

Side Effects & Cautions

- GI effects are the most common: nausea, vomiting, diarrhea, constipation; typically dose-dependent and improving over time
- Gallbladder disease (cholelithiasis) risk with rapid weight loss
- Rare: pancreatitis, gastroparesis-like symptoms
- Contraindicated with a personal or family history of medullary thyroid carcinoma or MEN2
- Muscle mass loss can accompany weight loss without adequate protein intake and resistance training
- Anesthesia consideration: dosing is typically held before surgical procedures; confirm timing with the anesthesiologist and surgeon

Best Disease Processes / Applications

Obesity and overweight with cardiometabolic risk, type 2 diabetes, and, distinctly among agents in this guide, patients with established cardiovascular disease or chronic kidney disease, where the outcome data is strongest. Often the first-line incretin choice because of that evidence base and its safety record.

Dosing & Cycling

Reconstitution Cheat Sheet

Vial Size	Dosage	Units to Draw
5mg vial BAC: 1mL (100 units)	250mcg (0.25mg)	5 units
	500mcg (0.5mg)	10 units

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Vial Size	Dosage	Units to Draw
	1000mcg (1mg)	20 units
	1500mcg (1.5mg)	30 units
	2000mcg (2mg)	40 units
	2400mcg (2.4mg)	48 units
10mg vial BAC: 2mL (200 units)	250mcg (0.25mg)	5 units
	500mcg (0.5mg)	10 units
	1000mcg (1mg)	20 units
	1500mcg (1.5mg)	30 units
	2000mcg (2mg)	40 units
	2400mcg (2.4mg)	48 units

Dosage and Timing

Format: Injectable

Common Dosages:

Injectable: Has a titration schedule. Most start at 0.25mg weekly. Example titration: 0.25mg, 0.5mg, 0.75mg, 1mg, 1.25mg, 1.5mg, 1.75mg, 2mg.

Timing:

Time of day does not matter. Once per week. Some prefer nighttime administration.

Alternative Protocols:

Can be split into multiple doses per week for more stable levels.

Cycle Length

On-Cycle	No standard cycle (GLP-1 class). Minimum 16 weeks if cycling.
Off-Cycle	Lifestyle change required to maintain results
Tapering	Recommended to taper down

Why Cycle: GLP-1 agonists do not typically require cycling. Use until desired results are achieved.

Pairs Well With

- Cagrilintide (the intended co-formulation pairing: a distinct satiety pathway)
- Tesamorelin or CJC-1295/Ipamorelin (lean mass preservation during weight loss)
- MOTS-c and L-Carnitine (metabolic and mitochondrial support during a caloric deficit)
- Not combined with tirzepatide, retatrutide, mazdutide, or survodutide; these are alternatives to one another

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Semax

Semax is a nootropic peptide that can help increase focus and recover from neurological stress.

Uses: Cognitive Enhancement, Focus and Mental Clarity, Neuroprotection

Mechanism of Action

Semax is a lab-made piece of a natural hormone called ACTH, modified so it does not break down as quickly in the body. It increases a protein called BDNF, which helps brain cells grow and form new connections, and it also adjusts the activity of brain chemicals like dopamine and serotonin. Unlike a stimulant, it does not force the brain into overdrive; it supports the brain's own growth and repair processes instead.

Benefits

- Supports focus, working memory, and mental clarity
- Increases BDNF, supporting neuroplasticity
- Used in Russia clinically for post-stroke cognitive recovery and ADHD-type symptoms
- Non-stimulant mechanism (no direct dopamine-releasing or stimulant profile)

Side Effects & Cautions

- Nasal irritation with intranasal dosing
- Overstimulation, irritability, or headache in some users, particularly at higher doses
- Limited large-scale Western clinical trial data outside the Russian literature
- Not FDA-approved for any indication

Best Disease Processes / Applications

Cognitive performance support, focus, and adjunctive use in structured nootropic protocols; historically studied for post-stroke and ischemic cognitive recovery. Most commonly used in practice for ADHD and focus issues, and post-stroke recovery. Some patients have been able to fully come off ADHD medications while on Semax long-term: any changes to prescribed pharmacologic medications should always be discussed with a medical provider or psychiatrist first.

Dosing & Cycling

Reconstitution Cheat Sheet

Vial Size	Dosage	Units to Draw
5mg vial BAC: 1mL (100 units)	200mcg (0.2mg)	4 units
	250mcg (0.25mg)	5 units
	300mcg (0.3mg)	6 units
	400mcg (0.4mg)	8 units
	500mcg (0.5mg)	10 units
10mg vial BAC: 2mL (200 units)	200mcg (0.2mg)	4 units
	250mcg (0.25mg)	5 units
	300mcg (0.3mg)	6 units

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Vial Size	Dosage	Units to Draw
	400mcg (0.4mg)	8 units
	500mcg (0.5mg)	10 units
30mg vial BAC: 3mL (300 units)	400mcg (0.4mg)	4 units
	500mcg (0.5mg)	5 units

Dosage and Timing

Format: Injectable or Intranasal

Common Dosages:

Injectable or Intranasal: 200–800mcg per day.

Timing:

Best used before activities that require enhanced focus. Some feel it builds up stronger with more continuous use.

Alternative Protocols:

Can be done 5 days on, 2 days off or every other day.

Cycle Length

On-Cycle	4–8 weeks
Off-Cycle	2–4 weeks
Tapering	Not required

Why Cycle: Avoid diminishing returns. Use during times of cognitive demand for maximum effects.

Pairs Well With

- Selank (classic nootropic pairing; Semax for focus and drive, Selank for anxiolytic balance)
- Adamax (longer-acting Semax analog; typically used as an alternative rather than combined with Semax itself)
- P-21 and Cerebrolysin (the combination used for Alzheimer's dementia and post-stroke care)

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Sermorelin

Sermorelin is an analogue of growth hormone-releasing hormone that stimulates the pituitary gland to release more growth hormone.

Uses: Muscle Growth and Recovery, Better Sleep Quality, Anti-Aging

Mechanism of Action

Sermorelin is the first 29 amino acids of GHRH: the shortest piece of the natural hormone that still works. It tells the pituitary to release growth hormone in the body's own pattern, and because it acts through the normal control system, the pituitary's feedback loop stays intact and can still put on the brakes. Its half-life is only about 10 to 20 minutes, so it produces a brief pulse rather than sustained elevation.

Benefits

- Works through the body's own regulatory pathway, so feedback control is preserved
- Was FDA-approved (as Geref) for pediatric growth hormone deficiency before being discontinued for commercial reasons, not safety
- Longest track record of clinical use of any GHRH agent in this guide
- Supports sleep quality, recovery, and lean body composition
- Lower risk of GH excess than direct growth hormone injection

Side Effects & Cautions

- Injection-site reactions (the most common side effect)
- Flushing, headache, dizziness
- Water retention and joint discomfort
- Must be dosed fasted: insulin blunts the GH response
- Weaker and shorter-acting than tesamorelin or CJC-1295; patients expecting dramatic effects are often disappointed
- Elevated IGF-1 warrants periodic monitoring

Best Disease Processes / Applications

Adult growth hormone axis support where a gentle, physiologic approach is the goal: age-related GH decline, sleep quality, recovery, and body composition. Often the appropriate starting point in the GHRH class because of its safety record and self-limiting mechanism, with tesamorelin or CJC-1295 reserved for patients needing a stronger signal.

Dosing & Cycling

Reconstitution Cheat Sheet

Vial Size	Dosage	Units to Draw
5mg vial BAC: 2mL (200 units)	200mcg (0.2mg)	8 units
	250mcg (0.25mg)	10 units
	300mcg (0.3mg)	12 units
	500mcg (0.5mg)	20 units
10mg vial BAC: 3mL (300 units)	200mcg (0.2mg)	6 units

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Vial Size	Dosage	Units to Draw
	250mcg (0.25mg)	7.5 units
	300mcg (0.3mg)	9 units
	500mcg (0.5mg)	15 units

Dosage and Timing

Format: Injectable

Common Dosages:

Injectable: 200–300mcg per day.

Timing:

Best taken in a fasted state, at night before bed, 5–6 nights per week. Can also be split to morning and night as long as fasted.

Alternative Protocols:

Some do this daily or 3 on, 2 off.

Cycle Length

On-Cycle	8–16 weeks
Off-Cycle	4–8 weeks
Tapering	Not required

Why Cycle: Prevent receptor desensitization. Preserve responsiveness.

Pairs Well With

- Ipamorelin (GHRH + GHRP: the standard combination)
- Not combined with Tesamorelin, CJC-1295, or Mod-GRF; all GHRH-class, one at a time
- BPC-157/TB-500 (recovery-focused stacking)

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SS-31 (Elamipretide)

SS-31 is a mitochondrial peptide that can help mitochondrial function and reduce oxidative stress, improve energy, and address age-related mitochondrial decline.

Uses: Mitochondrial Health and Energy, Anti-Aging and Longevity

Mechanism of Action

SS-31 travels straight to the inner membrane of the mitochondria (the cell's energy-producing structure) and attaches to a fat molecule there called cardiolipin, which helps keep the energy-production machinery organized. By stabilizing this structure, SS-31 reduces energy leaks that create cell-damaging byproducts, and it helps the mitochondria produce energy more efficiently.

Benefits

- Improves mitochondrial efficiency and reduces oxidative stress
- FDA-approved in 2025 (as FORZINITY) under accelerated approval for Barth syndrome, the first approved therapy for that disease and the first mitochondrial-targeted drug approval
- Investigated in heart failure, ischemia-reperfusion injury, and age-related muscle decline
- May support exercise tolerance and reduce fatigue in mitochondrial dysfunction states
- Preclinical renal and cardiac protective signal

Side Effects & Cautions

- Injection-site reactions (the most common finding in trial data, and they can be pronounced)
- Rare hypersensitivity reactions
- The approval is narrow; it covers Barth syndrome only. Every other use discussed here is off-label and investigational, and trials in primary mitochondrial myopathy and dry AMD did not meet their primary endpoints
- Long-term safety data outside the trial population is limited

Best Disease Processes / Applications

Age-related mitochondrial decline, cardiometabolic support, and patients specifically targeting mitochondrial membrane integrity rather than general energy-substrate support. Also used in chronic or severe illness where mitochondria are damaged: long COVID, chronic fatigue syndrome, autoimmune conditions, or recovery after a heart attack or stroke.

Dosing & Cycling

Reconstitution Cheat Sheet

Vial Size	Dosage	Units to Draw
10mg vial BAC: 1mL (100 units)	1000mcg (1mg)	10 units
	2000mcg (2mg)	20 units
	4000mcg (4mg)	40 units
	5000mcg (5mg)	50 units
25mg vial BAC: 2.5mL (250 units)	1000mcg (1mg)	10 units

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Vial Size	Dosage	Units to Draw
	2000mcg (2mg)	20 units
	4000mcg (4mg)	40 units
	5000mcg (5mg)	50 units
50mg vial BAC: 3mL (300 units)	1000mcg (1mg)	6 units
	2000mcg (2mg)	12 units
	4000mcg (4mg)	24 units
	5000mcg (5mg)	30 units

Dosage and Timing

Format: Injectable

Common Dosages:

Injectable: 4mg daily until 50mg total is reached (approximately 12 days at 4mg, plus a 13th day at 2mg).

Timing:

Time of day does not matter. Some take it at night due to fatigue side effects, though the fatigue is typically not avoidable by timing.

Alternative Protocols:

Some do 0.5–1mg daily for up to 8 weeks. Both approaches have been effective.

Cycle Length

On-Cycle	Use until 50mg is reached, or 4–8 weeks at low doses
Off-Cycle	4–6 weeks between cycles; 2–4 cycles per year
Tapering	Not required

Why Cycle: Cost effectiveness. Benefits achieved without long-term use.

Pairs Well With

- NAD+ and MOTS-c (the mitochondrial-support trio, each targeting a different node of the same system)
- SS-31 does not need to be run before starting MOTS-c; the two can be run simultaneously, with good results seen in patients who do so
- Glutathione (handles the oxidative byproducts SS-31 helps reduce)

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Survodutide

Survodutide is a GLP-1/glucagon dual receptor agonist used for weight management.

Uses: Weight Loss, Appetite Suppression, Metabolic Health

Mechanism of Action

Survodutide activates two receptors: GLP-1 and glucagon. The GLP-1 arm slows gastric emptying and drives satiety the way semaglutide does. The glucagon arm increases energy expenditure and drives fat breakdown in the liver, which is why its most distinctive clinical data is in liver disease rather than in weight loss alone.

Benefits

- Dual GLP-1/glucagon mechanism: appetite suppression plus increased energy expenditure
- Phase 3 obesity data reported roughly 16.6% mean weight loss
- FDA Breakthrough Therapy designation for MASH (metabolic dysfunction-associated steatohepatitis) with fibrosis: phase 2 showed significant improvement in steatohepatitis
- Hepatic fat reduction is a core strength of the glucagon arm

Side Effects & Cautions

- GI effects are dose-limiting: nausea, vomiting, diarrhea; discontinuation rates in trials were meaningful, so slow titration matters
- Glucagon receptor activity can raise heart rate and affect glycemic control: more monitoring than with GLP-1-only agents
- Not FDA-approved; still in phase 3 development as of this writing; verify current status
- Injection-site reactions
- Same theoretical thyroid C-cell/MEN2 class caution as other incretin agents
- Long-term safety data does not yet exist

Best Disease Processes / Applications

Obesity with fatty liver disease or MASH is where this agent is most differentiated: the liver data is its strongest suit. Also used in patients who have plateaued on a GLP-1-only agent and need a different mechanism rather than a higher dose.

Dosing & Cycling

Reconstitution Cheat Sheet

Vial Size	Dosage	Units to Draw
10mg vial BAC: 1mL (100 units)	600mcg (0.6mg)	6 units
	2400mcg (2.4mg)	24 units
	3600mcg (3.6mg)	36 units
	4800mcg (4.8mg)	48 units
12mg vial BAC: 1.2mL (120 units)	600mcg (0.6mg)	6 units
	2400mcg (2.4mg)	24 units

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Vial Size	Dosage	Units to Draw
	3600mcg (3.6mg)	36 units
	4800mcg (4.8mg)	48 units

Dosage and Timing

Format: Injectable

Common Dosages:

Injectable: Has a titration schedule. Most start at 0.3 or 0.6mg weekly. Example titration: 0.6mg, 1.2mg, 2.4mg, 3.6mg, 4.8mg, 6mg.

Timing:

Time of day does not matter. Once per week. Some prefer nighttime administration.

Alternative Protocols:

Some split the dose throughout the week for more stable levels.

Cycle Length

On-Cycle	No standard cycle (GLP class). Minimum 16 weeks if cycling.
Off-Cycle	Lifestyle change required to maintain results
Tapering	Recommended to taper down

Why Cycle: GLP agonists do not typically require cycling.

Pairs Well With

- Cagrilintide (amylin satiety pathway, additive to the incretin/glucagon mechanism)
- Tesamorelin or MOTS-c (lean mass and mitochondrial support during aggressive fat loss)
- Not combined with tirzepatide, retatrutide, semaglutide, or mazdutide: alternatives, not a stack

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TB-500 (Thymosin Beta-4)

TB-500 is a peptide that can promote tissue repair, angiogenesis, and inflammation reduction in soft tissue, tendons, and ligaments.

Uses: Muscle and Tendon Repair, Injury Recovery, Inflammation Reduction

Mechanism of Action

TB-500 is made from a protein your body already produces called Thymosin Beta-4. It attaches to actin, a building-block protein that helps cells move and change shape. By doing this, TB-500 helps repair cells travel faster to an injured area and reorganize the tissue there.

Benefits

- Promotes migration of repair cells into injured tissue
- Supports new blood vessel formation (angiogenesis)
- Reduces inflammation and fibrosis (scar tissue formation)
- May improve flexibility and range of motion during recovery
- Supports cardiac and skeletal muscle repair in preclinical models

Side Effects & Cautions

- Injection-site irritation
- Mild fatigue or lightheadedness reported anecdotally
- Theoretical angiogenic/tumor-growth concern, similar to BPC-157: caution in active malignancy
- Limited controlled human trial data
- Prohibited by WADA; disqualifying for tested athletes

Best Disease Processes / Applications

In practice, TB-500 is used alongside BPC-157 rather than as a standalone peptide. For any of the conditions listed under BPC-157: soft-tissue injury, post-surgical orthopedic recovery, cardiac repair after a heart attack, and neuronal repair after a stroke; TB-500 can be added to the BPC-157 protocol to support the same repair process from a complementary angle.

Dosing & Cycling

Reconstitution Cheat Sheet

Vial Size	Dosage	Units to Draw
5mg vial BAC: 1mL (100 units)	250mcg (0.25mg)	5 units
	500mcg (0.5mg)	10 units
	750mcg (0.75mg)	15 units
10mg vial BAC: 2mL (200 units)	1000mcg (1mg)	20 units
	250mcg (0.25mg)	5 units
	500mcg (0.5mg)	10 units
	750mcg (0.75mg)	15 units

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Vial Size	Dosage	Units to Draw
	1000mcg (1mg)	20 units
20mg vial BAC: 2mL (200 units)	500mcg (0.5mg)	5 units
	750mcg (0.75mg)	7.5 units
	1000mcg (1mg)	10 units

Note: TB-500 has a longer half-life than TB-4. Most products labeled TB-500 are actually TB-4. Verify which you have to determine dosing frequency. If it is true TB-500, you can use higher amounts less frequently (e.g., 2mg 2x weekly).

Dosage and Timing

Format: Oral or Injectable

Common Dosages:

Oral: 0.5–1mg daily.

Injectable: 0.5–1mg daily.

Timing:

Time of day does not matter. If using TB-4, splitting morning and night may be best due to the shorter action.

Alternative Protocols:

If using actual TB-500, a higher amount less frequently works (e.g., 2mg 2x weekly).

Cycle Length

On-Cycle	4–8 weeks
Off-Cycle	4–8 weeks
Tapering	Not required

Why Cycle: Benefits achieved can last through off-cycle periods. Allow natural healing to continue.

Pairs Well With

- BPC-157 (the required pairing; TB-500 is not used as a standalone peptide in practice)
- GHK-Cu (remodeling and collagen quality)
- MOTS-c (supports the cellular energy demand of active tissue repair)

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Teriparatide

Teriparatide is a synthetic form of PTH (parathyroid hormone 1-34) that stimulates osteoblast activity, actively building new bone rather than just slowing bone loss. It is one of the only compounds in this category that is anabolic to bone tissue.

Uses: Bone Density Restoration, Fracture Recovery and Healing, Connective Tissue and Skeletal Support

Mechanism of Action

Teriparatide is the first 34 amino acids of parathyroid hormone, the active portion. Continuously high parathyroid hormone breaks bone down, but given as a once-daily pulse it does the opposite: it activates osteoblasts (the cells that build bone) more than osteoclasts (the cells that break it down). That intermittent dosing pattern is the entire mechanism, and it is why teriparatide is anabolic rather than simply anti-resorptive like most osteoporosis drugs.

Benefits

- FDA-approved: the best-established agent in this guide, with a full regulatory and outcome evidence base
- Genuinely anabolic: builds new bone rather than only slowing bone loss
- Substantially reduces vertebral and non-vertebral fracture risk
- Increases bone mineral density at the spine and hip
- Used off-label for difficult fracture healing and non-union

Side Effects & Cautions

- Orthostatic hypotension, particularly after the first few doses; patients should dose where they can sit or lie down
- Hypercalcemia; calcium should be monitored, and it is contraindicated in pre-existing hypercalcemia or hyperparathyroidism
- Nausea, leg cramps, headache, dizziness
- The osteosarcoma boxed warning was removed from US labeling in 2020, along with the 2-year lifetime treatment limit, after long-term surveillance found no increased risk, but it remains cautioned in patients at increased baseline osteosarcoma risk (Paget's disease, prior skeletal radiation, unexplained alkaline phosphatase elevation)
- Bone density gains are lost after stopping unless followed by an antiresorptive agent, sequencing matters
- Requires refrigeration

Best Disease Processes / Applications

Severe osteoporosis with high fracture risk, osteoporosis that has failed or cannot tolerate bisphosphonates, and glucocorticoid-induced osteoporosis. Off-label, it is used for stress fractures, delayed union, and non-union where fracture healing has stalled. Nearly always followed by an antiresorptive agent to hold the gains.

Dosing & Cycling

Reconstitution Cheat Sheet

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Vial Size	Dosage	Units to Draw
1mg vial BAC: 2mL (200 units)	20mcg	4 units
	40mcg	8 units
	60mcg	12 units
	80mcg	16 units
	100mcg	20 units

Note: The clinically established dose for bone density is 20mcg daily. Research and off-label use may go higher, but starting at 20mcg and assessing tolerance is strongly recommended.

Dosage and Timing

Format: Injectable

Common Dosages:

Injectable: 20–40mcg daily is the most common range. Some research protocols go up to 60–100mcg.

Timing:

Administered at the same time each day. Morning is common. Some experience transient lightheadedness; sitting or lying down for 30 minutes post-injection is advisable when starting.

Alternative Protocols:

No significant alternatives. Consistency in daily timing is important.

Cycle Length

On-Cycle	3–6 months (clinically used up to 24 months, but extended use without breaks is not recommended off-label)
Off-Cycle	3–6 months minimum before resuming
Tapering	Not required

Why Cycle: Prolonged continuous use can shift PTH activity from anabolic to catabolic on bone. Cycling keeps the anabolic window active and prevents diminishing returns.

Pairs Well With

- An antiresorptive agent (bisphosphonate or denosumab) after the course; this is a sequencing requirement, not an optional addition
- Adequate calcium and vitamin D status is a prerequisite, not an adjunct
- BPC-157 and GHK-Cu (connective tissue and soft-tissue repair alongside bone healing in fracture contexts)

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Tesamorelin

Tesamorelin is a synthetic GHRH analogue that stimulates the pituitary gland to increase growth hormone secretion.

Uses: Visceral Fat Reduction, Muscle Growth and Fat Loss, Anti-Aging

Mechanism of Action

Tesamorelin is a lab-made version of a hormone your brain naturally makes called GHRH. It attaches to receptors on the pituitary gland (a small gland at the base of your brain) and tells it to release the body's own growth hormone in natural bursts. Because it works through the body's normal control system instead of adding growth hormone directly, the body can still keep some control over the process.

Benefits

- FDA-approved and best evidenced for reduction of visceral adipose tissue
- Improves body composition (favors lean mass over fat mass)
- May improve lipid profiles (modest reduction in triglycerides)
- Some cognitive benefit signal in older adults and MCI populations in trial data
- Physiologic GH pulsing reduces risk of GH excess compared to direct GH injection

Side Effects & Cautions

- Injection-site reactions (erythema, pruritus) are the most common
- Fluid retention, joint or muscle discomfort
- May raise blood glucose modestly; monitor in insulin-resistant patients
- Theoretical concern regarding IGF-1 elevation and malignancy surveillance
- Not for use in patients with active malignancy or pituitary disease without oncology clearance

Best Disease Processes / Applications

Visceral fat reduction (including HIV-associated lipodystrophy, its original approval), body recomposition in patients with central adiposity, and adjunctive use in structured GLP-1/GIP fat-loss protocols where lean mass preservation is a priority. Also used for tissue repair, including tendon and ligament damage post-surgery, as well as recovery and repair of heart tissue after sudden events like a heart attack.

Dosing & Cycling

Reconstitution Cheat Sheet

Vial Size	Dosage	Units to Draw
5mg vial BAC: 1mL (100 units)	500mcg (0.5mg)	10 units
	1000mcg (1mg)	20 units
	2000mcg (2mg)	40 units
10mg vial BAC: 1mL (100 units)	500mcg (0.5mg)	5 units
	1000mcg (1mg)	10 units

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Vial Size	Dosage	Units to Draw
	2000mcg (2mg)	20 units

Dosage and Timing

Format: Injectable

Common Dosages:

Injectable: 0.5–2mg per day.

Timing:

Best taken in a fasted state (60–90 minutes away from a meal). At night is best for 1x daily. 5 days on, 2 days off is the preferred protocol.

Alternative Protocols:

Can also be done 6 days on, 1 day off, or 7 days per week. 1mg 5 days on, 2 days off is generally cost-effective and provides good results.

Cycle Length

On-Cycle	8–16 weeks
Off-Cycle	4–8 weeks
Tapering	Not required

Why Cycle: Prevent receptor desensitization. Cost effectiveness.

Pairs Well With

- Ipamorelin (synergistic GH axis support: GHRH plus GHRP)
- Not typically combined with CJC-1295, Mod-GRF, or Sermorelin; all GHRH-class analogs, one at a time
- Tirzepatide or retatrutide (visceral fat reduction plus lean mass preservation)
- MOTS-c (metabolic and mitochondrial support during recomposition)

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Tesofensine

Tesofensine is a triple monoamine reuptake inhibitor that increases dopamine, norepinephrine, and serotonin signaling to suppress appetite and increase energy expenditure.

Uses: Appetite Suppression, Weight Loss

Mechanism of Action

Unlike everything else in this guide, tesofensine is not a peptide; it is a small molecule that blocks the brain from reabsorbing three chemical messengers: dopamine, norepinephrine, and serotonin. It was originally created to treat Parkinson's and Alzheimer's disease, and its appetite-suppressing effect was discovered along the way. By keeping these three brain chemicals active longer, it strongly reduces appetite and increases how much energy the body burns, working through the brain directly, rather than through the gut-hormone pathway GLP-1 medications use.

Benefits

- Significant appetite suppression in phase 2 obesity trials
- Distinct mechanism from GLP-1/GIP agents: acts centrally on monoamine signaling rather than the incretin system
- May increase resting energy expenditure
- Being studied as monotherapy and in combination with other weight-loss agents
- Oral dosing; no injection required

Side Effects & Cautions

- Increased heart rate and blood pressure: the dose-limiting concern in trial data and the reason patient selection and cardiovascular monitoring matter
- Dry mouth, insomnia, constipation
- Theoretical dependence and psychiatric effects given the dopaminergic/monoaminergic mechanism, requiring careful patient selection
- Should not be used alongside SSRIs, SNRIs, MAOIs, or other psychiatric medications: any changes to psychiatric medications should be discussed with a psychiatrist and medical provider first
- Not FDA-approved for obesity in the United States as of this writing; a Mexican regulatory application has not been approved either: regulatory status should be verified before clinical use
- The very long half-life (about 9 days) means dose changes accumulate slowly; do not titrate quickly

Best Disease Processes / Applications

Patients being considered for a non-incretin weight-loss mechanism, particularly where the goal is appetite suppression through a different pathway than GLP-1/GIP: for example, non-responders to incretin therapy, or patients who cannot tolerate GI side effects. Should be reserved for careful, individualized use given the cardiovascular monitoring requirement.

Dosing & Cycling

Reconstitution Cheat Sheet

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Note: Tesofensine is an orally administered small molecule, not an injectable peptide. No reconstitution is required; it is typically supplied as capsules.

Dosage and Timing

Format: Oral

Common Dosages:

Oral: 250mcg (0.25mg) daily to start, titrating up to 500mcg (0.5mg) daily as needed. Doses above 500mcg were associated with meaningfully higher blood pressure and heart rate in trial data and are not commonly used.

Timing:

First thing in the morning upon waking. Taking it later in the day can interfere with sleep.

Alternative Protocols:

Because the half-life is very long, roughly 9 days, any dose change has a slow, cumulative effect and takes several weeks to fully express. Titrate slowly and do not chase a dose increase after only a few days.

Some use every-other-day or 5 days on, 2 days off dosing to manage cardiovascular effects or cost. Blood pressure and heart rate should be checked at baseline and monitored throughout.

Cycle Length

On-Cycle	8–12 weeks
Off-Cycle	4–8 weeks
Tapering	Recommended

Why Cycle: Limit cumulative cardiovascular load and reduce the potential for tolerance or dependence given the dopaminergic mechanism.

Pairs Well With

- A GLP-1 agonist such as semaglutide or tirzepatide; tesofensine pairs well with patients who are already on a GLP-1 agonist and don't want to increase their GLP-1 dose further due to side effects, cost, or other concerns
- Not combined with stimulants, SSRIs, SNRIs, or other monoaminergic agents
- Blood pressure and heart rate monitoring matters more here than any peptide pairing

Thymosin Alpha-1 (TA-1)

Thymosin Alpha-1 is a peptide that can help with immune regulation, T-cell production, and inflammation modulation.

Uses: Immune System Regulation, Chronic Infections, Autoimmune Support

Mechanism of Action

Thymosin Alpha-1 is a peptide made naturally by the thymus gland (sold outside the U.S. under the brand name Zadaxin). It helps immune cells called T-cells mature and function properly, and it helps other immune cells present threats to the body more effectively. It essentially helps the immune system respond appropriately, turning up the response against real threats like infections while helping calm down excess inflammation.

Benefits

- Approved in several countries as adjunctive therapy for chronic hepatitis B/C and as an immune adjuvant in certain cancers

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- Supports recovery from immune-suppressing illness or chronic infection
- May improve vaccine response in immunocompromised populations
- Anti-inflammatory balancing effect alongside immune stimulation

Side Effects & Cautions

- Injection-site reactions are the most common
- Generally well tolerated in the substantial international clinical trial base
- Not FDA-approved in the United States, which limits domestic prescribing pathways and long-term U.S. safety surveillance
- Because it modulates rather than simply suppresses immune activity, response in autoimmune patients can be variable; monitor for flares early in treatment

Best Disease Processes / Applications

Immune support during or after significant illness, chronic viral infection adjunct therapy (where available), and general immune resilience in patients with recurrent infections or age-related immune decline. Also commonly used in combination with Thymulin to treat autoimmune conditions.

Dosing & Cycling

Reconstitution Cheat Sheet

Vial Size	Dosage	Units to Draw
5mg vial BAC: 1mL (100 units)	1000mcg (1mg)	20 units
	2000mcg (2mg)	40 units
10mg vial BAC: 1mL (100 units)	1000mcg (1mg)	10 units
	2000mcg (2mg)	20 units

Dosage and Timing

Format: **Injectable**

Common Dosages:

Injectable: Typically 1–2mg administered per day, 2–3 days per week.

Timing:

Timing does not matter.

Alternative Protocols:

1mg daily for 10 days if a sickness arises to try to knock it out. This can work quite well.

Cycle Length

On-Cycle	2–8 weeks
Off-Cycle	4–16 weeks
Tapering	Not required

Why Cycle: Prevent immune system overstimulation. Use during times of need (sicknesses and infections) and allow natural immune responses afterward.

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Pairs Well With

- Thymulin (complementary thymic-support mechanism, the standard autoimmune pairing)
- BPC-157 (patients recovering from combined tissue injury and immune stress)
- LL-37 (immune support alongside an infection-clearing protocol)

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Thymulin

Thymulin is a zinc-dependent thymic hormone that supports T-cell maturation and helps regulate immune and inflammatory activity.

Uses: Immune Regulation, Autoimmune Support, Chronic Inflammation

Mechanism of Action

Thymulin is a small protein made by the thymus gland, and it needs zinc attached to it before it can work. It helps train and mature T-cells, an important type of immune cell, and levels of it naturally drop as we age (as the thymus gland itself shrinks).

Benefits

- Supports T-cell maturation and immune regulation
- May help modulate autoimmune and chronic inflammatory activity
- Zinc-dependent activity ties into broader micronutrient status optimization
- Complementary to Thymosin Alpha-1, with a different but overlapping mechanism

Side Effects & Cautions

- Injection-site reactions
- Because Thymulin initially upregulates the immune system, an acute flare-up of certain conditions, or feeling worse before feeling better, can occur at the start of treatment; most patients feel better after completing a full cycle
- Data in humans is limited relative to more established immune peptides
- Zinc status should be assessed, since activity depends on adequate zinc availability
- Not FDA-approved for any indication

Best Disease Processes / Applications

Immune modulation in patients with age-related thymic decline or chronic low-grade immune dysregulation; often discussed alongside Thymosin Alpha-1 as part of an immune-support protocol. Very commonly used for autoimmune conditions, especially in patients with frequent flare-ups.

Dosing & Cycling

Reconstitution Cheat Sheet

Vial Size	Dosage	Units to Draw
10mg vial BAC: 2mL (200 units)	1000mcg (1mg)	20 units
	2000mcg (2mg)	40 units
	5000mcg (5mg)	100 units
20mg vial BAC: 2mL (200 units)	1000mcg (1mg)	10 units
	2000mcg (2mg)	20 units
	5000mcg (5mg)	50 units
	10000mcg (10mg)	100 units

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Note: Vial sizes vary by source; confirm the actual milligram content on your vial before using this chart. Because Thymulin initially upregulates immune activity, a temporary flare or a feeling of getting worse before getting better can occur in the first days of a cycle. Start at the lowest amount and work up.

Dosage and Timing

Format: Injectable

Common Dosages:

Acute illness (cold, flu, COVID): a larger dose for a short period, 5–10mg daily for 7–10 days, followed by reassessment and often a lower dose for the following days.

Autoimmune conditions: a low, steady dose, typically around 2mg three times weekly, for at least 4–6 months before cycling off.

Timing:

Once daily (or on dosing days), any time of day. No fasting requirement.

Alternative Protocols:

Some patients with autoimmune conditions and frequent flare-ups, such as lupus with IBD, stay on Thymulin indefinitely alongside Thymosin Alpha-1, typically around 2mg three times a week. Zinc status should be assessed before and during use, since Thymulin requires zinc to be biologically active.

Cycle Length

On-Cycle	7–10 days (acute) or 4–6 months (autoimmune)
Off-Cycle	Similar length to the on-cycle
Tapering	Often stepped down after an acute course

Why Cycle: Allow the immune system to re-equilibrate between courses. Some autoimmune patients run it continuously alongside Thymosin Alpha-1.

Pairs Well With

- Thymosin Alpha-1 (complementary immune-modulating peptide, different but overlapping mechanism, the standard autoimmune pairing)
- Zinc supplementation (required cofactor for activity)
- KPV (anti-inflammatory support during an immune-modulating protocol)

Tirzepatide

Tirzepatide is a GLP-1/GIP dual receptor agonist used for weight management and metabolic health.

Uses: Weight Loss, Appetite Suppression, Blood Sugar Regulation

Mechanism of Action

Tirzepatide is a lab-made peptide that activates two different receptors in the body, called GLP-1 and GIP. GLP-1 slows down how fast your stomach empties, sends "I'm full" signals to your brain, and helps your body release insulin at the right times. GIP adds extra effects on how fat cells work and seems to boost the GLP-1 signal even further. Together, these two turn down hunger signals while turning up fullness and blood sugar control.

Benefits

- Substantial weight loss (SURMOUNT trial series: up to ~20%+ body weight at max dose)

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- Robust glycemic control in type 2 diabetes (SURPASS trial series)
- Improves blood pressure, lipid profile, and markers of fatty liver disease
- Emerging multi-organ benefit data: cardiovascular, renal, and sleep apnea outcomes
- SURMOUNT-4 and SURMOUNT-MAINTAIN data inform discontinuation/maintenance strategy

Side Effects & Cautions

- GI effects are most common: nausea, vomiting, diarrhea, constipation; typically dose-dependent and improve over time
- Injection-site reactions
- Gallbladder disease (cholelithiasis) risk with rapid weight loss
- Rare: pancreatitis, gastroparesis-like symptoms
- Contraindicated in personal/family history of medullary thyroid carcinoma or MEN2
- Muscle mass loss can accompany weight loss without adequate protein intake and resistance training

Best Disease Processes / Applications

Obesity/overweight with cardiometabolic risk, type 2 diabetes, and patients who need both robust weight loss and glycemic control in one agent. Significant benefit has also been seen with autoimmune conditions such as lupus, rheumatologic conditions such as rheumatoid arthritis, and severe inflammatory conditions such as inflammatory bowel disease, fibromyalgia, and endometriosis. For these conditions, a microdose is typically used. Also used for liver disease and fatty liver; patients with fatty liver disease have shown remarkable improvement, with some reverting to nearly normal, healthy livers after 6–8 months on tirzepatide.

Dosing & Cycling

Reconstitution Cheat Sheet

Vial Size	Dosage	Units to Draw
5mg vial BAC: 1mL (100 units)	1250mcg (1.25mg)	25 units
	2500mcg (2.5mg)	50 units
	5000mcg (5mg)	100 units
10mg vial BAC: 1mL (100 units)	2500mcg (2.5mg)	25 units
	5000mcg (5mg)	50 units
	7500mcg (7.5mg)	75 units
	10000mcg (10mg)	100 units
	2500mcg (2.5mg)	25 units
	5000mcg (5mg)	50 units
30mg vial BAC: 3mL (300 units)	10000mcg (10mg)	100 units
	5000mcg (5mg)	25 units
	10000mcg (10mg)	50 units
60mg vial BAC: 3mL (300 units)	5000mcg (5mg)	25 units
	10000mcg (10mg)	50 units
	12000mcg (12mg)	60 units

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Note: Available in many vial sizes (5mg through 120mg). See full reconstitution tables for all sizes.

Dosage and Timing

Format: Injectable

Common Dosages:

Injectable: Has a titration schedule. Most start between 1.25–2.5mg weekly. Example titration: 2.5mg, 5mg, 7.5mg, 10mg, 12.5mg, 15mg.

Timing:

Time of day does not matter. Once per week. Some prefer nighttime administration.

Alternative Protocols:

Some split the dose throughout the week (e.g., 2.5mg Monday, 2.5mg Thursday for 5mg/week, or 1mg daily Monday through Friday).

Cycle Length

On-Cycle	No standard cycle (GLP class). Minimum 16 weeks if cycling.
Off-Cycle	Lifestyle change required to maintain results
Tapering	Recommended to taper down

Why Cycle: GLP agonists do not typically require cycling. Use until desired results are achieved.

Pairs Well With

- Cagrilintide (complementary satiety pathway: amylin agonism)
- Tesamorelin (lean mass preservation during weight loss)
- MOTS-c (metabolic/mitochondrial support during caloric deficit)
- Retatrutide is an alternative rather than a pairing, since both are incretin-based; not typically combined

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VIP (Vasoactive Intestinal Peptide)

VIP is a neuropeptide that helps regulate inflammation, lung health, blood pressure, cardiovascular function, and immune function.

Uses: Inflammation, Lung Health, Cardiovascular Function, Cognitive Function

Mechanism of Action

VIP is a 28-amino-acid neuropeptide your body produces throughout the nervous system, gut, and lungs. It binds VPAC1 and VPAC2 receptors, which relaxes smooth muscle, widening airways and blood vessels, and shifts immune cells away from an inflammatory pattern toward a regulatory one. In practice it is best known for its role in chronic inflammatory response protocols, where it is used to restore regulatory control after the inflammatory drivers have been removed.

Benefits

- Broad anti-inflammatory and immune-regulating effect, shifting toward a regulatory T-cell pattern
- Pulmonary vasodilation and bronchodilation: the basis for research in pulmonary hypertension and ARDS
- Supports cognitive function and reduces neuroinflammation
- Used to normalize hormonal and inflammatory markers in chronic inflammatory response syndrome protocols
- Cardiovascular support through vasodilation

Side Effects & Cautions

- Hypotension and flushing: the vasodilatory effect is real and dose-dependent; caution in patients already running low blood pressure
- In chronic inflammatory response protocols, ongoing exposure and colonized chronic sinusitis should be addressed before starting VIP: using it while the driver is still present is a common reason it fails or backfires
- Nasal irritation with intranasal dosing; injection-site reactions
- Diarrhea and GI upset (VIP is the hormone behind VIPoma-associated diarrhea, which is the mechanism at work)
- Human data outside of aviptadil's ARDS research is limited; not FDA-approved for these uses

Best Disease Processes / Applications

Chronic inflammatory conditions, particularly chronic inflammatory response syndrome and mold-related illness, where it is typically the final step after exposure removal and binder therapy. Also used for lung health and pulmonary inflammation, cardiovascular support, and cognitive function where neuroinflammation is a driver.

Dosing & Cycling

Reconstitution Cheat Sheet

Vial Size	Dosage	Units to Draw
6mg vial BAC: 3mL (300 units)	100mcg (0.1mg)	5 units

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Vial Size	Dosage	Units to Draw
7.5mg vial BAC: 3mL (300 units)	100mcg (0.1mg)	4 units
10mg vial BAC: 5mL (500 units); transfer to larger vial	100mcg (0.1mg)	5 units

Dosage and Timing

Format: Injectable or Intranasal

Common Dosages:

Injectable or Intranasal: 50–100mcg daily to start. Can increase up to 300–600mcg range over time (mostly intranasal).

Timing:

Can be taken morning or night, or both.

Alternative Protocols:

Can be done 5 days on, 2 days off or every other day.

Cycle Length

On-Cycle	4–8 weeks
Off-Cycle	4–8 weeks
Tapering	Not required

Why Cycle: Maximize results during periods of need.

Pairs Well With

- Thymosin Alpha-1 (immune regulation from a complementary direction in chronic inflammatory illness)
- KPV (anti-inflammatory support without immune suppression)
- MOTS-c, SS-31, or NAD+ (chronic inflammatory illness almost always carries a mitochondrial component)

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Common Blend Reconstitution Charts

BPC-157 + TB-500 (5/5 Blend)

Bacteriostatic Water: 1mL (100 units)

Dosage	Units to Draw
250mcg of each (0.25mg)	5 units
500mcg of each (0.5mg)	10 units
750mcg of each (0.75mg)	15 units
1000mcg of each (1mg)	20 units

BPC-157 + TB-500 (10/10 Blend)

Bacteriostatic Water: 2mL (200 units)

Dosage	Units to Draw
250mcg of each (0.25mg)	5 units
500mcg of each (0.5mg)	10 units
750mcg of each (0.75mg)	15 units
1000mcg of each (1mg)	20 units

GLOW (GHK-Cu + BPC-157 + TB-500) (50/10/10 Blend)

Bacteriostatic Water: 3mL (300 units)

Dosage	Units to Draw
1mg GHK-Cu / 0.2mg BPC / 0.2mg TB	6 units
1.5mg GHK-Cu / 0.3mg BPC / 0.3mg TB	9 units
2mg GHK-Cu / 0.4mg BPC / 0.4mg TB	12 units
2.5mg GHK-Cu / 0.5mg BPC / 0.5mg TB	15 units

KLOW (GHK-Cu + BPC-157 + TB-500 + KPV) (50/10/10/10 Blend)

Bacteriostatic Water: 3mL (300 units)

Dosage	Units to Draw
1mg GHK-Cu / 0.2mg each others	6 units
1.5mg GHK-Cu / 0.3mg each others	9 units
2mg GHK-Cu / 0.4mg each others	12 units
2.5mg GHK-Cu / 0.5mg each others	15 units

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CJC-1295 + Ipamorelin (5/5 Blend)

Bacteriostatic Water: 2mL (200 units)

Dosage	Units to Draw
100mcg of each (0.1mg)	4 units
200mcg of each (0.2mg)	8 units
250mcg of each (0.25mg)	10 units
300mcg of each (0.3mg)	12 units

CJC-1295 + Ipamorelin (10/10 Blend)

Bacteriostatic Water: 3mL (300 units)

Dosage	Units to Draw
200mcg of each (0.2mg)	6 units
250mcg of each (0.25mg)	7.5 units
300mcg of each (0.3mg)	9 units

Semax + Selank (5/5 Blend)

Bacteriostatic Water: 2mL (200 units)

Dosage	Units to Draw
200mcg of each (0.2mg)	8 units
250mcg of each (0.25mg)	10 units
300mcg of each (0.3mg)	12 units
400mcg of each (0.4mg)	16 units
500mcg of each (0.5mg)	20 units

Tesamorelin + Ipamorelin (12/3 Blend)

Bacteriostatic Water: 1.2mL (120 units)

Dosage	Units to Draw
0.5mg Tesa / 125mcg Ipa	5 units
1mg Tesa / 250mcg Ipa	10 units
2mg Tesa / 500mcg Ipa	20 units

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Tesamorelin + Ipamorelin (10/5 Blend)

Bacteriostatic Water: 2mL (200 units)

Dosage	Units to Draw
0.5mg Tesa / 250mcg Ipa	10 units
1mg Tesa / 500mcg Ipa	20 units
2mg Tesa / 1000mcg Ipa	40 units

BPC-157 / TB-500 / KPV Blend (10/10/10)

Bacteriostatic Water: 2mL (200 units)

Dosage	Units to Draw
250mcg each	5 units
500mcg each	10 units
750mcg each	15 units
1000mcg (1mg) each	20 units

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