medi labs

Peptide Protocol Guide

Everything you need to know before your first injection: how to mix, measure, store and inject, plus the full protocol for every peptide we carry.

Beginner friendly · Step by step · 28 peptide protocols

Use ← → to move · press **M** for the menu · medilabsresearch.com



BEFORE YOU START

Watch first: how-to videos

New to this? Watch these short videos before you mix or inject. Then follow the written steps in this guide.

1

Watch first

How to mix (reconstitute) your peptide

Step-by-step demo of adding bacteriostatic water to the vial. Watch this first.

Watch on YouTube →

Scan to watch

2

How to do a SubQ injection

Injecting under the skin, usually in the belly. This is the most common method.

Watch on YouTube →

Scan to watch

3

How to do an IM (deltoid) injection

Injecting into the shoulder muscle, for peptides that call for IM.

Watch on YouTube →

Scan to watch

BEFORE ANYTHING ELSE

Important disclaimer

What this guide is (and isn't)

- Provided for **educational and informational purposes only**.
- It is **not medical advice** and not a substitute for a licensed physician or qualified healthcare provider.
- Nothing in it creates a doctor–patient relationship.
- These compounds are sold as **research chemicals**. Unless a section says otherwise, they are **not approved** by the FDA, Health Canada or any other regulator for human use.
- Dosing protocols come from clinical practice, published research and community experience, not regulatory labeling.
- Many of these compounds are **banned by WADA** and major sports organizations.

Your responsibility

- You're responsible for your own decisions and for following the laws of your country and any country you travel to.
- Dose math assumes the vial sizes and water volumes shown. **Always recalculate for the vial you actually have.**
- By using this guide you accept these terms and release the provider from any liability arising from its use.

Talk to your doctor first

- Especially if you're pregnant or breastfeeding
- History of cancer, diabetes, heart, kidney, liver or thyroid disease
- You take prescription medication
- Never stop or change a prescribed medication without your doctor

Get immediate medical help for

- Signs of an allergic reaction
- Severe or persistent pain
- Vomiting that will not stop
- Vision changes
- An erection lasting more than 4 hours
- Anything that feels seriously wrong
- **Took the wrong dose?** Call Poison Control (Canada 1-844-764-7669 · US 1-800-222-1222) or 911

The golden rule

If you are ever unsure, do not inject.

HOW TO USE THIS GUIDE

Your path through this guide

Four stops. Read them all before your first dose: bloodwork is a baseline you get before you start.

1

Learn the basics

Part 1: measure a dose, mix & store vials, nasal sprays, travel

2

Learn to inject

Part 2: SubQ and IM injections, step by step

3

Go to your peptide

Parts 3–10: the full protocol for what you bought

4

Check your bloodwork

Part 11: baseline labs before your first dose, then while you're on

Read Parts 1 and 2 in full before your first injection

Even if you only bought one peptide. They cover the skills every protocol depends on: measuring a dose correctly, mixing and storing your vials, and injecting safely.

Every peptide section follows the same layout

What it is · How it works · What to expect · Dosing protocol · Reconstitution math · What it stacks with · Side effects · Who should not use it · What to monitor · FAQ

CONTENTS

What's inside

01 — **Start here**
Supplies, dose math, storage & mixing, nasal sprays, travel

02 — **How to inject**
SubQ and IM, step by step

03–10 — **Your peptide**
28 peptide protocols by goal: fat loss, muscle, healing, sleep, focus, sexual health, skin, longevity

11 — **Bloodwork**
What to test before you start and while you're on

Tip: click any card to jump there. Press **M** at any time to open the full menu.

PART 1

01

Start here

Read this first. The supplies, the dose math, how to store and mix, nasal sprays and traveling.

- Beginner supply list
- How to measure your dose
- How to store & reconstitute
- The nasal spray DIY guide
- Traveling with peptides



PART 1 · START HERE

Beginner supply list

Everything you need on hand before your first vial arrives.

TO MIX

Peptides

Bacteriostatic water (BAC water)

Medi Labs BAC water: 10 mL vial. Most labels say discard 28 days after the first puncture

Sterile saline

Optional, if BAC water is unavailable

3 mL syringe + 22G, 1-inch drawing needle

TO INJECT

30G or 31G, 5/16-inch insulin syringes

For SubQ. Use U-100 insulin syringes (100 units = 1 mL)

29G, 1/2-inch, 1 mL insulin syringes

For IM

Alcohol prep pads

Bigger shoulders? (IM)

27G 1-inch needle, 1 mL luer-lock syringe and an 18–21G drawing needle: see Part 2

TO STAY SAFE & ORGANIZED

Sharps container

Never share needles, syringes or vials

Refrigerator storage

Label maker

Or a fine-tip marker and tape



PART 1 · START HERE

Watch first, then use the calculator

1. Watch a mixing demonstration

Watch a step-by-step video first, then follow the written steps in the next slides.

Watch the mixing video (YouTube) →

2. Use the free peptide calculator (no sign-up)

Enter the **mg in your vial**, the **mL of bacteriostatic water** you add, and your **target dose**. It tells you how many units to draw on an insulin syringe.

Open the calculator →

3. Always double-check the result

Check it against the formula on the next slides. Never rely on a single source for your dose.



MEASURE YOUR DOSE

You only need one formula

Measuring your dose, made simple.

Concentration = mg in vial ÷ mL of water added

Amount to draw = your dose ÷ concentration

Divide what's in the vial by the water you add to get the **concentration**. Then divide your dose by that concentration to get **how much to draw**.

The most dangerous mistake

Mixing up mg and mcg. That's a 1,000× error. Always double-check your units.

1,000×

1 mg = 1,000 mcg

The units you'll see

The units

UNIT	WHAT IT IS	WHERE YOU'LL SEE IT
mg	milligram	How peptide vials are sold (2–30 mg)
mcg	microgram	How most doses are measured
mL	milliliter	Liquid volume (your BAC water)
IU	international unit	Used for HGH and HCG only
units	the lines on an insulin syringe	What you actually draw

Memorize these 3

1 mg = 1,000 mcg

1 mL = 100 units

0.1 mL = 10 units

About IU

IU is a potency measure that's different for every compound. You can't convert HGH IU into HCG IU. For HGH, 1 mg is about 3 IU.

Concentration: the key concept

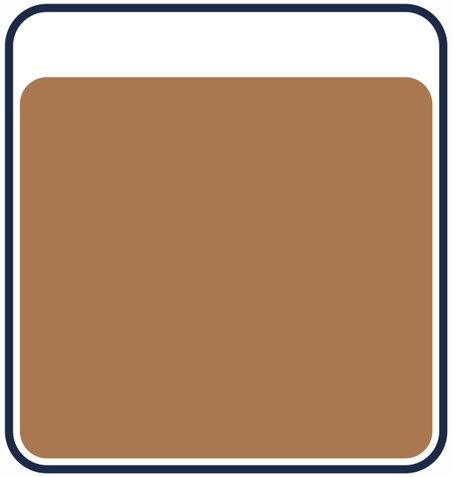
Concentration is **how much peptide is in each mL**.

Think of coffee: espresso is a lot of coffee in a little water. An americano is the same coffee in more water. **Same amount of peptide, different strength.**



Espresso

less water, stronger



Americano

more water, weaker

The formula

Concentration = Amount in vial ÷ Water added

Example: 10 mg vial + 2 mL water

10 mg ÷ 2 mL = 5 mg/mL

= 5,000 mcg/mL

MEASURE YOUR DOSE

The 3-step dose calculation

Example: BPC-157 | Vial: 5 mg | Water: 2 mL | Dose: 250 mcg

1

Find the concentration

mg in vial ÷ mL of water

5 ÷ 2 = 2.5 mg/mL
= 2,500 mcg/mL

2

Find the volume to draw

dose ÷ concentration

250 ÷ 2,500 = 0.1 mL

3

Convert to syringe units

mL × 100

0.1 mL × 100 = 10 units

Draw to the 10-unit line

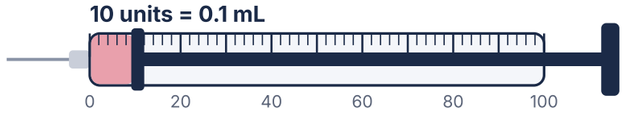


More examples + a cheat sheet

Semaglutide

5 mg vial + 2 mL water · dose 250 mcg

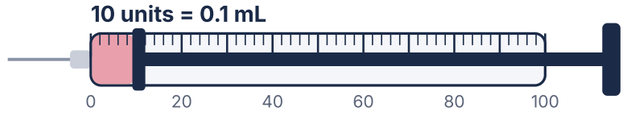
5 ÷ 2 = 2.5 mg/mL = 2,500 mcg/mL
250 ÷ 2,500 = 0.1 mL



CJC-1295

2 mg vial + 2 mL water · dose 100 mcg

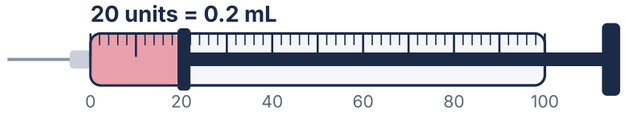
2 ÷ 2 = 1 mg/mL = 1,000 mcg/mL
100 ÷ 1,000 = 0.1 mL



HGH (IU)

10 IU vial + 1 mL water · dose 2 IU

10 ÷ 1 = 10 IU/mL
2 ÷ 10 = 0.2 mL



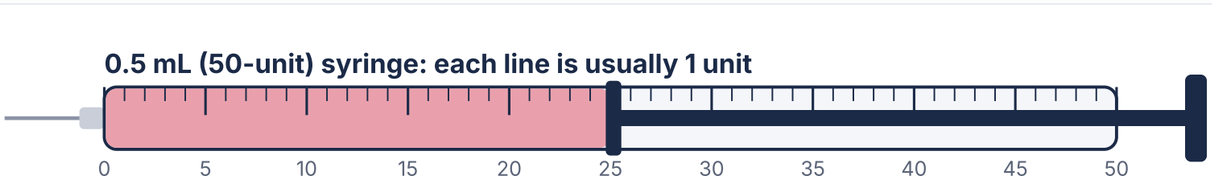
Quick cheat sheet

What's in 10 units on an insulin syringe?

VIAL	WATER	10 UNITS =
5 mg	1 mL	500 mcg
5 mg	2 mL	250 mcg
10 mg	1 mL	1 mg (1,000 mcg)
10 mg	2 mL	500 mcg
10 mg	4 mL	250 mcg

Reading your syringe







Insulin syringe (what you'll use)

- Use **U-100** insulin syringes: marked 0–100 units, and **100 units = 1 mL**. The math in this guide assumes U-100.
- To convert mL to units, multiply by 100: 0.1 mL = 10 units, 0.25 mL = 25 units.
- **Check your syringe size.** Line spacing changes with the syringe.

Standard syringe (less common)

- Marked in mL with decimal lines.
- Read the small lines carefully.

MEASURE YOUR DOSE

How much water should you add?

The water **doesn't change how much peptide is in the vial**. It only changes how much liquid you inject per dose.

Less water = stronger

✓ Smaller injection volume

✗ Harder to measure small doses accurately

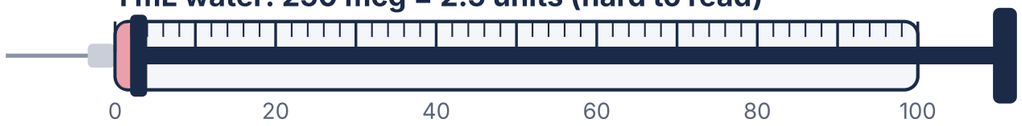
More water = weaker

✓ Easier to measure small doses precisely

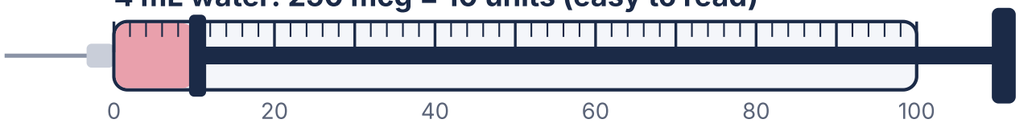
✗ Bigger injection volume

Same 10 mg vial, same 250 mcg dose (from the cheat-sheet numbers):

1 mL water: 250 mcg = 2.5 units (hard to read)



4 mL water: 250 mcg = 10 units (easy to read)



Rule of thumb

1–2 mL works for most peptides. If your dose comes out to just a few units on the syringe, add more water so it's easier to measure.

MEASURE YOUR DOSE

Double-check your math, every time

1. **Work it backward:** volume × concentration should equal your dose.
2. **Sanity check:** most peptide injections are 0.05–0.5 mL (5–50 units).
3. **Way too big?** You probably mixed up mg and mcg.
4. **Need more than 0.5 mL?** Use less water next time.
5. **Use a peptide calculator** or have someone check your work.

5–50

units: the normal range for most injections

If it looks wrong, stop

Recalculate before you draw. A 1,000× mg/mcg mix-up is the error that hurts people.

STORE & MIX

Most “bad batches” are really bad storage

How to store and reconstitute peptides.

Peptide powder is very stable. It starts breaking down the moment it meets **moisture, heat, light or oxygen**.

Powder

Freezer

Mixed

Fridge, never the freezer

Every shot

Let cold vials warm before opening, and check every vial

Why the powder is so stable

- Peptides are freeze-dried (lyophilized): frozen, then the water is pulled out under vacuum.
- With no water, the molecules are locked in place and can't move or react. Think of it like **hard candy**.
- That's why the powder is so stable, and why everything changes once you add water.



STORE & MIX

The 4 enemies of peptides

1. Moisture

The biggest threat

- Softens the locked “hard candy” state so molecules move and break down.
- The more moisture gets in, the lower the temperature where this happens. With enough, it happens at room temp.
- Never open a cold vial: condensation lands on the powder, like a cold glass on a hot day.

The rule: Let a cold vial sit at room temperature 15–30 min before opening. Don't heat it to speed things up.

2. Heat

Speeds everything up

- Every 10°C (18°F) warmer roughly doubles the rate of breakdown.



The rule: Keep time at room temperature short, and get it back in the fridge fast.

3. Light

UV damage snowballs

- UV light damages certain amino acids.
- Damaged molecules make the rest more light-sensitive.

The rule: Store in the dark: the original box or a drawer in the fridge. Never by a window.

4. Oxygen

Every puncture lets air in

- Vials are sealed under vacuum or nitrogen.
- Each needle puncture lets air in.

The rule: Once a vial is mixed, use it steadily. Don't let a half-used vial sit around.

Adding water starts 2 separate clocks

Most people only know about one.



Clock 1: Bacteria

infection safety



Clock 2: Breakdown

does it still work?

Two separate issues

A vial can be safe from bacteria and still be dead, or still potent and contaminated.

Clock 1: Bacteria

- Every puncture is a chance for bacteria to get in.
- BAC water contains 0.9% benzyl alcohol, which stops bacteria from growing.
- This clock is about infection safety. It says nothing about whether your peptide still works.

Clock 2: Chemical breakdown

- Different for every peptide.
- Some are tough: BPC-157 survives stomach acid.
- Others are fragile and lose potency much faster (see the exceptions slide).

STORE & MIX

Which liquid to use

What BAC water does

- ✓ Stops bacteria from growing, so you can pull multiple doses from one vial
- ✓ Mild numbing effect, so shots sting a bit less

What it doesn't do

- ✗ Doesn't protect the peptide itself from breaking down
- ✗ Can actually harm a few specific peptides

Bacteriostatic water

Contains 0.9% benzyl alcohol

Use for Multi-dose vials

Default for most peptides

Sterile saline (0.9% NaCl)

Contains No preservative

Use for Nasal sprays, benzyl-alcohol-sensitive peptides

Sterile water

Contains Just water, no preservative

Use for Single use, or benzyl-alcohol-sensitive peptides

0.6% acetic acid

Use for IGF-1 LR3, IGF-1 DES, AOD-9604 (and Tesamorelin if it gels)

Not for Other peptides

Exceptions to the standard rules

PEPTIDE	LIQUID	NOTE
IGF-1 LR3	0.6% acetic acid	Not BAC water
IGF-1 DES	0.6% acetic acid	Fragile: buy small vials
AOD-9604	0.6% acetic acid	Or 50/50 with BAC water
Tesamorelin	BAC water	Acetic acid if it gels
NAD+	BAC water, 3–6 mL	Needs extra water
Glutathione	BAC water, 3–12 mL	Breaks down fast: use quickly
Semax / Selank (nasal)	Sterile saline	For nasal spray use
Oxytocin	Sterile water / saline	Benzyl alcohol degrades it

Injecting an acetic-acid peptide?

It can sting. Many people dilute it in the syringe with extra BAC water. Draw the BAC water first, then your dose, so a used needle never goes back into the BAC water vial.

Everything else

Not on this list? BAC water is the default.

Storage rules

Powder (before mixing)

Best	Freezer (−20°C / −4°F)
OK	Fridge (2–8°C / 36–46°F)
Always	Dark, sealed, original packaging

Mixed (after reconstitution)

Where	Fridge (2–8°C). ALWAYS.
Never	Freeze it
Light	Keep it dark
Use-by	Date it. Discard 28 days after mixing, or sooner if the peptide's section says so

Never freeze a mixed peptide

Your freezer isn't the controlled freeze-drying the manufacturer used. It just makes ice, and ice destroys peptides 4 ways:

1. Ice crystals physically damage the peptide.
2. Concentration spikes: as water freezes, the peptide is squeezed into what's left and clumps.
3. Unfolding: peptides stick to ice surfaces and fall apart.
4. pH shifts speed up breakdown.

Accidentally froze it?

Thaw it at room temperature, use it right away, don't refreeze it, and expect that you've lost some potency.

STORE & MIX

How to reconstitute, step by step

Before you mix

1. Wash your hands
2. Take the vial out of the fridge/freezer
3. Let it sit 15–30 min at room temp (don't skip)
4. Wipe the stopper with an alcohol swab
5. Let it air dry

Mixing

1. Draw your liquid into a syringe
2. Insert the needle at an angle
3. Aim the stream down the **inside wall** of the vial (never spray directly on the powder)
4. Let it dissolve on its own. **Do not shake.**
5. Still powder after a few minutes? Gently roll the vial between your palms.
6. It should be clear and colorless when done
7. Label it: date, peptide, concentration
8. Refrigerate immediately

Every time you draw

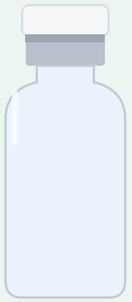
1. Use a new, sterile syringe for every vial entry
2. Wipe the stopper with alcohol
3. Check the solution (clear? no particles?)
4. Draw your dose
5. Back in the fridge right away

Why no shaking?

Shaking creates bubbles, and peptides unfold and clump where air meets water.

STORE & MIX

Check it before every shot



Good
Clear, no particles, no haze



Cloudy / hazy
Clumping



Floaters / particles
Advanced clumping



Yellowing
Oxidation



Gel
Severe clumping



Odd smell
Contamination

Caveat: clear doesn't prove it's potent

A peptide can break down into inactive pieces and still look perfectly clear. Looking only catches the obvious problems.

When to throw it out + common mistakes

Throw it out if

- It's cloudy or hazy, or has particles
- The color has changed
- It froze after mixing
- You suspect contamination (you touched the stopper, dropped the cap, etc.)
- It smells unusual
- You're not sure how it's been stored

When in doubt, throw it out

A new vial costs far less than an infection or weeks on a dead peptide.

Common mistakes

- **Opening a cold vial:** condensation gets on the powder.
- **Freezing a mixed peptide:** it's destroyed.
- **Shaking the vial:** it causes clumping.
- **Spraying water straight onto the powder:** same problem.
- **Leaving it on the counter:** every hour at room temp speeds up breakdown.
- **Assuming “no bacteria” means “still potent”:** two different clocks.
- **Using BAC water for everything:** a few peptides need something else.
- **Skipping the alcohol swab:** that's how bacteria get in.

The nasal spray DIY guide

Mix the peptide in the vial, move it to a spray bottle, and top it up with saline until each spray delivers your dose.

The whole section runs on one assumption: 1 spray = 0.1 mL

Test your bottle first. If it sprays more or less, every dose here is off.

What you need

- Your peptide vial
- Sterile saline (0.9% sodium chloride)
- A nasal spray bottle (empty nasal spray bottle kits are sold online)
- Syringes and alcohol swabs
- Optional: a free peptide calculator for the concentration math. The formula in this section does the spray-bottle math.



Which peptides work as a nasal spray?

Best suited for nasal

- **Semax:** developed in Russia as a nasal spray; the clinical research was done this way.
- **Selank:** approved in Russia as a nasal spray.
- **Oxytocin:** widely studied as a nasal spray in clinical trials.
- **DSIP:** has been delivered nasally in research.
- **NAD+, GHK-Cu, VIP:** used nasally for brain-related goals. Evidence is mostly early or from animal studies.

Works nasally, but injection is preferred

- **PT-141:** works, but absorption varies a lot person to person.
- **Melanotan 2:** absorbs less through the nose, so it takes higher doses.
- **Epithalon:** needs a higher dose than injection.
- **BPC-157:** very little nasal research. SubQ is the standard for tissue repair.
- **TB-500:** injection is preferred for tissue repair.

Doesn't work nasally: inject these

- **GLP-1s:** Retatrutide, Semaglutide, Tirzepatide
- **GH peptides:** CJC-1295, Ipamorelin, Tesamorelin, Sermorelin

Pick your liquid, then test your bottle

Sterile saline (recommended)

✓ Most comfortable in the nose

✕ No preservative

Sterile water

✓ Works fine

✕ No preservative, can sting more

BAC water

✕ Irritates the nose. Not recommended for sprays.

No preservative = small batches

Nothing stops bacteria from growing in saline. Make small batches, keep the bottle in the fridge, and toss it if it turns cloudy or smells off.

First: test your spray bottle

Every recipe assumes 1 spray = 0.1 mL. Bottles vary.

1. Put exactly 1 mL of saline in the bottle
2. Prime it (2–3 sprays until it mists), then refill to 1 mL
3. Count sprays until empty
4. **10 sprays = 0.1 mL per spray** ✓ More or fewer? Use the calculator with your number.

The spray-bottle formula + how to mix

The formula

Total liquid in bottle (mL) =
(mg in vial × 1,000 ÷ mcg per spray) × mL per spray

Example

5 mg vial · 250 mcg per spray · 0.1 mL per spray

(5 × 1,000 ÷ 250) × 0.1 = 2 mL total

How to mix: step by step

1. Let the vial reach room temp (15–30 min)
2. Wipe the stopper with alcohol
3. Draw your saline into a syringe
4. Run it slowly down the **inside wall** of the vial
5. Swirl gently until dissolved. **Never shake.**
6. Draw all of it out and inject it into the spray bottle
7. Add the extra saline to reach your total volume
8. Swirl to mix
9. Label: peptide, date, strength
10. Refrigerate immediately

NASAL SPRAYS

Recipes: Semax & Selank

"Per nostril" is one spray. A full dose is **1 spray in each nostril (2 sprays)**.

Semax · cognitive / BDNF

5 MG VIAL

STRENGTH	PER NOSTRIL (TOTAL DOSE)	MIX VIAL WITH	ADD TO BOTTLE	TOTAL	DOSES
Low	100 mcg (200 total)	2 mL	3 mL	5 mL	25
Standard	250 mcg (500 total)	2 mL	nothing	2 mL	10
High	500 mcg (1,000 total)	1 mL	nothing	1 mL	5

10 MG VIAL

STRENGTH	PER NOSTRIL (TOTAL DOSE)	MIX VIAL WITH	ADD TO BOTTLE	TOTAL	DOSES
Low	100 mcg (200 total)	2 mL	8 mL	10 mL	50
Standard	250 mcg (500 total)	2 mL	2 mL	4 mL	20
High	500 mcg (1,000 total)	2 mL	nothing	2 mL	10

Selank · anti-anxiety / calm focus

5 MG VIAL

STRENGTH	PER NOSTRIL (TOTAL DOSE)	MIX VIAL WITH	ADD TO BOTTLE	TOTAL	DOSES
Low	100 mcg (200 total)	2 mL	3 mL	5 mL	25
Standard	250 mcg (500 total)	2 mL	nothing	2 mL	10

10 MG VIAL

STRENGTH	PER NOSTRIL (TOTAL DOSE)	MIX VIAL WITH	ADD TO BOTTLE	TOTAL	DOSES
Low	100 mcg (200 total)	2 mL	8 mL	10 mL	50
Standard	250 mcg (500 total)	2 mL	2 mL	4 mL	20
High	500 mcg (1,000 total)	2 mL	nothing	2 mL	10

Recipes: Semax + Selank blend & Adamax

Semax + Selank blend (one bottle)

Mix each vial separately, then combine both in one bottle. Each spray delivers both.

TWO 5 MG VIALS

STRENGTH	OF EACH, PER NOSTRIL	EACH VIAL WITH	ADD TO BOTTLE	TOTAL	DOSES
Low	100 mcg	2 mL	1 mL	5 mL	25
Standard	250 mcg	1 mL	nothing	2 mL	10

TWO 10 MG VIALS

STRENGTH	OF EACH, PER NOSTRIL	EACH VIAL WITH	ADD TO BOTTLE	TOTAL	DOSES
Low	100 mcg	2 mL	6 mL	10 mL	50
Standard	250 mcg	2 mL	nothing	4 mL	20
High	500 mcg	1 mL	nothing	2 mL	10

Adamax · Semax analog / nootropic · 10 mg vial

STRENGTH	PER NOSTRIL (TOTAL DOSE)	MIX VIAL WITH	ADD TO BOTTLE	TOTAL	DOSES
Standard	100 mcg (200 total)	2 mL	8 mL	10 mL	50
High	150 mcg (300 total)	2 mL	4.7 mL	6.7 mL	33

Forgetting the blend math

Two vials in one bottle means double the liquid, which cuts each peptide's strength in half.

Recipes: Melanotan 2, PT-141 & BPC-157

Melanotan 2 · tanning / libido · 10 mg vial

STRENGTH	PER NOSTRIL (TOTAL DOSE)	MIX VIAL WITH	ADD TO BOTTLE	TOTAL	DOSES
Loading (daily)	250 mcg (500 total)	2 mL	2 mL	4 mL	20
Maintenance (2–3×/week)	125 mcg (250 total)	2 mL	6 mL	8 mL	40

BPC-157 · healing · 5 mg vial

STRENGTH	PER NOSTRIL (TOTAL DOSE)	MIX VIAL WITH	ADD TO BOTTLE	TOTAL	DOSES
Low	125 mcg (250 total)	2 mL	2 mL	4 mL	20
Standard	250 mcg (500 total)	2 mL	nothing	2 mL	10

Note

Nasal BPC-157 has very little research behind it. For injuries, subQ near the injury is still the standard.

PT-141 · sexual health · 10 mg vial

STRENGTH	PER NOSTRIL (TOTAL DOSE)	MIX VIAL WITH	ADD TO BOTTLE	TOTAL	DOSES
Low	250 mcg (500 total)	2 mL	2 mL	4 mL	20
Standard	500 mcg (1,000 total)	2 mL	nothing	2 mL	10
High	1,000 mcg (2,000 total)	1 mL	nothing	1 mL	5



Nasal spray storage + common mistakes

Storage

- **Powder:** freezer for long-term storage, or the fridge. Keep it dark and sealed.
- **Mixed spray:** fridge, always. Keep it away from light and heat.
- **Never freeze** a mixed spray.
- **No preservative means small batches.** Don't mix a 10 mL bottle if you only use it occasionally.
- Toss it if it's cloudy, discolored, has particles or smells off.

Common mistakes

- **Not testing your bottle:** if it sprays 0.14 mL instead of 0.1, every dose is 40% high.
- **Forgetting the blend math:** two vials in one bottle halves each peptide's strength.
- **Using BAC water:** it irritates the nose.
- **Shaking the bottle:** swirl it.
- **Spraying with a stuffed-up nose:** you absorb less. Clear your nose first.
- **Trying it with GLP-1s or GH peptides:** they don't absorb through the nose.

Traveling with peptides

Simpler than people expect. Airport security is rarely the problem. **Heat, broken vials and forgotten supplies are.**

The short version

Travel with powder whenever you can, keep everything in your carry-on, protect it from heat, and check the laws before you cross a border.

Plan ahead: answer these

- How long will I be gone?
- Am I bringing powder, mixed vials, or both?
- Will I have a fridge?
- Do I have enough syringes, swabs and BAC water?
- Will I need to mix a vial while I'm away?

Powder vs mixed

- **Powder** (freeze-dried) is much easier to travel with: more stable, handles temperature swings better.
- **Mixed** peptides need refrigeration.
- **Long trip?** Bring powder vials and mix them when you arrive.



Flying: carry-on, security and borders

Carry-on (strongly preferred)

- ✓ You control the temperature
- ✓ No risk of lost or delayed bags
- ✓ The cabin stays at a steady temperature

Checked (avoid if you can)

- ✗ Cargo holds and tarmacs can get very hot or cold
- ✗ Bags get lost, delayed, and thrown around
- ✗ If you must: insulated container + ice packs + padding

Airport security (US domestic)

- TSA screens for security threats. Small vials and syringes rarely get a second look.
- Vials are tiny, far under the 3.4 oz (100 mL) liquid limit.
- Insulin syringes are allowed when you're traveling with injectable medication.
- Ice packs and cooler inserts are allowed for keeping medication cold. **Freeze them solid** before you go: slushy or melted packs can get extra screening.
- Keep everything together, labeled and neatly packed. An organized kit raises fewer questions.
- If asked, answer simply and honestly.

Traveling internationally: be careful

- Every country has its own laws on medications, research compounds and personal imports. What's fine in one country can be restricted or illegal in another.
- Check the rules for your destination **and every country you connect through**.
- Customs is different from airport security. Customs officers do care what you're bringing in.
- It's your responsibility. A few minutes of research can save you a serious problem.
- When in doubt, leave it at home or arrange it legally at your destination.

TRAVELING

Keeping peptides cold on the road

Recommended: insulated insulin travel cooler

About $36 online, sold for diabetics. Insulin needs the same fridge temperature your mixed peptides do.

- Rated to stay cold for up to 60 hours: long travel days and layovers
- Temperature display on the lid: see it's in range without opening it
- Hard metal shell protects glass vials from getting crushed
- Slim, bottle-sized tube fits a backpack or carry-on
- Reusable freezer pack: freeze the blue insert overnight and slide it in

How to use it

1. Freeze the blue insert solid the night before.
2. Load your vials into the cooling chamber. Wrap them in a little tissue or cloth so they don't rattle.
3. Check the display. You want **36–46°F (2–8°C)**.
4. Keep it in your carry-on.
5. Refreeze the insert at your hotel for the trip home.

Watch the low end

Right after you load a freshly frozen insert, the inside can run very cold. If the display drops near freezing (32°F / 0°C), let it warm up a bit before putting mixed vials in. Freezing ruins a mixed peptide.

“60 hours” is an ideal-conditions rating

In a hot car or a tropical climate it runs shorter, so go by the temperature display.

TRAVELING

By trip length, budget options and heat

Short trips (1–2 days)

- Recommended case, one frozen insert
- Refreeze the insert at the hotel

Longer trips (3+ days)

- Recommended case + a spare frozen insert or gel pack
- Refreeze at each stop (hotel freezer)
- Bring powder and mix on arrival

No case? The budget version

- A small insulated lunch bag with 1–2 gel ice packs
- Wrap the vials in a cloth. **Never let a mixed vial touch ice directly.**
- Hotel mini-fridge freezers and gas-station ice work as backups.

Protect them from heat

Heat is your biggest enemy on the road. Never leave peptides in:

- ✕ A parked car: it heats up fast, even on a mild day
- ✕ Direct sunlight
- ✕ A windowsill or dashboard
- ✕ A checked bag sitting on a hot tarmac

TRAVELING

Don't panic over short warm spells

Mixed tesamorelin at room temperature, 90 days

Real data from Peptide Crafters testing a peptide known for being fragile.



- Peptides don't die the moment they leave the fridge. Damage depends on **temperature and time together**.
- A few hours in a cool bag on a travel day is very different from an afternoon in a hot car.
- After a full month on the counter, it was still over 98% pure. A travel day is a few hours, not a month.
- The fridge is still better: the refrigerated sample held about 99% for the full 90 days.

The takeaway

Limit heat exposure, but don't stress over every minute. A delayed flight or a few hours without ice won't ruin your peptides. A hot car all afternoon might.

That's one batch of one peptide at normal room temperature: a snapshot, not a guarantee for every compound or for high heat.

TRAVELING

At your destination + what to pack

Refrigeration at your destination

- Confirm your room has a fridge before you book. Not every hotel has one.
- Keep vials away from the freezer compartment. Mini-fridges often freeze whatever sits against the back or top.
- Store them in the door or the middle shelf.

Protect and label your vials

- Vials are glass. Keep them in the hard-shell cooler or a padded case.
- Label every vial before you leave: **peptide name, date mixed, how much water you added**.
- After a few days on the road, clear vials all look the same.

Packing checklist

Most people remember the vials and forget the rest.

- ✓ Peptide vials (powder when possible)
- ✓ BAC water (or your mixing liquid)
- ✓ Insulin syringes (plus extras)
- ✓ Mixing syringes
- ✓ Alcohol prep pads
- ✓ Sharps container or disposal plan
- ✓ Labels or a marker
- ✓ Travel cooler case + frozen insert
- ✓ Padding for powder vials

Common travel mistakes

1. Forgetting supplies: syringes and swabs are hard to find somewhere unfamiliar.
2. Leaving peptides in a parked car.
3. Assuming the hotel has a fridge.
4. Not checking the laws at your destination.
5. Not labeling your vials.
6. Putting vials in a checked bag when you could carry them on.
7. Letting mixed vials freeze against a fresh ice insert or a mini-fridge freezer.
8. Panicking over a few warm hours and throwing out good peptides.

PART 2

02

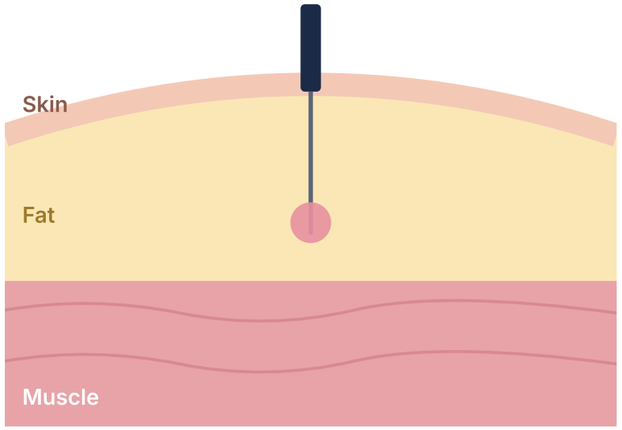
How to inject

SubQ for almost every peptide. IM for the deltoid. Both, step by step.

- Subcutaneous (SubQ)
- Intramuscular (IM) deltoid

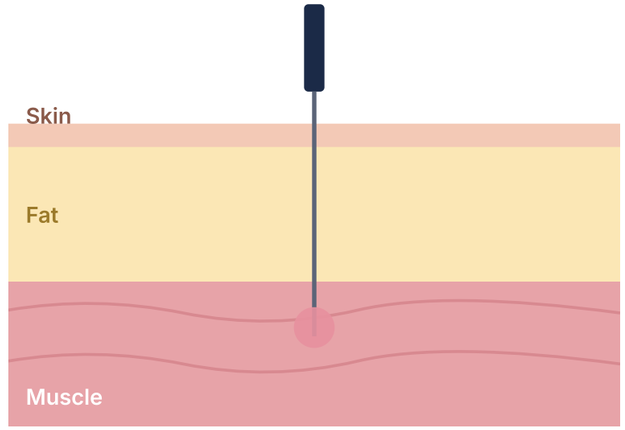


SubQ or IM? Know the difference



SubQ: into the fat layer

- The standard for almost every peptide
- Pinch the skin up and inject into the fold
- Absorbs a bit slower and steadier



IM: into the muscle

- Into the deltoid muscle
- Flatten the skin, don't pinch
- Suits larger volumes and oils (e.g. testosterone)

If your protocol doesn't say, it's SubQ.

Subcutaneous (SubQ) injections

SubQ means injecting into the fat layer just under your skin. It's easy, nearly painless, and done with a regular insulin syringe. **Rotate your sites and you'll avoid most problems.**

When to use SubQ

- **Most peptides:** BPC-157, TB-500, CJC/Ipamorelin, Tesamorelin, GLP-1s, MOTS-c, SS-31, Kisspeptin and more.
- **Small volumes:** up to 1 mL per spot; 0.5 mL or less is most comfortable.
- **Small oil doses:** testosterone can be done SubQ in small amounts (around 0.3 mL or less). Bigger oil doses do better IM.

Watch the SubQ video (YouTube) →

What you need

Syringe	Insulin syringe, 1 mL (100 units); 0.5 mL or 0.3 mL for small doses
Needle	29–31 gauge, 5/16 inch (8 mm) or ½ inch (12.7 mm)
Also	Alcohol swabs, sharps container

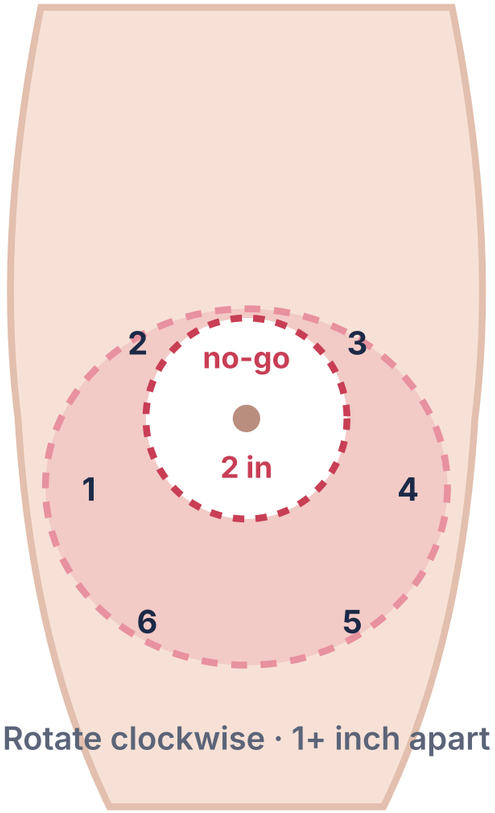
Either needle length works

The shorter 5/16 inch is the easiest. With the ½ inch, pinch well or angle it so you stay in the fat.

Small dose?

Use a 0.5 mL or 0.3 mL syringe. The lines are easier to read, and each line is usually 1 unit instead of 2.

Where to inject



Rotate clockwise · 1+ inch apart

Best sites

Belly	2+ inches away from your belly button (most common, easiest)
Upper glute	Upper, outer area

Avoid

- ✕ Within 2 inches of your belly button
- ✕ Skin that's bruised, scarred, red, hard or lumpy
- ✕ Moles, stretch marks and visible veins

Does location matter?

For most peptides, no. They go systemic. For BPC-157 with one specific injury, injecting near it gives a higher local dose.

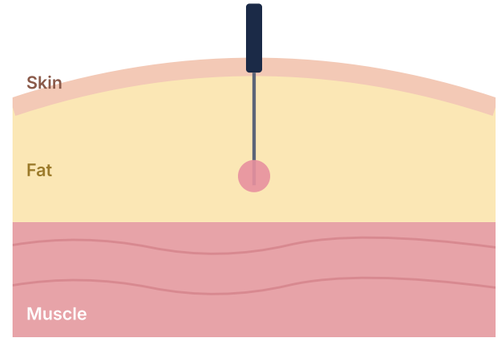
How to inject SubQ, step by step

Prep

1. Wash your hands
2. Wipe the vial stopper with alcohol, let it dry
3. Draw your dose
4. Tap out air bubbles, push until a tiny drop shows at the tip

Inject

1. Pick your spot
2. Wipe with alcohol. Let it dry fully.
3. **Pinch** up a fold of skin and fat (1–2 inches)
4. Go in at **90°** in one smooth motion (**45°** if you're very lean)
5. Push the plunger slowly and steadily
6. Wait 5 seconds before pulling out
7. Release the pinch, pull the needle straight out
8. Press lightly with gauze if needed. Don't rub.
9. Needle straight into the sharps container. **Never recap it.**



Why you pinch

It lifts the fat away from the muscle so the needle stays in the fat layer.

Very lean?

Use the shorter 5/16 inch needle, pinch firmly and go in at 45° so you don't hit muscle.

No need to aspirate

There are no large blood vessels in the fat layer.

Less pain + rotate your sites

Tips for less pain

- Let the alcohol dry. Wet alcohol stings going in.
- Let cold vials warm up a few minutes. Cold liquid stings more.
- Go in quickly and push slowly.
- Relax. Tensing up makes it worse.
- Pick a fattier spot for peptides that burn.
- For peptides that sting (GHK-Cu, acetic-acid mixes): dilute the dose with extra BAC water in the syringe. Draw the BAC water first, then the dose.

Rotate your sites: the most important SubQ habit

- Move at least **1 inch** from your last spot.
- Use a pattern: work clockwise around your belly, or alternate left and right.
- Injecting several times a day? Use different areas (belly in the morning, thigh at night).

Why it matters

Hitting the same spot over and over builds up hard, lumpy fat or scar tissue. Peptides absorb poorly from those spots, and they can become permanent.

What's normal, what's not + common mistakes

Normal

- ✓ A small bump that flattens in minutes to hours
- ✓ Mild redness or itching at the site
- ✓ A drop of blood or liquid
- ✓ A small bruise now and then
- ✓ Brief stinging

Some peptides react more

GHK-Cu, Tesamorelin and SS-31 commonly cause redness, itching or a welt for 10–20 minutes. That's expected.

Get medical help

- Spreading redness, heat or swelling
- Pus, or a hard painful lump that keeps growing
- Fever or chills
- Hives, swelling of the face/throat, or trouble breathing

Common mistakes

- **Same spot every time:** lumps and poor absorption.
- **Not pinching:** you can end up in the muscle.
- **Too close to the belly button.**
- **Not letting the alcohol dry.**
- **Pushing too fast:** more stinging and bigger bumps.
- **Too much volume in one spot:** split anything over 1 mL.
- **Reusing needles:** they dull after one use and raise infection risk.
- **Recapping needles:** that's how people stick themselves.

SubQ FAQ

Does it hurt?
Barely. Insulin needles are tiny. Most people feel a small pinch or nothing at all.

I got a bump after injecting. Is that OK?
Yes. It's the liquid sitting under the skin, and it absorbs within minutes to hours.

A little leaked out. Did I lose my dose?
Only a tiny amount. Wait 5 seconds before pulling out next time.

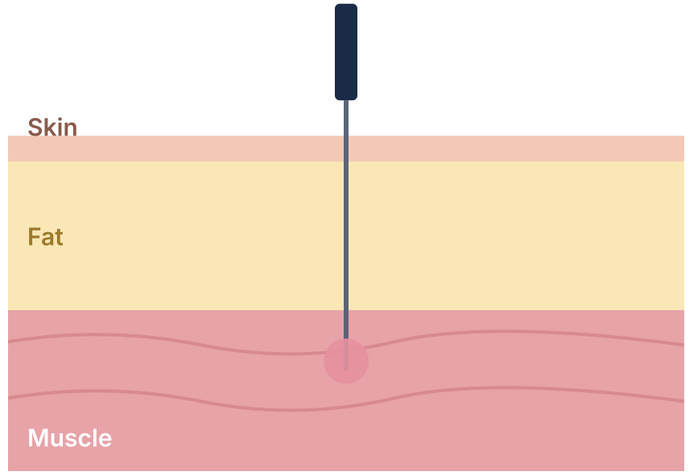
I hit a blood vessel and it bled or bruised. Is that a problem?
No. It happens. Press on it for a minute and pick a different spot next time.

Can I mix two peptides in one syringe?
Often yes, if both use BAC water and you inject right away. Don't mix GLP-1s, cagrilintide or acetic-acid peptides with others. Check each peptide's section.

SubQ or IM for testosterone?
Both work. SubQ suits small, frequent doses. IM suits larger volumes. See the IM deltoid section.

Intramuscular (IM) deltoid injections

If you're lean, a regular insulin syringe reaches your deltoid: tiny needles, almost no pain, one syringe for everything. If you carry more fat over your shoulders, use a **27 gauge, 1 inch** needle so you actually reach the muscle. Either way, **location matters most: 2–3 finger widths below the bony tip of your shoulder.** Works for both oil (testosterone) and peptides.



The pinch test: which needle is right for you?

PINCH THE SKIN & FAT OVER YOUR DELTOID	USE
Fold is under ~1 inch thick	29 gauge ½ inch insulin syringe
Fold is ~1 inch or thicker	27 gauge, 1 inch
Not sure?	27 gauge, 1 inch

A pinch doubles the layer, so a 1-inch fold means about ½ inch of fat, which is the length of an insulin needle.

Watch the IM deltoid video (YouTube) →

Your two needle options

Option 1: insulin syringe (lean)

Needle	29–31 gauge, ½ inch (12.7 mm)
Syringe	1 mL (100 units), needle built in
Best for	Lean shoulders, small volumes
Pros	Nearly painless, less scar tissue
Cons	Oil moves slowly through it

Option 2: 27 gauge, 1 inch (bigger)

Needle	27 gauge, 1 inch
Syringe	1 mL luer lock
Draw with	18–21 gauge, then swap needles
Best for	More fat over the shoulders, more muscle mass
Pros	Reaches muscle reliably, oil flows easier
Cons	Slightly more to feel

Check your needle length

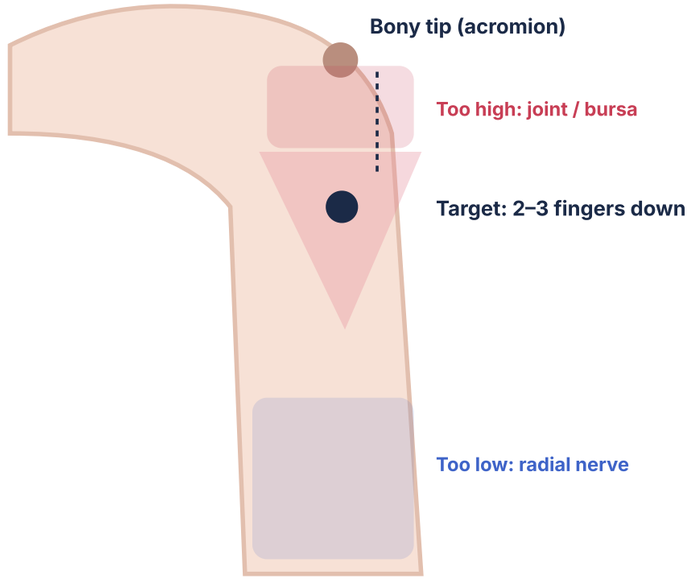
Many insulin syringes come in 5/16 inch (8 mm), which is too short for IM. You want the ½ inch (12.7 mm) version.

What it works for

- **Peptides (water-based):** flow easily through either needle.
- **Oil (testosterone):** works through both, but oil is thick, so it moves slowly through an insulin needle. That's normal. Be patient.
- **Volume:** 1 mL max in the deltoid. With an insulin needle and oil, 0.5 mL or less per shot. For more, split it between both arms.

Finding the right spot

This is the most important part of this section.



How to find it

1. Feel for the bony tip at the top/outer edge of your shoulder (the **acromion**)
2. Measure **2–3 finger widths** straight down from it
3. That's the center of the deltoid: the thick, meaty middle of the muscle
4. Picture an upside-down triangle on your upper arm. Aim for the middle of it.

Avoid

- ✕ **Too high** (within 2 fingers of the bone): you can hit the shoulder joint or bursa and cause a lasting shoulder injury.
- ✕ **Too low** (lower third of the upper arm): the radial nerve runs there.
- ✕ **Too far front or back:** stay on the outer side of the arm.
- ✕ **Skin that's bruised, scarred, red or swollen:** use the other arm.

Drawing your dose

Peptides, with either needle

1. Wipe the vial stopper with alcohol and let it dry.
2. Draw your dose.
3. Tap out the air bubbles.

Oil with an insulin syringe (slow is normal)

- **Warm the vial first** in your hand or pocket for a few minutes. Warm oil flows much more easily.
- **Pull the plunger back and wait.** The oil fills slowly, so hold it and be patient.
- **Faster option, backloading:** pull the plunger all the way out of the insulin syringe. Draw the oil with a separate syringe and an 18–21 gauge needle, squirt it into the back of the insulin syringe, then put the plunger back in and push out the air. It also keeps your injection needle perfectly sharp.

Oil with the 27 gauge

1. Draw with an 18–21 gauge needle.
2. Swap to the fresh 27 gauge, 1 inch needle to inject.
3. Tap out the bubbles and push until a tiny drop shows at the tip.

How to inject IM, step by step

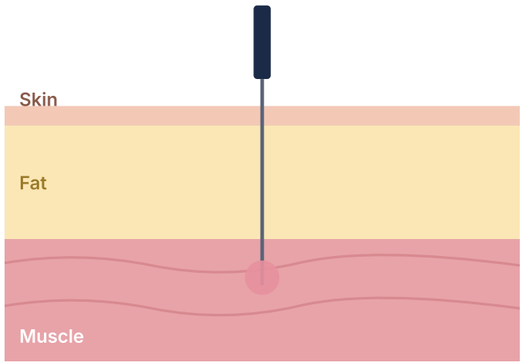
1. Wash your hands
2. Sit down and **relax your arm**. Let it hang loose or rest it on your lap.
3. Find your spot (2–3 fingers below the bone)
4. Wipe with alcohol. Let it dry fully.
5. With your free fingers, **flatten or spread the skin**. Do NOT pinch it up.
6. Go straight in at **90°**, all the way, in one smooth motion
7. Push the plunger **slowly** (oil through an insulin needle takes a while)
8. Wait 5–10 seconds before pulling out
9. Pull straight out, press with gauze. Don't rub hard.
10. Needle straight into the sharps container. **Never recap it.**

Why you don't pinch

Pinching lifts the fat away from the muscle, so a short needle ends up in fat instead. Flatten the skin and go straight in to the full depth.

Injecting yourself

Use your opposite hand: your right hand injects your left arm.



Less pain, rotation, and what's normal

Tips for less pain

- Relax the muscle. A tense muscle hurts more and leaks more.
- Let the alcohol dry. Wet alcohol stings going in.
- Warm your oil before drawing.
- Go in quickly and push slowly.
- Move your arm afterward. Light arm circles help it spread.

Rotate your sites

- Switch arms every injection.
- Move about an inch from your last spot on that arm.
- Injecting often? Rotate between the deltoids, glutes and thighs.

Normal

- ✓ Mild soreness for 1–2 days
- ✓ A drop of blood or oil at the site
- ✓ Small bruise

Signs you didn't reach muscle

- A lump or knot under the skin that lingers
- More stinging or redness than usual
- Oil leaking back out
- → Switch to the 27 gauge, 1 inch needle

Get medical help

- Spreading redness, heat or swelling
- Pus or a hard, painful lump that keeps growing
- Fever or chills
- Numbness, tingling or weakness down the arm
- Severe shoulder pain or trouble lifting the arm
- A coughing fit or trouble breathing right after an oil injection

IM common mistakes + FAQ

⚠ Common mistakes

- **Injecting too high:** the most common mistake and the most likely to cause a real shoulder injury. Measure every time.
- **Using an insulin needle when you're not lean enough:** the dose ends up in fat. Keep getting lumps? Move up to the 1 inch.
- **Using the short (5/16 inch) insulin needle:** it won't reach the muscle.
- **Pinching the skin.**
- **Not going in all the way** with the short needle.
- **Rushing oil through a small needle:** push slowly and steadily.
- **Too much volume:** 1 mL max, and 0.5 mL for oil through an insulin needle.
- **Tensing the arm.**
- **Same spot every time.**

Can I really inject testosterone with an insulin needle?

Yes, if you're lean enough to reach the muscle. It's slow, but it works, and it's much easier on your tissue over years of injections.

How do I know I reached the muscle?

You went in the full ½ inch on a lean shoulder, there's no lump afterward, and nothing leaked out. If you keep getting lumps, use the 1 inch.

I'm in between. Which one?

Go with the 27 gauge, 1 inch. It's still a thin needle, and you'll know you're in the muscle.

Why 27 gauge and not the usual 23–25?

It's thinner, so it hurts less and causes less scarring, and it still moves oil fine if you push slowly.

Some of it leaked out. Did I lose my dose?

Usually only a tiny amount. Inject slowly and wait 5–10 seconds before pulling out.

RECAP

Your first injection, start to finish

1 Do the math

mg ÷ mL = strength. Dose ÷ strength × 100 = units. Check it backward.

2 Warm the vial

15–30 min at room temp before opening.

3 Mix gently

Down the inside wall. Never shake. Label it.

4 Inspect it

Clear, no particles, no haze. If in doubt, throw it out.

5 Draw your dose

Wash your hands. Swab the stopper, draw, tap out bubbles.

6 Inject

Swab the site and let it dry. SubQ: pinch, 90° (45° if very lean). IM: flatten, 90°, 2–3 fingers below the bone.

7 Dispose

Straight into the sharps container. Never recap.

8 Back in the fridge

Right away. Rotate your site next time.

Now go to the section for your peptide.

Every peptide section has its own protocol, mixing math, side effects and who should not use it. Read all of it before you start.

PARTS 3–10

Find your peptide

Jump straight to the one you bought. Each section starts with a one-page overview.

PART 3 · FAT LOSS & METABOLIC HEALTH

- Retatrutide
- Tirzepatide
- Semaglutide
- Cagrilintide
- AOD-9604
- SLU-PP-332
- MOTS-c
- 5-Amino-1MQ

PART 4 · MUSCLE GROWTH & HORMONE SUPPORT

- Tesamorelin
- CJC-1295 + Ipamorelin
- IGF-1 LR3
- HGH 191AA

PART 5 · HEALING & RECOVERY

- BPC-157
- Wolverine Stack
- KLOW Blend
- KPV
- Thymosin Alpha-1
- Cartalax

PART 6 · SLEEP SUPPORT

- DSIP

PART 7 · COGNITIVE & MOOD SUPPORT

- Semax
- Selank

PART 8 · SEXUAL HEALTH

- Kisspeptin-10
- Melanotan 2

PART 9 · SKIN HEALTH

- GHK-Cu
- Melanotan 1

PART 10 · LONGEVITY & ANTI-AGING

- SS-31
- NAD+
- Glutathione

PART 3

03

Fat Loss & Metabolic Health

- Retatrutide
- Tirzepatide
- Semaglutide
- Cagrilintide
- AOD-9604
- SLU-PP-332
- MOTS-c
- 5-Amino-1MQ



Retatrutide

Phase 3 trials (TRIUMPH), not FDA approved; Lilly plans submission late 2026 or early 2027, possible approval late 2027

A once-weekly triple-agonist injection (GLP-1, GIP, glucagon) that cuts appetite and raises calorie burn for major weight loss.

- Described as the most powerful weight-loss drug ever tested.
- Hits three receptors (GLP-1, GIP, glucagon): eat less, better blood sugar, burn more at rest.
- Trials: average 24% body-weight loss at 48 weeks and 28.7% at 68 weeks.
- Taken once a week; start low and titrate up.
- Protein and lifting decide whether you lose fat, or fat and muscle.

ROUTE	FREQUENCY	HALF-LIFE
SubQ injection	**Once weekly (or split into two shots)**	**~6 days**

RECEPTORS	MAKER	MIX WITH
GLP-1 + GIP + glucagon	**Eli Lilly**	**Bac water**



What it is & how it works

What it is

- A triple agonist from Eli Lilly that hits GLP-1, GIP and glucagon.
- Semaglutide hits 1 receptor → about 15% weight loss.
- Tirzepatide hits 2 → about 20%.
- Retatrutide hits 3 → 24–28.7%.
- Injected once a week; half-life about 6 days.
- Not FDA approved yet: in Phase 3 (TRIUMPH). Lilly plans to submit late 2026 or early 2027; possible approval late 2027.

Why you might feel hungrier than on sema

- You can't max out three receptors in one molecule.
- Lilly made retatrutide about 9x stronger at GIP but weaker at GLP-1.
- So appetite suppression can feel lighter than on semaglutide.
- Don't judge it by hunger: liver fat burning isn't something you feel. The glucagon effect works even when you can't feel it.

How it works for you

- **GLP-1 — appetite thermostat**: Keeps you full longer, slows digestion and quiets food noise.
- **GIP — blood sugar and partitioning**: Better insulin response, steadier blood sugar, and sends nutrients into muscle instead of leaving them in the blood. Likely part of why tirzepatide preserves more muscle than semaglutide.
- **Glucagon — the difference-maker**: Turns your liver into a furnace: burns stored fat, burns more calories at rest, releases fat from storage as fuel.
- **Result**: You eat less and burn more. Other drugs mostly work on the "eat less" side.

What it is & how it works · Who should NOT use it

When does glucagon "kick in"?

- Not a light switch: it builds gradually as you raise the dose.
- At 4 mg and above, fat burning clearly shows in bloodwork and body-composition scans.
- Below 4 mg it's working, just not measurably.

Does it need carbs?

- No. Fat burning runs on stored body fat.
- Low-carb diets naturally raise glucagon, so low carb and retatrutide work well together.

Protect your muscle

- Muscle loss isn't inevitable — it's optional.
- Protein: 1 g per lb of goal body weight, every day. Treat it like a prescription.
- Lift weights at least 2–3x per week.
- Walk every day.
- Sleep: it's when you burn fat and recover.
- Case series: one patient lost 26.8% of body weight and gained 2.5% muscle by lifting and prioritizing protein.

Don't use if

- You or a family member has had medullary thyroid cancer (MTC)
- You have MEN 2
- You're pregnant or breastfeeding
- You're allergic to retatrutide or similar drugs

Who should NOT use it · Results & what to expect

Use caution with

- History of pancreatitis
- Gallbladder disease (rapid weight loss raises gallstone risk)
- Type 1 diabetes, or diabetic retinopathy
- Heart rhythm issues
- Gastroparesis
- An active eating disorder

Headline numbers

28.7%
average weight loss at 68 weeks (about 71 lbs) (trial result)

24.2%
average weight loss at 48 weeks (trial result)

82%
drop in liver fat in 24 weeks (trial result)

100%
of people on 8–12 mg lost at least 5% (trial result)

Results & what to expect

The results

- People were still losing weight when both trials ended.
- On 12 mg: 83% lost at least 15%, and about 39% lost 30% or more.
- Liver fat: 86% of people reached normal liver fat — the biggest reduction ever recorded for any drug.
- Blood sugar: HbA1c dropped up to 2.0%.
- Heart markers: blood pressure down about 10 mmHg; LDL and triglycerides down.
- Knee pain: down up to 76%; 1 in 8 people completely pain-free.
- Muscle: no more muscle loss than other GLP-1 drugs, despite much more total weight lost.

What to expect

Weeks 1–4 (2 mg)

- Mild appetite suppression, less than on sema or tirz
- Possible nausea or constipation that settles within days
- A bit less food noise

Weeks 5–12 (4 → 8 mg)

- Weight loss speeds up to about 1.5–2 lbs per week
- The fat-burning effect is now active
- Blood pressure often normalizes

Week 13+ (8–12 mg)

- Steady loss of 1.5–2+ lbs per week
- Metabolic markers keep improving

The dosing protocol

My Protocol

Author's protocol — "Follow this one"

Titration, twice weekly, SubQ.

Week 1	1 mg once weekly
Weeks 2–4	1 mg Monday + 1 mg Thursday
Weeks 5–8	1.5 mg Monday + 1.5 mg Thursday
Weeks 9–12	2 mg Monday + 2 mg Thursday
Weeks 12–15	2.5 mg Monday + 2.5 mg Thursday

Human Study Protocol

Phase 2 trial design

Follows the Phase 2 trial design, which had the best tolerability. Once weekly, SubQ.

Weeks 1–4	2 mg
Weeks 5–8	4 mg
Weeks 9–12	8 mg
Week 13+	12 mg (max, optional)

- Start at 2 mg: it cuts side effects with no loss in results.
- Rough side effects? Stay at that dose another 4 weeks.
- Don't push through severe nausea.
- Same injection day every week.

The dosing protocol · Mixing & measuring your dose

How much do you need?

Phase 2, 48 weeks

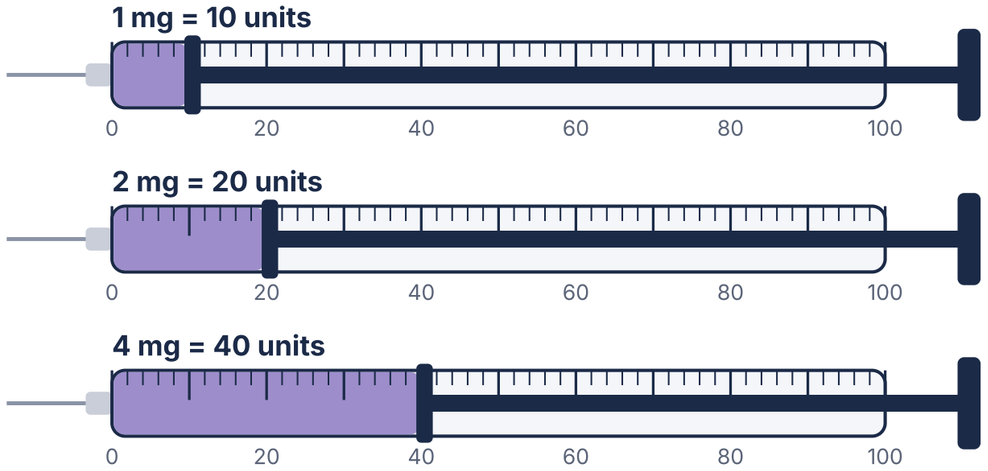
4 mg	~17% weight loss
8 mg	~23% weight loss
12 mg	~24% (28.7% at 68 wks in Phase 3)

- Diminishing returns: 4 → 8 mg adds about 6 points; 8 → 12 mg adds only about 1.5.
- Most people do great at 8 mg.
- Need 15–20% loss? 4–8 mg is likely enough.
- Need 20% or more? 8–12 mg.
- Plateaued on sema or tirz? Moderate-dose retatrutide may beat your max dose on those.

Example: 10 mg vial

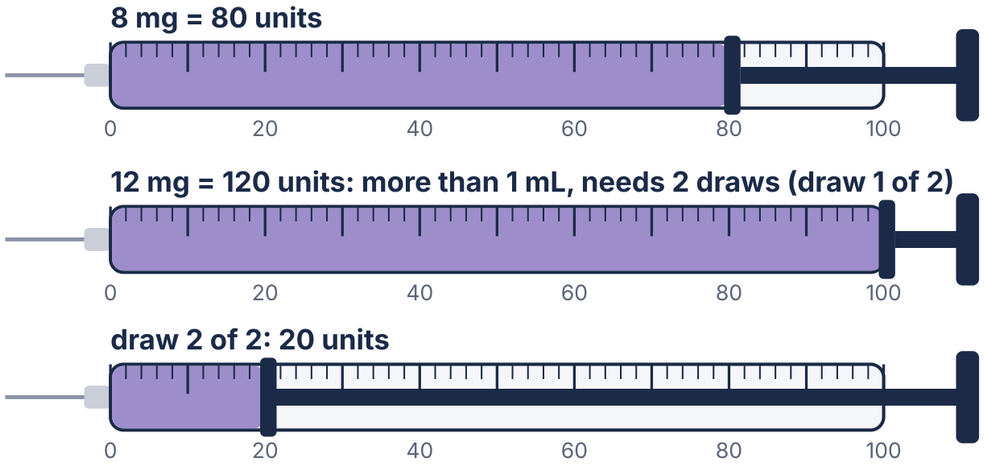
ADD
1 mL bac water

STRENGTH
10 mg/mL



Mixing & measuring your dose · Tips & warnings

Example: 10 mg vial (cont.)



- A 10 mg vial holds 100 units total. Doses above 10 mg need more than one vial: recalculate with the formula.
- Vial sizes vary.
- Formula: total mg ÷ mL of water = mg per mL.

Two protocols are shown: pick one, don't mix them

The author's protocol (1 → 2.5 mg twice weekly, up to week 15) and the Phase 2 study protocol (2 → 12 mg weekly) are different schedules. The results and timeline numbers in this section come from trials at doses up to 12 mg. Decide on one plan with your clinician before you start.

Ketoacidosis warning

The risk is real in these situations. Moderate low carb (50–100 g a day) is fine.

- Strict keto + a high dose + illness
- If you're diabetic
- If you're on an SGLT2 inhibitor

Tips & warnings · What it stacks with

Split dosing (not microdosing)

You can split your weekly dose into two shots (e.g. 1 mg twice a week instead of 2 mg once). Average level stays the same, peaks are smaller, which helps nausea and skin sensitivity. True microdosing never reaches an effective level.

Will you keep it off?

Depends on what you build while you're on it. Use the appetite-suppression window to lock in habits. Lean on the drug alone and appetite returns when you stop — you risk reaching goal weight looking soft and weak.

Low blood sugar: know the steps

Signs: shaky, sweaty, fast heartbeat, confused. Under 70 mg/dL (3.9 mmol/L): take 15 g of fast sugar (juice, glucose tabs) and recheck in 15 minutes. Under 54 mg/dL (3.0 mmol/L), confused or unable to swallow: call 911. (Added by expert review.)

Having surgery or a procedure with sedation?

Tell your surgeon and anesthesiologist, by name, that you're on it (including research-grade product). Guidance changed in 2024: many patients now continue GLP-1s, often with a 24-hour liquid diet beforehand, but your care team decides. (Updated by expert review.)

Cagrilintide titration (if adding)

- Weeks 1–4: 0.25 mg weekly
- Weeks 5–8: 0.5 mg
- Weeks 9–12: 1.0 mg
- Weeks 13–16: 1.7 mg
- Week 17+: 2.4 mg (maintenance)
- Separate shot from reta, same day each week.

What it stacks with · Side effects & interactions

What it stacks with

- **Cagrilintide** — Best add-on if appetite suppression is weak. Works on the brainstem "stop eating" switch, not the GLP-1 appetite thermostat. CagriSema reached 20.4% vs 14.9% for sema alone. Combo with retatrutide hasn't been studied.
- **BPC-157 / TB-500** — No conflict.
- **GH peptides** — No conflict. Keep GH peptides fasted; take reta anytime.
- **TRT** — No conflict.
- **Semaglutide or tirzepatide** — Wouldn't recommend stacking: doubles up the same GLP-1 pathway — more side effects, no more benefit. Add cagrilintide instead.

Common side effects

- GI (most common, dose-dependent): nausea 25–45%, diarrhea about 33%, vomiting about 21%, constipation
- Feeling cold: common, even though core temperature may run slightly higher
- Skin sensitivity (7–21%, dose-dependent): touch feels uncomfortable, you notice clothes rubbing; 9% at 9 mg and 21% at 12 mg; worse at night

Less common

- Higher resting heart rate: about +10 bpm, peaks around week 24, then comes back down
- Hair thinning: from undereating and rapid weight loss, not the drug itself

Side effects & interactions · What to monitor

Rare

- One case of pancreatitis in trials, which resolved

Side-effect notes

- GI effects usually ease after a few weeks at each dose; titrating slowly helps a lot.
- Skin sensitivity may help (untested): lower the dose, split the dose, zinc picolinate 15–30 mg a day, or loratadine 10 mg a day.
- Skin sensitivity and feeling cold are listed as unique side effects.
- In Phase 3, 12–18% of people quit because of side effects.
- Trials reported no severe low blood sugar and no thyroid cancer.

Interactions

- Insulin or sulfonylureas: doses may need to come down a lot to avoid low blood sugar
- Oral meds and birth control: slower digestion changes absorption — use backup contraception during titration
- SGLT2 inhibitors: higher ketoacidosis risk

Monitor

- Daily protein
- Resting heart rate: flag if consistently over 100
- Signs of undereating: hair thinning, fatigue, brain fog
- Body composition, not just the scale
- Metabolic panel and lipid panel periodically

What to monitor · FAQ

Call a doctor for

- Vomiting that won't stop
- Severe stomach pain (possible pancreatitis or gallbladder)
- Signs of an allergic reaction
- Resting heart rate over 100
- Skin sensitivity that doesn't improve when you lower the dose

FAQ

How long can I stay on it?
Trials ran 48–68 weeks, and people were still losing weight when they ended. Most people run it until they hit their goal.

Can I split my dose?
Yes. Your weekly total is what matters.

Will I lose muscle?
Only if you skip protein and lifting.

Tirzepatide

Mounjaro / Zepbound

FDA approved (Mounjaro: type 2 diabetes; Zepbound: weight management and obstructive sleep apnea)

A once-weekly GLP-1 + GIP injection — the strongest FDA-approved weight-loss drug, with about 20% average weight loss.

- Described as the strongest FDA-approved weight-loss drug available.
- Hits two receptors (GLP-1 + GIP); trial weight loss about 20%.
- Beat semaglutide head-to-head: 20.2% vs 13.7%.
- Once weekly: titrate up slowly and find your minimum effective dose.
- Protein and lifting decide whether you lose fat, or fat and muscle.

ROUTE **SubQ injection**	FREQUENCY **Once weekly, same day**	HALF-LIFE **~5 days**
RECEPTORS **GLP-1 + GIP**	MAKER **Eli Lilly**	SITES **Belly, thigh or upper arm — rotate every injection**



What it is & how it works

What it is

- A dual agonist from Eli Lilly that hits GLP-1 and GIP.
- FDA approved under two brand names — same drug, different label:
- Mounjaro: type 2 diabetes.
- Zepbound: weight management and obstructive sleep apnea.
- Injected once a week; half-life about 5 days.
- Researchers first thought blocking GIP would help weight loss. The reverse was true: activating GIP alongside GLP-1 beats GLP-1 alone.

How it works for you

- **GLP-1 — appetite thermostat**: Keeps you full longer, slows digestion, reduces food noise and makes food less rewarding.
- **GIP — blood sugar and partitioning**: Better insulin response after meals, fewer blood sugar spikes and crashes, and sends nutrients into muscle instead of leaving them in the blood.
- **Together**: Stronger appetite control than GLP-1 alone, better blood sugar handling, and fewer GI dropouts than semaglutide.
- **Knock-on effects**: Losing fat, especially visceral fat around organs, improves blood pressure, cholesterol, liver fat and heart risk. Health gains go beyond the scale.

What it is & how it works · Who should NOT use it

Non-negotiables while you're on it

- Protein: 1 g per lb of goal body weight daily (e.g. 250 lbs aiming for 190 → 190 g a day). Track it like medication.
- Lift weights at least 2–3x per week — the only signal telling your body to keep muscle in a deficit.
- Sleep: 7–9 hours.
- Walk every day.

Switching to retatrutide

- On the day your next tirz shot is due, take retatrutide at 2 mg instead — whatever tirz dose you were on.
- Your glucagon receptor has never been activated, so it needs its own titration.
- Expect appetite to come back somewhat over the next few weeks as tirz wears off.

Troubleshooting

- Can't sleep? Usually undereating: blood sugar drops overnight, cortisol spikes, you wake at 2 AM. Eat more during the day; protein snack before bed.
- Stalled? Check protein, training and appetite before raising the dose.

Don't use if

- You or a family member has had medullary thyroid cancer (MTC)
- You have MEN 2
- You're pregnant or breastfeeding
- You're allergic to tirzepatide

Who should NOT use it · Results & what to expect

Use caution with

- History of pancreatitis
- Gallbladder disease or gallstones
- Type 1 diabetes
- Diabetic retinopathy
- Gastroparesis
- Kidney disease (stay hydrated if you get GI side effects)

Headline numbers

~21%
weight loss at 15 mg over 72 weeks

20.2% vs 13.7%
weight loss vs semaglutide head-to-head

62%
fatty liver resolved (vs 10% on placebo)

63%
drop in sleep apnea severity

Results & what to expect

The results

- Weight loss over 72 weeks: 15% at 5 mg, 19.5% at 10 mg, about 21% at 15 mg.
- At 15 mg: more than half lost 20%+, over a third lost 25%+.
- vs semaglutide: fewer quit over GI side effects (2.7% vs 5.6%).
- Blood sugar: HbA1c down up to 2.3%; beat semaglutide 1 mg at every dose.
- Liver: fatty liver disease resolved in up to 62% vs 10% on placebo.
- Sleep apnea: severity down up to 63%; about 50% saw apnea resolve.
- Heart: blood pressure, LDL and triglycerides all went down.

The results (cont.)

- Testosterone: raised T in men with obesity-related low T (less fat → less T converted to estrogen).
- Muscle: about 75% of weight lost was fat, 25% lean mass — on a 50 lb loss, ~12 lbs lean mass. Protein and lifting are non-negotiable.

Results & what to expect

What to expect

Weeks 1–4 (2.5 mg)

- Mild to moderate appetite suppression
- Nausea is common, especially the first week
- A little to 10 lbs weight loss, much of it water

Weeks 5–12 (5–7.5 mg)

- Stronger appetite control
- Food noise drops
- Steady loss of 1–3 lbs per week
- Side effects settle down

What to expect (cont.)

Weeks 13–24 (7.5–15 mg)

- Peak effect window
- Energy, blood sugar and lipids improve

Weeks 24–72

- Weight loss slows as you near your new set point — that's normal
- Don't panic and raise the dose
- Metabolic improvements keep coming even when the scale slows

The dosing protocol

Standard Titration

FDA label & clinical trials

Once weekly, SubQ. Matches the FDA label and the clinical trials.

Weeks 1–4	2.5 mg
Weeks 5–8	5 mg
Weeks 9–12	7.5 mg
Weeks 13–16	10 mg
Weeks 17–20	12.5 mg
Week 21+	15 mg (max)

- Don't skip 2.5 mg. Starting higher won't give better results — it'll just make you miserable.
- Side effects too rough? Stay at that dose longer, drop back to the last stable dose, or step up in a smaller increment.
- Injection: SubQ, once weekly, same day. Sites: belly, thigh or upper arm. Rotate every injection.

How much do you need?

SURMOUNT-1, 72 weeks

5 mg	~15% weight loss
10 mg	~19.5% weight loss
15 mg	~21% weight loss

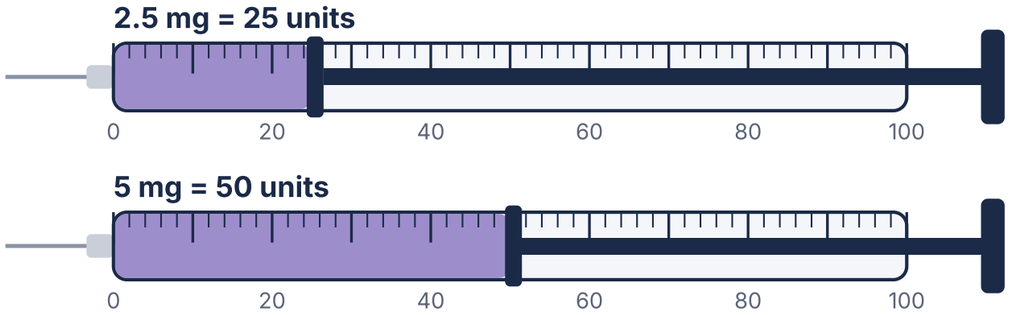
- Diminishing returns: 5 → 10 mg adds about 4.5 points; 10 → 15 mg adds only about 1.5.
- 10 mg gets most people nearly 20%.
- Find your minimum effective dose. At each step ask: Am I losing at a good rate? Are side effects manageable? Is my appetite under control?
- Losing 1–2 lbs a week with tolerable side effects? Stay where you are.
- Raise the dose when your body builds tolerance, not to chase a number.

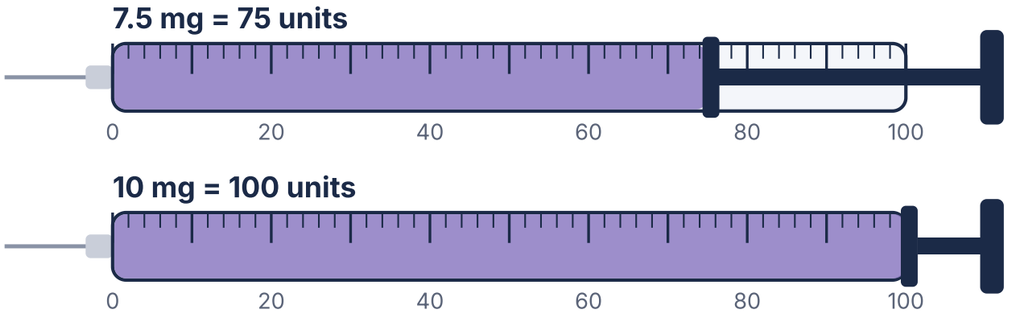
Mixing & measuring your dose

Example: 10 mg vial

ADD
1 mL bac water

STRENGTH
10 mg/mL





- Higher doses need 2 draws on a 100-unit syringe. A 10 mg vial holds 100 units total. The 12.5 mg and 15 mg doses need more than one vial: recalculate with the formula.
- Vial sizes vary.
- Formula: total mg ÷ mL of water = mg per mL.

Tips & warnings

Birth control warning

Tirzepatide significantly reduces oral birth control absorption — peak levels drop 59%.

- Use a non-oral method, or
- Add a backup method for 4 weeks after starting and 4 weeks after every dose increase

Stopping

In trials, people switched to placebo regained about 14% of body weight within a year. Appetite returns when you stop; whether weight returns depends on the habits you built.

Thyroid

Tirzepatide caused thyroid C-cell tumors in rodents. It's unknown whether this happens in humans, so the label carries a boxed warning. Report a neck lump, hoarseness or trouble swallowing.

Low blood sugar: know the steps

Signs: shaky, sweaty, fast heartbeat, confused. Under 70 mg/dL (3.9 mmol/L): take 15 g of fast sugar (juice, glucose tabs) and recheck in 15 minutes. Under 54 mg/dL (3.0 mmol/L), confused or unable to swallow: call 911. (Added by expert review.)

Having surgery or a procedure with sedation?

Tell your surgeon and anesthesiologist, by name, that you're on it (including research-grade product). Guidance changed in 2024: many patients now continue GLP-1s, often with a 24-hour liquid diet beforehand, but your care team decides. (Updated by expert review.)

What it stacks with

What it stacks with

- **BPC-157 / TB-500** — No conflict.
- **GH peptides** — No conflict. Keep GH peptides fasted; take tirz anytime.
- **MOTS-c** — No conflict.
- **5-Amino-1MQ** — No conflict.
- **TRT** — No conflict. Fat loss may raise natural T — watch bloodwork; you may be able to lower your TRT dose.
- **Semaglutide or other GLP-1s** — Same receptor: more side effects, no extra benefit.
- **Retatrutide** — Shares two receptors — don't stack. Use one or the other.

Side effects & interactions

Common side effects

- Nausea (25–30%), mostly the first 1–2 weeks at each new dose
- Constipation (very common and often underestimated)
- Diarrhea
- Sulfur burps
- Bloating and acid reflux
- Fatigue early on

Less common

- Hair thinning during rapid loss (caused by the calorie deficit, not the drug)
- Injection site reactions
- Headache and dizziness
- Body aches

Rare

- Gallbladder problems (about 0.6%, linked to rapid weight loss)
- Pancreatitis (similar rate to placebo in obesity trials)
- Allergic reactions

Interactions

- Insulin or sulfonylureas: doses may need to come down a lot
- Oral meds: slower digestion can change how they absorb
- Oral birth control: absorption significantly reduced (see warning)

What to monitor · FAQ

Monitor

- Fasting glucose and HbA1c
- Lipid panel
- Liver and kidney function
- Testosterone in men: may rise as you lose fat
- Body composition, not just the scale

Call a doctor for

- Vomiting that won't stop
- Severe stomach pain (possible pancreatitis or gallbladder)
- Signs of an allergic reaction
- Vision changes
- Dehydration

FAQ

Tirz or Sema?
Tirz, based on the data. If sema is all you can get it still works — be extra strict about protein and lifting.

Tirz or Reta?
Reta is stronger (about 28.7% weight loss) but not FDA approved. If insurance covers tirz, start there. It works.

Will I lose muscle?
Some lean mass loss happens with any major weight loss. Big losses come from skipping protein and training, not the drug itself.

Semaglutide

Ozempic / Wegovy

FDA approved (Ozempic 2017, Wegovy 2021, Oral Wegovy Dec 2025)

The original once-weekly GLP-1 with the most human data and proven heart protection; about 15% average weight loss.

- The original big GLP-1, with the most human data of any weight-loss drug — including proven heart protection.
- Hits one receptor; people lose about 15% of body weight.
- Works by making a calorie deficit easy to stick to — it doesn't burn fat by itself.
- Tirzepatide and retatrutide produce more weight loss, but sema is proven, widely available and still works.

ROUTE	FREQUENCY	HALF-LIFE
SubQ injection (oral Wegovy pill also exists)	**Once weekly**	**~7 days**

STEADY STATE	RECEPTORS	MIX WITH
After 4–5 weeks	**GLP-1 only**	**Bac water**



What it is & how it works

What it is

- A GLP-1 agonist: a long-lasting version of the fullness hormone your gut releases after meals.
- Ozempic (2017): type 2 diabetes, up to 2.0 mg per week.
- Wegovy (2021): weight loss, 2.4 mg per week.
- Oral Wegovy (Dec 2025): 25 mg daily — the first GLP-1 pill approved for weight loss.
- Injected once a week; half-life about 7 days; steady levels after 4–5 weeks.
- Hits one receptor. Tirzepatide hits two; retatrutide hits three.

How it works for you

- **Brain**: Turns up the "I'm full" signal and turns down the "I'm hungry" signal.
- **Reward**: Makes food less rewarding, so foods you used to crave lose their pull.
- **Stomach**: Slows digestion. In one study, 37% of a meal was still in the stomach 4 hours later vs none on placebo. You fill up sooner and stay full longer.
- **Blood sugar**: Boosts insulin only when blood sugar is high, so it rarely causes lows on its own. Also blocks glucagon after meals, stopping blood sugar spikes.

What it is & how it works

Protect your muscle

- Without lifting and enough protein, about 40% of weight lost can be lean mass. You can change that.
- Protein: 1 g per lb of goal body weight, every day. Treat it like a prescription.
- Lift weights at least 2–3x per week.
- Good news: in one study lean mass loss leveled off after about 7 months, and grip strength rose 4.5 kg at 12 months.
- Case series: one patient gained 2.5% muscle while losing 26.8% of body weight by training and eating enough protein.

Switching to tirz or reta

- Take your last sema dose, then start the new drug the following week.
- No washout needed.
- For retatrutide, start at 2 mg.

Sema vs Tirz vs Reta

- Semaglutide: 1 receptor, about 15% loss. Most data, proven heart protection.
- Tirzepatide: 2 receptors, about 20%. Beat sema head-to-head (20.2% vs 13.7%), fewer GI dropouts, may preserve more muscle.
- Retatrutide: 3 receptors, about 28.7%. The only one that also raises calorie burn. Not FDA approved yet.

What it is & how it works · Who should NOT use it

Tips from users

- Nausea: smaller meals, avoid fatty food, stay hydrated, don't lie down after eating.
- Constipation: magnesium citrate, water and fiber.
- Fatigue: usually undereating — check calories and protein.
- Sulfur burps: common, caused by food sitting in the stomach longer.
- "Ozempic face": facial fat loss from losing weight fast; happens with any major weight loss.

Access

- FDA declared the semaglutide shortage over in February 2025.
- Compounding pharmacies can no longer make copies under the shortage exception.
- Research-grade semaglutide is still sold by peptide suppliers.

Don't use if

- You or a family member has had medullary thyroid cancer (MTC)
- You have MEN 2
- You're pregnant or breastfeeding
- You're allergic to semaglutide

Use caution with

- History of pancreatitis
- Diabetic retinopathy
- Kidney disease (dehydration from GI side effects can hurt kidneys)
- Gallbladder disease
- Gastroparesis
- Depression or a history of suicidal thoughts
- Upcoming surgery

Results & what to expect

Headline numbers

14.9%
average weight loss at 68 weeks

20%
fewer heart attacks, strokes and CV deaths (17,600-person trial)

24%
fewer serious kidney events (diabetes + kidney disease)

15.2%
weight kept off at 2 years while staying on it

The results

- 86% lost at least 5%, 69% at least 10%, and 50% at least 15%.
- For a 240 lb person, 14.9% is about 36 lbs.
- With a structured diet and coaching: 16% average loss; about 40% lost 20% or more.
- Heart benefit held even in people without diabetes.
- Visceral fat: down 27%.

What to expect

Weeks 1–2
- Appetite suppression starts, even at the starting dose

Month 2
- Weight loss starts as the dose goes up

Months 3–9
- When most of the weight comes off

Months 12–15
- Weight loss plateaus around 15%, and holds as long as you stay on the drug

Full dose
- Takes about 16–17 weeks of titration to reach

The dosing protocol

Weight Loss Titration (Wegovy)

Dose-finding studies, confirmed in Phase 3

Weekly, SubQ.

Weeks 1–4	0.25 mg
Weeks 5–8	0.5 mg
Weeks 9–12	1.0 mg
Weeks 13–16	1.7 mg
Week 17+	2.4 mg (full dose)

- Don't skip steps — jumping up causes severe nausea.
- Rough side effects? Stay at that dose 4 more weeks.
- Same injection day each week.
- To change days, your last dose must be 2+ days ago.
- You don't have to reach 2.4 mg. Plenty get great results at 1.0 mg with fewer side effects; pushing higher can add side effects without much extra loss.

Type 2 Diabetes (Ozempic)

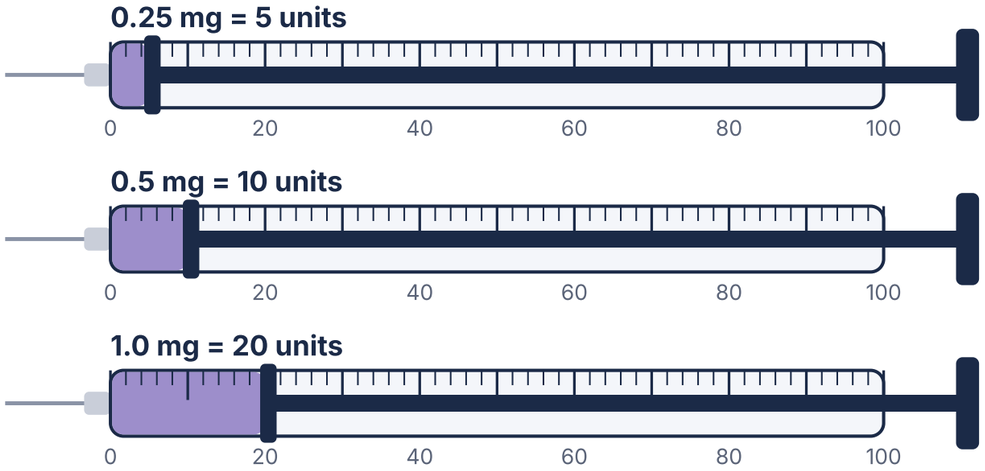
Weeks 1–4	0.25 mg
Week 5+	0.5 mg

- Can increase to 1.0 or 2.0 mg based on response.

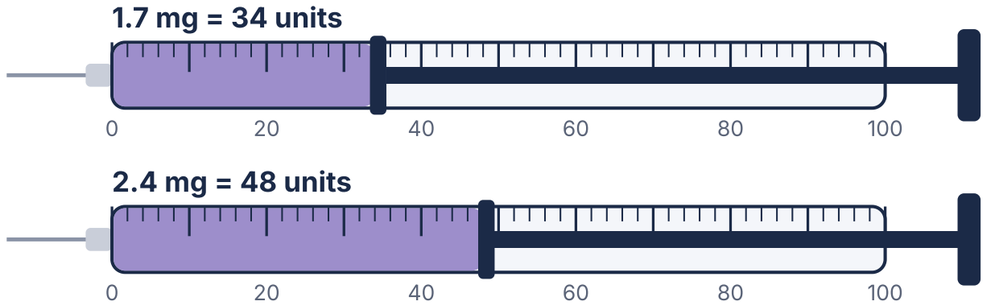
Mixing & measuring your dose

Your Medi Labs vial: 10 mg (with 2 mL)

ADD	STRENGTH
2 mL bac water	5 mg/mL



Your Medi Labs vial: 10 mg (with 2 mL) (cont.)

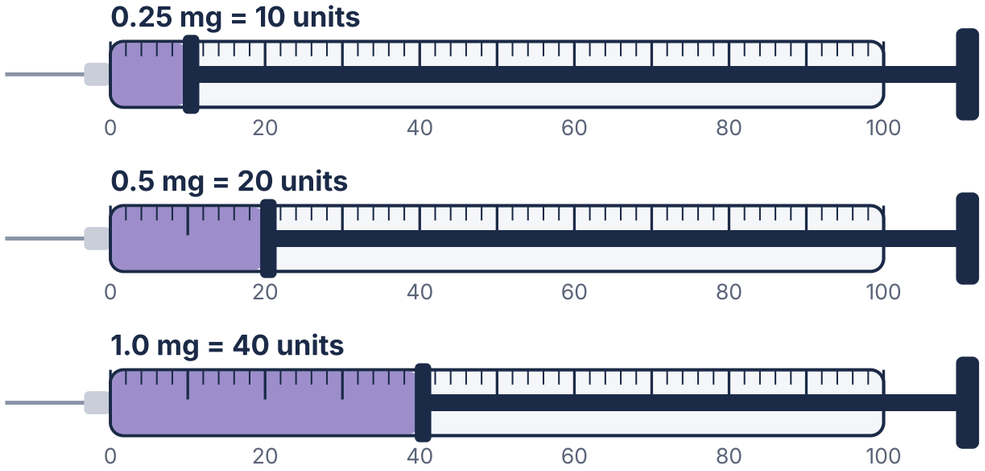


- Same strength as the cagrilintide 10 mg example.
- 5 units is small: a 0.3 mL or 0.5 mL syringe is easier to read.

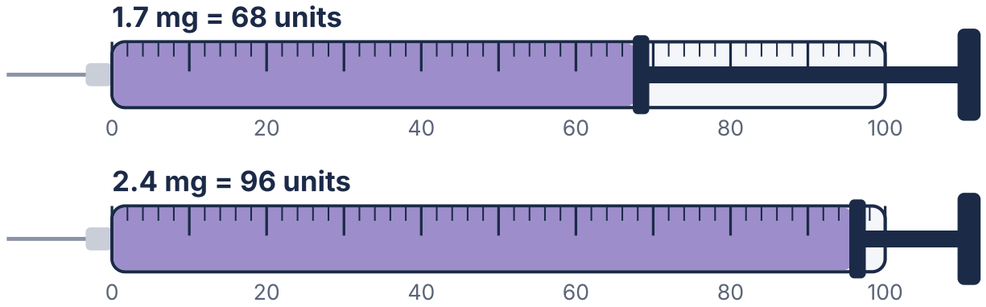
Mixing & measuring your dose

Your Medi Labs vial: 10 mg (with 4 mL, easier to measure)

ADD	STRENGTH
4 mL bac water	2.5 mg/mL



Your Medi Labs vial: 10 mg (with 4 mL, easier to measure) (cont.)

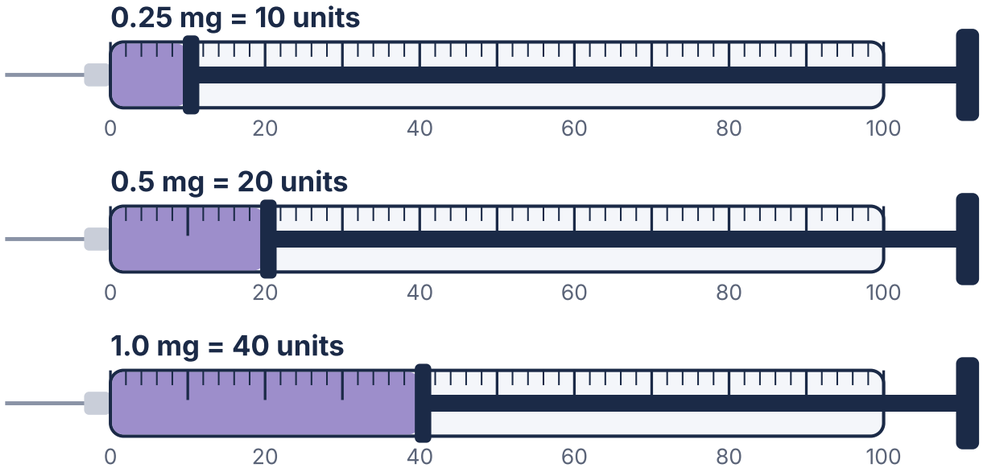


- Same unit numbers as the 5 mg + 2 mL example.
- A 10 mg vial holds 40 doses at 0.25 mg, or about 4 doses at 2.4 mg.

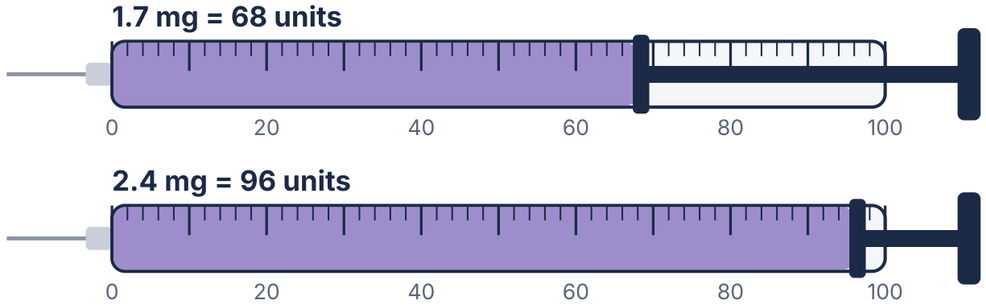
Mixing & measuring your dose · Tips & warnings

Example: 5 mg vial

ADD	STRENGTH
2 mL bac water	2.5 mg/mL



Example: 5 mg vial (cont.)



- Vial sizes vary (5, 10, 20, 30 mg).
- Formula: total mg ÷ mL of water = mg per mL.

Semaglutide does NOT burn fat

It doesn't raise metabolic rate or burn fat directly. All weight loss comes from eating less: the drug makes a deficit easy, and the deficit causes fat loss. That's also why weight comes back when you stop — appetite returns.

Tips & warnings

When you stop

In the STEP-1 follow-up, people regained two-thirds of lost weight within a year (17.3% down to just 5.6% net loss). The drug worked; they hadn't built the habits to hold the deficit on their own.

Surgery warning (updated)

Tell your surgeon and anesthesiologist, by name, that you're on it (including research-grade product). Guidance changed in 2024: many patients now continue GLP-1s, often with a 24-hour liquid diet beforehand, but your care team decides. (Updated by expert review.)

- American Society of Anesthesiologists: stop at least 1 week before elective surgery

Low blood sugar: know the steps

Signs: shaky, sweaty, fast heartbeat, confused. Under 70 mg/dL (3.9 mmol/L): take 15 g of fast sugar (juice, glucose tabs) and recheck in 15 minutes. Under 54 mg/dL (3.0 mmol/L), confused or unable to swallow: call 911. (Added by expert review.)

What it stacks with · Side effects & interactions

What it stacks with

- **BPC-157 / TB-500** — No conflict. Some say BPC helps GI discomfort, though that hasn't been studied.
- **GH peptides** — No conflict. Sema's appetite suppression makes fasting for GH peptides easier, and GH peptides can help protect lean mass.
- **TRT** — No conflict. May help preserve muscle while you lose weight.
- **Insulin or sulfonylureas** — Doses may need to come down. Do this with a doctor.
- **Tirzepatide, retatrutide or any other GLP-1** — Don't stack: same receptor, more side effects without more benefit.

Common side effects

- Nausea: 44% vs 17% on placebo
- Diarrhea: 32% vs 16%
- Vomiting, constipation, stomach pain, headache, fatigue

Less common

- Acid reflux, bloating, gas, dizziness
- Hair shedding: 2.5% vs 1% on placebo — linked to rapid weight loss, more common in women

Side effects & interactions · What to monitor

Side-effect notes

- Common effects are dose-dependent and worst during titration; they usually ease after 4–8 weeks. About 4.5% quit because of GI issues.
- Gallbladder: GLP-1s carry about 37% higher risk of gallbladder problems; risk rises with higher doses and faster weight loss.
- Gastroparesis: can cause seriously delayed stomach emptying. Contact your doctor if nausea, vomiting or bloating persists.
- Pancreatitis: no increased risk vs placebo in studies, but stop the drug if you suspect it.
- Thyroid: caused thyroid tumors in rodents. Human cases are rare; unclear if it applies to people. FDA requires a boxed warning.

Side-effect notes (cont.)

- Mood: in 2025 the FDA removed the suicidal thoughts warning after reviewing 107,000+ patients. Not well tested in active major depression.

Interactions

- Insulin or sulfonylureas: risk of low blood sugar
- Prokinetics (metoclopramide, erythromycin): may cancel out sema's effect on digestion
- Most oral meds (metformin, warfarin, statins, digoxin) showed no significant interaction

Call a doctor for

- Nausea, vomiting or bloating that persists (possible gastroparesis)
- Vomiting that won't stop
- Severe stomach pain (possible pancreatitis or gallbladder)
- Signs of an allergic reaction
- Vision changes
- Dehydration
- Blood sugar under 70 with symptoms

FAQ

FAQ

Does it burn fat?
No. It reduces your appetite. The calorie deficit is what burns the fat.

Will I regain the weight?
Most people who stop regain about two-thirds within a year, unless they built protein, training and sleep habits while on it.

Is it safe for my kidneys?
It protected kidneys in trials. The risk comes from dehydration during GI side effects, so stay hydrated.

Cagrilintide

Phase 3 trials, not FDA approved; available from research suppliers

A once-weekly long-acting amylin injection, used as an add-on when a GLP-1 isn't controlling hunger enough.

- The add-on for when your GLP-1 isn't killing your hunger.
- Works through amylin — a separate fullness system that sema, tirz and reta don't touch.
- Decent alone (about 11% weight loss); strong in combination — 20.4% with semaglutide.
- Especially useful on retatrutide, where appetite suppression can feel weaker.

ROUTE	FREQUENCY	LASTS
SubQ injection	Once weekly	7–8 days

PATHWAY	MIX WITH
Amylin (brainstem satiety)	Bac water — never in the same vial/syringe as other peptides



What it is & how it works

What it is

- A long-acting version of amylin, a hormone your pancreas releases alongside insulin that tells your brain you're full.
- Natural amylin breaks down in minutes; cagrilintide lasts 7–8 days — a louder, longer version of a signal your body already sends.
- Injected once a week.
- In Phase 3 trials, not FDA approved yet. Available from research suppliers.

How it works for you

- **GLP-1 — appetite thermostat (hypothalamus)**: Controls how much you think about food and whether you want to start eating.
- **Amylin — satiety switch (brainstem)**: Tells you when to stop eating. Amylin-responsive neurons don't even have GLP-1 receptors.
- **Two channels together**: Fewer thoughts about food between meals, and putting the fork down sooner during meals.
- **Fresh receptors**: Even with some GLP-1 tolerance after a year, your amylin receptors are untouched by those drugs.
- **Slower digestion**: Meals keep you satisfied longer.

What it is & how it works · Who should NOT use it

The amylin resistance problem

- As insulin resistance builds, you pump out more insulin — and more amylin with it.
- Constantly high amylin wears receptors down until they stop responding.
- The "stop eating" signal breaks, so you eat more, worsening insulin resistance — a vicious cycle.
- That's why stopping once you've started eating can feel impossible. It isn't just willpower.
- Cagrilintide is strong enough to cut through that resistance.

Why it matters on retatrutide

- Reta trades some GLP-1 strength for glucagon fat burning, so hunger and food noise can return when switching from sema or tirz.
- Reta doesn't touch amylin. Cagri adds a full-strength appetite signal through a new pathway, without doubling up like stacking sema would.

Use caution with

- History of pancreatitis
- Gallbladder disease
- Gastroparesis
- Kidney disease
- Type 1 diabetes (not studied)
- Pregnancy or breastfeeding: avoid

Results & what to expect

Headline numbers

20.4%
average weight loss with CagriSema at 68 weeks (REDEFINE 1)

22.7%
in people who took every dose

11.5%
cagrilintide alone over 68 weeks at 2.4 mg

88%
of people with prediabetes returned to normal blood sugar (CagriSema)

The results

- Cagri alone: about 10.8% weight loss at 26 weeks at 4.5 mg, beating liraglutide (Saxenda) head-to-head.
- CagriSema = cagri 2.4 mg + sema 2.4 mg (REDEFINE 1, 68 weeks).
- Semaglutide alone: 14.9%.
- 60% lost 20% or more; 23% lost 30% or more.
- 56% were no longer classified as obese.
- With type 2 diabetes (REDEFINE 2): 13.7% weight loss; 73.5% reached HbA1c ≤ 6.5% vs 15.9% on placebo.
- People with diabetes lose less weight on every drug in this class.

Results & what to expect

What to expect

Weeks 1–4 (0.25 mg)

- Mild appetite reduction; some notice little
- GI effects, if any, usually mild

Weeks 5–8 (0.5 mg)

- Portions shrink naturally
- GI effects may flare briefly with each dose change

Weeks 9–16 (1.0–1.7 mg)

- Strong appetite suppression; food noise drops
- A GLP-1 combo gets very powerful here — watch your protein

Week 17+ (2.4 mg)

- Full effect
- Steady weight loss if nutrition and training are dialed in

The dosing protocol · Mixing & measuring your dose

Titration

Based on Phase 3 REDEFINE trials

Once weekly, SubQ.

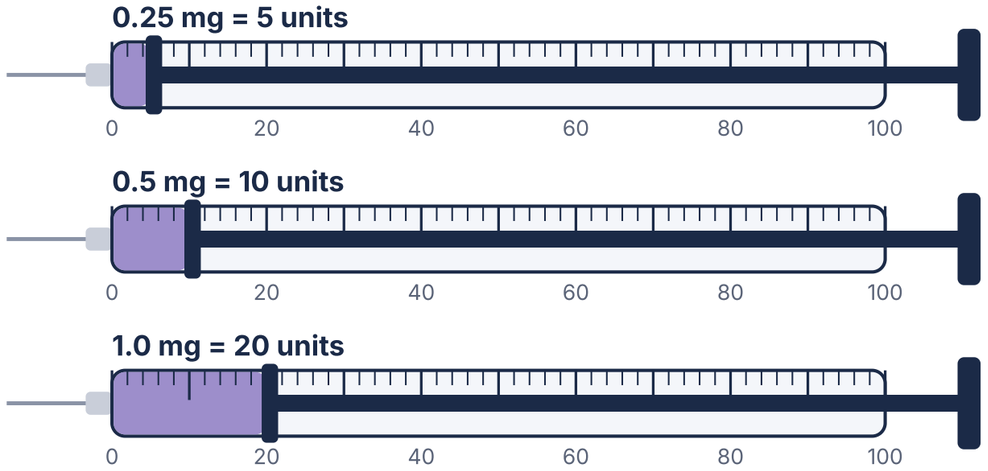
Weeks 1–4	0.25 mg (250 mcg)
Weeks 5–8	0.5 mg
Weeks 9–12	1.0 mg
Weeks 13–16	1.7 mg
Week 17+	2.4 mg (maintenance)

- Don't rush the titration — going slow keeps nausea down.
- You don't have to reach 2.4 mg if a lower dose is working.
- Rough side effects? Stay at that dose another 4 weeks.
- Inject on the same day every week.
- During titration: smaller meals; skip greasy, fried and spicy food. Ginger tea helps nausea.

10 mg vial

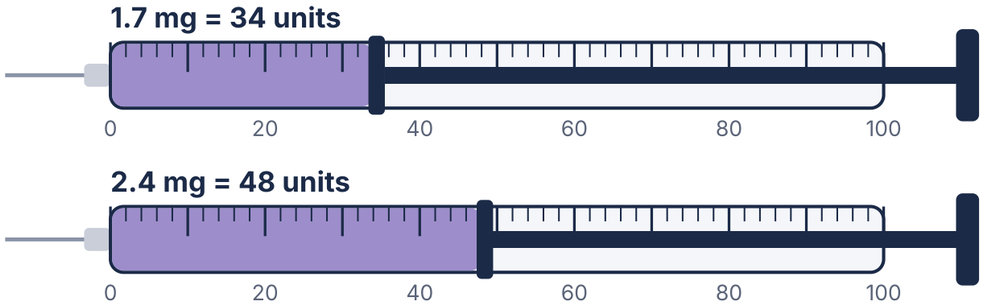
ADD
2 mL bac water

STRENGTH
5 mg/mL



Mixing & measuring your dose · Tips & warnings

10 mg vial (cont.)



- Lasts ~4 weeks at 2.4 mg.
- Powder: freezer (-20°C) or fridge, away from light.
- Mixed: fridge, use within 28 days, don't freeze.
- Discard if cloudy or discolored.

The protein warning

Cagri plus a GLP-1 makes appetite suppression very strong, so undereating is easy — and undereating protein means losing muscle with the fat.

- Weeks 1–4: scale drops fast; you feel like you're crushing it
- Months 2–3: strength drops, clothes fit weird, something feels off
- Long term: skinny fat, slower metabolism, easier regain
- The rule: 1 g protein per lb of goal body weight daily; prioritize it every meal and track it
- The peptide suppresses hunger. It doesn't remove your responsibility.

Heads up: cagri + reta isn't trial-tested

The studied combo is cagri + sema. Cagri + reta is based on mechanism and community reports, not trials. There's no receptor overlap, though.

Tips & warnings · What it stacks with

Low blood sugar: know the steps

Signs: shaky, sweaty, fast heartbeat, confused. Under 70 mg/dL (3.9 mmol/L): take 15 g of fast sugar (juice, glucose tabs) and recheck in 15 minutes. Under 54 mg/dL (3.0 mmol/L), confused or unable to swallow: call 911. (Added by expert review.)

What it stacks with

- **Semaglutide** — The studied combo (CagriSema): 20.4% weight loss at 68 weeks.
- **Retatrutide** — Makes sense by mechanism with no receptor overlap, and community reports support it — but not studied in trials.
- **Tirzepatide** — Makes sense by mechanism but hasn't been studied.

Combining it with a GLP-1

Rules for adding cagri to sema, tirz or reta.

- Use a separate injection: cagri needs a different pH, so never mix it in the same vial or syringe with other peptides
- Same day is fine, but use a different injection site
- Starting both at once? Titrate each on its own schedule
- Already on a GLP-1? Start cagri at 0.25 mg and keep your current GLP-1 dose

Having surgery or a procedure with sedation?

Tell your surgeon and anesthesiologist, by name, that you're on it (including research-grade product). Guidance changed in 2024: many patients now continue GLP-1s, often with a 24-hour liquid diet beforehand, but your care team decides. (Updated by expert review.)

Side effects & interactions · What to monitor

Common side effects

- Nausea
- Vomiting
- Constipation or diarrhea
- Stomach discomfort
- Feeling overly full

Less common

- Headache
- Dizziness
- Injection site reactions
- Mild low blood sugar (more likely with a GLP-1 combo)

Side-effect notes

- Similar to GLP-1 drugs; stronger when combined, especially during titration.

Interactions

- Insulin or sulfonylureas: doses may need to come down
- Oral meds: slower digestion changes how they absorb

Call a doctor for

- Vomiting that won't stop
- Severe stomach pain (possible pancreatitis or gallbladder)
- Signs of an allergic reaction
- Severe dehydration
- Blood sugar under 70 with symptoms

FAQ

FAQ

Can I use it alone?
Yes, for about 10–11% weight loss. It's strongest as an add-on.

Which GLP-1 does it pair with?
Sema is the studied combo. Tirz and reta make sense by mechanism but haven't been studied.

Can I mix it in the same syringe?
No. Always use a separate shot.

AOD-9604

HGH Fragment 176-191

Obesity program shut down in 2007; FDA compounding committee voted against it (Dec 2024); WADA-banned

A fat-burning fragment of growth hormone: very safe, but weak evidence; the author generally doesn't recommend it.

- The fat-burning fragment of growth hormone, stripped of everything else.
- Extremely safe: 6 human trials with 900+ people.
- But it failed its biggest trial against placebo, and the injectable form was never tested in humans.
- Author's view: generally not recommended. A GH secretagogue does the same job better.
- GLP-1s work far better for fat loss.

ROUTE	DOSE	TIMING
SubQ (belly most common)	300 mcg daily	Morning, fasted

HALF-LIFE	MIX WITH	DURATION
~3 minutes (IV, in animals)	0.6% acetic acid (NOT bac water)	4–12 weeks, then equal time off



What it is & how it works

What it is

- A 16-amino-acid piece from the tail end of growth hormone (amino acids 176–191).
- Has one swap (tyrosine) to make it more stable.
- Goal: keep GH's fat-burning effect, drop the downsides (insulin resistance, water retention, IGF-1, carpal tunnel).
- History: Metabolic Pharmaceuticals (Australia) ran 6 human trials with 900+ participants.
- Safety data was excellent; weight-loss results weren't. Obesity program shut down in 2007.
- Banned by WADA, plus the UFC, NFL, NCAA, NHL, MLB, NAIA and PGA.
- The FDA's compounding committee voted against it in December 2024.

How it works for you

- **Releases stored fat**: Tells fat cells to release stored fat (lipolysis).
- **Needs beta-3 receptors**: Mice without beta-3 receptors on fat cells didn't respond. It seems to increase the number of these receptors rather than bind them directly.
- **That's all it does**: ❌ Doesn't bind the GH receptor. ❌ Doesn't raise IGF-1. ❌ Doesn't affect blood sugar or insulin. ❌ Doesn't suppress appetite. ❌ Doesn't build muscle or improve sleep, recovery or aging.
- **Very short half-life**: About 3 minutes (IV, in animals). That short half-life is why you dose it daily.

What it is & how it works · Who should NOT use it

Why it falls short

- GH burns fat two ways.
- 1. Directly: GH switches on the fat-breakdown enzyme in fat cells.
- 2. Indirectly: GH converts to IGF-1, which burns fat again and drives muscle, recovery, collagen and bone.
- A secretagogue (CJC/Ipa, Tesamorelin) gives both steps plus all the extras.
- AOD only gives you a piece of step 1.

What it's good for

- Safety: side effects indistinguishable from placebo across 6 trials.
- No toxicity in 6–9 month animal studies at doses thousands of times higher than people use.
- No IGF-1 bump: an option for people who can't raise IGF-1.
- Cheap: a 5 mg vial costs much less than other fat-loss peptides.
- Cartilage (early): one rabbit study showed repair when injected into the joint, especially with hyaluronic acid. No human data.

How it compares (mechanism · avg weight loss · status)

- AOD-9604: HGH fragment · ~2–3 kg · Discontinued
- Liraglutide: GLP-1 · ~8% · Approved
- Semaglutide: GLP-1 · ~15% · Approved
- Tirzepatide: GLP-1 + GIP · ~21% · Approved
- Retatrutide: GLP-1 + GIP + Glucagon · ~24–28.7% · Phase 3

Use caution with

- Active cancer or a history of cancer
- Pregnancy or breastfeeding
- An allergy to AOD-9604 or GH fragments
- Tested athletes: don't use it

Results & what to expect

Headline numbers

6 trials
human trials with 900+ people; side effects matched placebo

5.7 vs 1.8 lbs
Phase 2a, 12 weeks: 1 mg oral group vs placebo

0 doses
beat placebo in the 24-week, 536-person OPTIONS study

~2–3 kg
average weight loss; GLP-1s range ~8–28.7%

What to expect

Weeks 6–12

- Some people see a subtle loss of midsection fat; others notice nothing

The results

- Phase 2a (12 weeks, oral): 1 mg group lost 5.7 lbs vs 1.8 lbs on placebo.
- 🚩 Red flag: the lowest dose did best; higher doses up to 30 mg did worse. Suggests noise, not a real effect.
- Phase 2b, OPTIONS study (24 weeks, 536 people, oral): didn't beat placebo at any dose. This killed the program.
- Every human trial used oral tablets. The subQ injection used today was never tested.
- People report a "50/50 shot": some see subtle midsection fat loss over 6–12 weeks, others notice nothing.
- Best case: lean people chasing their last few percent of body fat report the most satisfaction.
- Results are subtle, not dramatic. Nowhere near a GLP-1.

The dosing protocol

Standard Protocol

Clinical practice / community consensus

From clinical practice and community consensus. SubQ dosing was never studied in humans.

Dose	300 mcg daily
Timing	Morning, fasted
Wait	30+ min before eating
Route	SubQ (belly most common)
Duration	4–12 weeks, then equal time off

Higher Dose

Clinical practice / community consensus

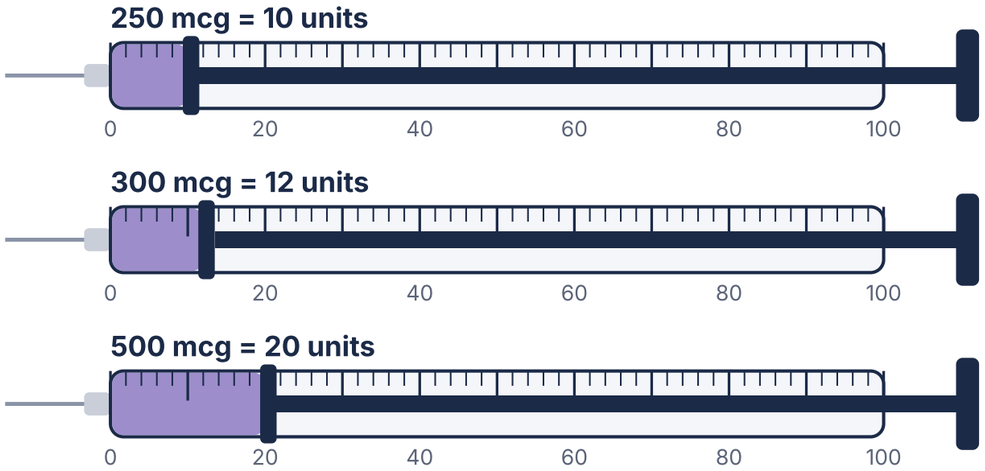
Dose	500 mcg daily
Option	250 mcg AM + 250 mcg before bed
Duration	4–12 weeks

Mixing & measuring your dose · Tips & warnings

5 mg vial

ADD
2 mL 0.6% acetic acid (NOT bac water)

STRENGTH
2.5 mg/mL



- Lasts ~16 days at 300 mcg, 10 days at 500 mcg
- Storage: fridge, use within 28 days

AOD vs "HGH Frag 176-191": not the same thing

They're sold as if identical, but they aren't.

- AOD-9604: the stabilized version (tyrosine swap). All the human data comes from this one.
- HGH Frag 176-191: the raw, unmodified piece. Zero human data.
- If the stable version couldn't beat placebo, the raw fragment starts from an even weaker spot.

Tips & warnings

How to stop it gelling

AOD gels more than any other peptide, for three reasons:

- About 6 of its 16 amino acids avoid water, so molecules clump together.
- A sulfur bridge can break and link molecules into chains.
- Shaking makes bubbles that pull molecules apart; they stick together when bubbles pop.
- Fix: use 0.6% acetic acid, not bac water. It keeps molecules repelling and slows sulfur bonding.
- Alternative: 1 mL acetic acid first, let it start dissolving, then add 1 mL bac water.
- Drip slowly down the vial's side. Don't spray the powder; don't shake.
- Let it dissolve on its own (can take a few minutes). Swirl gently if needed.
- Preload your syringes so you only disturb the vial once.
- Normal: some gelling over time, even with perfect technique.
- Not normal: a glob that never dissolves from day one, or thick, milky liquid. Don't use that vial.

Tips & warnings · What it stacks with · more

What it stacks with

- **GH secretagogues (CJC/Ipa, Tesamorelin)** — Redundant. The secretagogue already does this via the full GH pathway, so you'd pay for a weaker copy. Clinics often add AOD as a "fat-burning" line item anyway.
- **GLP-1s (Reta, Tirz, Sema)** — No conflict, but the GLP-1 does almost all the work.
- **TRT** — No conflict.
- **BPC-157 / TB-500** — No conflict.

Common side effects

- Most people get none

Author's position

I generally don't recommend AOD-9604 for fat loss. Three problems stack up:

- The data is weak. Its biggest trial failed.
- It's redundant. A secretagogue already does this job, and better.
- The injectable form was never tested. Every trial used tablets.
- Narrow case: if you truly can't use a secretagogue or GLP-1 and expectations are realistic. Its safety isn't a worry.
- For most people: money is better spent on a secretagogue, or tirzepatide/retatrutide if fat loss is the goal.
- Training, nutrition and sleep do 95% of the work. Peptides only enhance a solid foundation.

Less common

- Occasional: injection site redness, mild headache, mild nausea, indigestion

Side effects & interactions · What to monitor · more

Side-effect notes

- Does NOT cause: high blood sugar, insulin resistance, IGF-1 increases, water retention, joint pain or sleep problems

Call a doctor for

- Signs of an allergic reaction
- A severe or persistent headache
- Anything unusual

FAQ

Does it work?
The evidence is weak. Some notice a small effect; many notice nothing.

Is it the same as HGH?
No. It doesn't touch the GH receptor or raise IGF-1.

Do I need to take it fasted?
Yes. Morning, on an empty stomach, and wait 30 minutes before eating.

Can I use bac water?
No. It'll gel. Use 0.6% acetic acid.

SLU-PP-332

Never tested in humans (mouse data only); WADA-banned

A lab compound sold as "exercise in a pill": impressive in mice, never tested in humans; the author doesn't recommend it.

- Sold as "exercise in a pill." The mouse data is impressive.
- It has never been tested in a human.
- Oral absorption is a gamble, and most people inject it wrong.
- There's an open cancer question.
- Author doesn't recommend it: MOTS-c, SS-31 and NAD+ reach the same goals with better data.

TYPE	TARGET	HUMAN DATA
Synthetic small molecule (not a peptide)	**ERRs, strongest at ERR-alpha**	**None**

HUMAN DOSE	DOPING
Unknown	**WADA-banned; 22 metabolites detectable**



What it is & how it works

What it is

- Not a peptide: a synthetic small molecule. Vendors market it as a peptide, which says a lot about info quality.
- Activates ERRs (estrogen-related receptors), switches controlling mitochondria building and fat burning.
- Strongest at ERR-alpha.
- Nothing to do with estrogen: the receptors just look like estrogen receptors.
- They don't bind estrogen, and it doesn't change your estrogen levels.
- Never tested in humans; all in-body data is from mice. Using it = joining an uncontrolled human experiment.
- WADA bans it, and labs can now detect 22 of its metabolites.

How it works for you

- **Exercise's ERR-alpha switch**: Exercise switches on ERR-alpha, building more mitochondria and shifting muscle toward fat burning. This is how you adapt to endurance training.
- **The same switch, chemically**: SLU-PP-332 flips that switch without the workout, hence "exercise in a pill."
- **Only one pathway**: Real exercise hits hundreds (AMPK, mTOR, BDNF, IGF-1, myokines, bone, immune). It can't replace training.

Research vs reality: the dose gap

- Mouse doses: 25–50 mg/kg (injected)
- Human equivalent: ~140–285 mg/day (154 lb adult)
- What's sold: 100 mcg – a few mg per capsule
- A tiny fraction of the research dose, and swallowed instead of injected.

What it is & how it works · Who should NOT use it · more

What to use instead

- MOTS-c: fat burning and metabolic flexibility through AMPK
- SS-31: repairs mitochondrial structure
- NAD+: fuel for energy production
- Optional add-ons: berberine and niacin
- See The Cellular Energy Protocol in the NAD+ section for the full stack.
- Nothing replaces actual exercise.

Don't use if

- Active cancer or any history of cancer
- You're a tested athlete
- You're allergic to it

Use EXTREME caution with

- Use extreme caution with: pregnancy or breastfeeding
- Blood sugar conditions, or medications that lower blood sugar
- Cholesterol concerns
- Heart conditions
- Liver problems

Headline numbers

70% / 45%

longer / farther running in mice

~12%

body weight lost by obese mice in 28 days

0

human trials

Results & what to expect

The results

- Endurance: mice ran 70% longer and 45% farther, with more endurance-type muscle fibers.
- Fat loss: obese mice lost ~12% of body weight in 28 days without eating less or moving more. Metabolism ran hotter.
- Kidneys: reversed age-related kidney decline in old mice.
- Heart: improved heart function and survival in mice with heart failure.
- Human cells in a dish: reduced oxidative stress and aging markers in muscle cells from older women.
- Every result came from mice injected with high doses for 8 weeks or less. None confirmed in people.
- User reports: some feel more energy, better cardio, getting winded faster (higher metabolic demand), gradual fat loss over 4–8 weeks.

The results (cont.)

- Many feel nothing, even at 250–1,500 mcg a day for over a month.
- Pattern: responders usually take it with fat, sublingually, or at higher doses. Non-responders mostly swallow standard capsules. Absorption is the difference.

What to expect

Weeks 4–8

- Some users report gradual fat loss; many feel nothing

Tips & warnings · What it stacks with

Why the author doesn't recommend it

Four problems:

- 1. You probably can't absorb it. It doesn't dissolve in water, so swallowed capsules absorb unpredictably; some absorb almost none.
- No published oral bioavailability study exists; any "40–50% bioavailability" claim online is made up.
- Its developers still inject it in every study and say the structure must change to work orally.
- 2. Bac water doesn't work. It won't dissolve; you're injecting water with particles floating in it.
- Studies used lab solvents (DMSO, PEG 300, Tween 80). Not something to mix at home.
- 3. The doses don't match research (see Research vs Reality). Nobody knows the right human dose.
- 4. Unresolved cancer question (see below).

Open cancer question

Several cancers, including breast and lung, use ERR-alpha to grow; blocking ERR-alpha slows tumors in studies. SLU-PP-332 does the opposite and switches it on.

- No study shows it causes cancer, but none has run long enough to find out.
- It's an unknown risk, not a proven harm, and that isn't the same as safe.

What it stacks with

Any combination — Never studied with anything. Every combination is untested.

MOTS-c, SS-31, GLP-1s — Different pathways, so no obvious conflict, but untested together.

Side effects & interactions · FAQ

Side-effect notes

- Mouse studies: HDL (good cholesterol) dropped; total cholesterol and triglycerides also fell.
- User reports: low blood sugar at higher doses, poor sleep, GI upset, fatigue. Sparse and unverified.
- Long-term: no data in any species beyond 8 weeks.

FAQ

Is it a peptide?
No. It's a small molecule sold alongside peptides.

Does it affect estrogen?
No. The receptors are named after estrogen, but it doesn't touch estrogen.

Does oral work?
It's a coin flip on absorption. That's why reviews are so mixed.

What's the right dose?
Nobody knows.

MOTS-c

Not FDA approved; WADA-banned since 2024

A natural mitochondrial peptide that flips your AMPK switch for better fat burning, glucose handling and mitochondria.

- An exercise mimetic your mitochondria make naturally.
- Flips your metabolic master switch (AMPK).
- Result: more fat burning, better glucose handling, more efficient mitochondria.
- It's the "optimize" step.
- Works best when you train and your mitochondria are healthy enough to respond.

ROUTE **SubQ**	DOSE **5–10 mg per week total**	FREQUENCY **3x weekly (Mon / Wed / Fri)**
TIMING **Morning fasted, or 30 min pre-training**	MIX WITH **Bac water, 1 mL per 5 mg**	CYCLE **4–8 weeks on, equal time off**



What it is & how it works · Who should NOT use it

What it is

- A 16-amino-acid peptide coded in your mitochondrial DNA. Almost no other peptides come from there.
- Released during exercise and fasting.
- Levels fall with age: ~11% lower by your 40s–50s, ~21% lower by your 70s.
- Analogy: SS-31 = mechanic, NAD+ = fuel, MOTS-c = supercharger.
- Not FDA approved. WADA has banned it since 2024.

Don't use if

- Active cancer or tumors
- Type 1 diabetes (risk of dangerous low blood sugar)
- Allergy to MOTS-c

How it works for you

- **Flips the AMPK switch**: Your body reacts as if fasted or training, even when you aren't.
- **Glucose uptake without insulin**: Opens more glucose doorways (GLUT4) into muscle.
- **More fat burning**: Increases fatty acid oxidation.
- **Better mitochondria**: Existing ones work more efficiently, and it signals for new, healthier ones.
- **Protects them**: Moves into the nucleus and switches on antioxidant genes (NRF2), cutting oxidative damage.
- **Lowers inflammation**: Reduces IL-6, IL-1β and TNF-α.
- **Metabolic flexibility**: Your body switches between burning carbs and fat more easily.

Who should NOT use it · Results & what to expect

Use caution with

- Type 2 diabetes on medication: monitor blood sugar; your meds may need adjusting
- Pregnancy or breastfeeding
- A history of cancer
- Serious chronic illness

Headline numbers

21%
ALT drop with CB4211 (stabilized MOTS-c), 4 weeks at 25 mg daily

28%
AST drop with CB4211

6%
fasting glucose drop with CB4211

36%
of people cut liver fat by more than 30% (CB4211)

The results

- Direct human data on MOTS-c doesn't exist yet. Timelines come from community reports.
- Closest human evidence: CB4211, a stabilized version of MOTS-c, trialed in obese adults at 25 mg daily for 4 weeks.
- CB4211 results: ALT down 21%, AST down 28%, fasting glucose down 6%.
- 36% of people cut their liver fat by more than 30%.
- CB4211 isn't the same molecule, so results don't translate 1:1 to MOTS-c.

Results & what to expect

What to expect

30 min – a few hours

- Many feel an energy boost, especially dosing before training

Weeks 1–2

- Better training performance
- Steadier energy through the day

Weeks 4–8

- Easier fat loss while keeping muscle
- Better insulin sensitivity on bloodwork
- Better endurance and faster recovery

Standout report

- No energy crashes people would expect while dieting

The dosing protocol

Standard Protocol

Dose	5–10 mg per week total
Split	3 injections (Mon / Wed / Fri)
Timing	Morning fasted, or 30 min pre-training
Route	SubQ
Cycle	4–8 weeks on, equal time off

- Avoid dosing late in the day. It can disrupt sleep.

By Goal

Per week, split 3x.

Training enhancement	5–10 mg
Insulin resistance	10–15 mg
Longevity / wellness	5–10 mg (4–8 wk cycles)

Mitochondrial Stack: Sequential

Significant dysfunction

SS-31 repairs the membrane; MOTS-c works through the nucleus and genes. No overlap, so order depends on damage level.

Wks 1–4	SS-31 1–2 mg daily + NAD+ 100 mg 3x/wk
Wks 5–12	MOTS-c 10 mg/wk (split M/W/F) + NAD+ 100 mg 3x/wk
After	4–8 wks off, repeat 2–3x/year

The dosing protocol

Mitochondrial Stack: Concurrent

Moderate decline, still active

Wks 1–8	SS-31 1–2 mg daily + MOTS-c 10 mg/wk (split M/W/F) + NAD+ 100 mg 3x/wk
Wks 9–12	MOTS-c + NAD+ only
After	4–8 wks off, repeat 2–3x/year

Mitochondrial Stack: Prevention First

Younger / healthy

Start	MOTS-c 10 mg/wk (split M/W/F) + NAD+ 100 mg 3x/wk
Wk 4–8	Still fatigued? → Add SS-31 1–2 mg daily for 4–8 wks
Ongoing	4 wks off every 12–16 wks

- Cycle NAD+: 8–12 weeks on, then 4–8 weeks off. Longer use can suppress your own NAD+ production.

Mixing & measuring your dose

5 mg or 10 mg vial

ADD
1 mL bac water per 5 mg (5 mg vial = 1 mL, 10 mg vial = 2 mL)

STRENGTH
5 mg/mL

500 mcg = 10 units

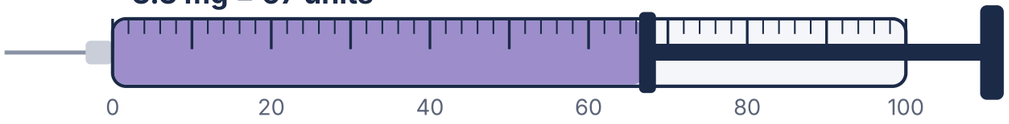


~1.7 mg = 33 units



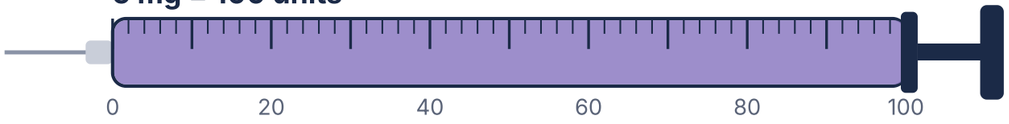
per injection for 5 mg/wk (3x/week)

~3.3 mg = 67 units



per injection for 10 mg/wk (3x/week)

5 mg = 100 units



per injection for 15 mg/wk (3x/week)

- Storage: refrigerate, use within 14–30 days

Tips & warnings

Why it works for some and not others

MOTS-c only sends the signal; your cells do the work. It usually fails for one of three reasons:

- 1. Damaged mitochondria: nothing healthy to optimize. Repair with SS-31 first.
- 2. No exercise: a sluggish AMPK pathway means the signal gets through poorly. Training is non-negotiable.
- 3. Dosing once a week: levels return to baseline within hours. Split into at least 3 injections a week.

Low blood sugar: know the steps

Signs: shaky, sweaty, fast heartbeat, confused. Under 70 mg/dL (3.9 mmol/L): take 15 g of fast sugar (juice, glucose tabs) and recheck in 15 minutes. Under 54 mg/dL (3.0 mmol/L), confused or unable to swallow: call 911. (Added by expert review.)

What it stacks with

What it stacks with

- **SS-31** — Sequence it or run it concurrently (see Mitochondrial Stack).
- **NAD+** — The fuel for what MOTS-c optimizes.
- **5-Amino-1MQ** — Stops NAD+ from being wasted.
- **GLP-1s (Reta, Sema, Tirz)** — Strong for fat loss. The GLP-1 handles intake; MOTS-c handles burn.
- **GH peptides** — No conflict. Both work best fasted, so you can take them together.
- **BPC-157 / TB-500** — No conflict.
- **TRT** — No conflict.

Side effects & interactions · What to monitor

Less common

- Palpitations
- Poor sleep if dosed late
- GI upset
- Muscle cramps
- Dizziness

Side-effect notes

- Most people get minimal side effects, usually settling within a few days.

Interactions

- Blood-sugar-lowering diabetes medication may need adjusting

Common side effects

- Injection site reactions
- Mild fatigue at the start
- Appetite changes (up or down)
- Mild headache

Monitor

- Blood sugar if you have type 2 diabetes on medication

Call a doctor for

- Signs of an allergic reaction
- Low blood sugar symptoms: shakiness, sweating, confusion, racing heart
- Anything persistent or unusual

FAQ

FAQ

Does it replace exercise?
No. Exercise raises MOTS-c ~12x in muscle and sends hundreds of other signals. MOTS-c amplifies training; it doesn't replace it.

Can I run it long term?
Take breaks: 4–8 weeks on with equal time off, or up to 12–16 weeks with breaks. Long-term human effects are unknown.

Does it cause cancer?
No study shows it does. Early evidence points the other way: it suppressed ovarian cancer in animal and cell studies. With active or recent cancer, avoid it until your oncologist clears it.

5-Amino-1MQ

NNMT Inhibitor

Not FDA approved; no human trials published (animal data only)

An oral small molecule that blocks NNMT to stop NAD+ waste in fat cells, raising energy burn without changing appetite.

- Plugs a leak that wastes NAD+ inside fat cells, so they burn more energy. Appetite doesn't change.
- Works best for people with significant extra body fat, especially stacked with a GLP-1.
- Does little for lean people.
- Microdoses likely do nothing, and the effective dose is still theory.
- There's no human data at all.

TYPE	ROUTE	DOSE
Small molecule (not a peptide)	Oral (preferred)	50 mg daily, up to 100 mg (theoretical)

TIMING	ABSORPTION	CYCLE
Morning only	~38% (rat data)	4–6 weeks on, 2–4 weeks off



What it is & how it works

What it is

- Not a peptide: a small molecule, so it survives digestion and works orally.
- Developed at the University of Texas Medical Branch as an obesity research compound.
- In mice: big fat loss with no change in food intake. It all came from higher energy burn.
- Not FDA approved. No human trials have been published.

Who it's actually for

- ✅ Significant extra body fat or metabolic dysfunction: NNMT is likely overactive, so there's something to fix.
- ✅ Already on a GLP-1: adds energy burn on top of appetite suppression.
- ❌ Lean and healthy: NNMT is probably normal, so nothing to correct. It needs a target to hit.

How it works for you

- **The setup**: Cells need NAD+ to make energy (ATP). About 80% of NAD+ comes from recycling vitamin B3 (nicotinamide). An enzyme, NNMT, also grabs B3 and turns it into waste; normally that's routine cleanup.
- **The problem**: In fat cells, B3 recycling is the only way to make NAD+, and NNMT is the only drain. Obesity ramps up NNMT in fat, draining NAD+, slowing fat burning and increasing storage. More fat means more NNMT: a vicious cycle.
- **The fix**: 5-Amino-1MQ blocks NNMT. NAD+ goes up, SAM (a key methyl donor) goes up, SIRT1 (a longevity protein) switches on, fat cells shrink, new fat creation slows, and energy burn rises with no appetite change.
- **The analogy**: SS-31 = mechanic, NAD+ = fuel, MOTS-c = supercharger, 5-Amino-1MQ = plugs the fuel leak before the fuel reaches the engine.

Who should NOT use it · Results & what to expect

Don't use if

- Active cancer or a history of cancer (NNMT's role in cancer is complicated)
- Pregnant or breastfeeding
- Severe liver or kidney disease

Use caution with

- Anxiety or stimulant sensitivity
- Medications that affect NAD+ or methylation
- Other compounds that raise your metabolic rate

Headline numbers

35%
less white fat in mice, no change in food intake

30%
smaller fat cells in mice

~70%
rise in peak strength in old mice

3–6 lbs
user-reported loss per 4–6 week cycle (anecdotal)

Results & what to expect

The results

- Fat loss (mice): 35% less white fat and 30% smaller fat cells, no change in food intake.
- Insulin: better glucose tolerance and insulin sensitivity.
- Liver: fatty liver improved.
- Aging muscle: woke dormant muscle stem cells; peak strength rose ~70% in old mice.
- With a diet cleanup: obese mice became indistinguishable from never-obese mice, which diet alone couldn't do. Gut bacteria shifted favorably.
- Muscle: appears to preserve lean tissue during fat loss.
- All animal data. None confirmed in humans.

What to expect

Weeks 1–2

- Subtle rise in energy
- Some feel slightly warmer

Weeks 3–4

- Fat loss becomes measurable, when it happens at all

Per 4–6 week cycle

- Users report 3–6 lbs lost, with diet and training unchanged
- No appetite change: not a GLP-1 experience

The dosing protocol

Oral (preferred)

Theoretical: extrapolated from animal data and modeling

Extrapolated from animal data and modeling, not human studies.

Week 1	50 mg daily (assess tolerance)
Week 2+	Up to 100 mg if tolerated
Timing	Morning only (can disrupt sleep)
Absorption	~38% reaches bloodstream (rat data)

- Why oral, not subQ? 50–100 mg a day as an injection is a lot of volume for most vials.
- It has also been studied in animals by mouth, with ~38% absorbed.

Cycling

Theoretical

On	4–6 weeks
Off	2–4 weeks
Total	2–3 cycles, reassess after each

- Diminishing returns: as you lose fat, NNMT comes back down, so each cycle has less to fix.

If You Try the Higher Dose

Theoretical

Before	Baseline labs (liver, kidney, metabolic panel)
During	Watch sleep, heart rate, jitteriness, anxiety
After	Recheck labs at end of first cycle
Stop if	Palpitations, severe insomnia, or anything unusual

Tips & warnings

⚠ Why most online doses probably don't work

The dose gap:

- Microdose protocols: 150–600 mcg/day
- Est. 50% enzyme blocking: ~50–100 mg/day
- Est. near-full blocking: ~400–600 mg/day
- Mouse data (human equiv): ~400 mg/day
- A drug must block at least 50% of its target enzyme to do much. That threshold is called IC50.
- Microdoses likely land about 400x below that.
- Your body prefers making NAD+: the NAD+-making enzyme (NAMPT) grabs B3 ~430x more strongly than NNMT.
- NNMT only becomes a real drain when heavily overactive.
- Just want more NAD+? Take NMN or injectable NAD+ instead of microdosing an enzyme blocker.
- Why microdoses exist: a 10 mg vial lasts 66 days at 150 mcg/day, but only 2 days at 5 mg/day. Economics drive the dose, not science.

⚠ 🚨 Read this before you dose: theory, not fact

Where the number comes from: mouse studies scaled to human size, plus pharmacology logic (if you don't block the enzyme, the drug can't work).

- ❌ No human trial at any dose
- ❌ No human safety data
- ❌ No study confirming metformin is a good stand-in
- ❌ No long-term data on blocking NNMT in people
- 50–100 mg a day is 100–600x more than most people take, of a compound no human has formally tested.
- Microdoses: probably useless, but also probably harmless.
- Higher doses: might actually work, and are true unknown territory.
- Don't treat this protocol as fact. Trying it means experimenting on yourself; choose with eyes open.

Tips & warnings · What it stacks with · more

Foundation first

Not a substitute for nutrition, training, or medical treatment for metabolic conditions. Fix your foundation first; once habits are solid, add compounds like this.

Common side effects

- Mild jitteriness or extra energy (usually the first few days)
- Feeling slightly warm

Less common

- Headache
- Poor sleep if dosed late
- Occasional nausea

What it stacks with

- **SS-31 + NAD+ (Repair Protocol)** — SS-31 repairs, NAD+ fuels, and 5-Amino-1MQ keeps the fuel from being wasted.
- **MOTS-c + NAD+ (Optimize Protocol)** — Same logic.
- **GLP-1s (Reta, Tirz, Sema)** — A strong pairing. The GLP-1 cuts intake; 5-Amino-1MQ raises energy burn.
- **TRT** — No conflict.
- **Testing the higher dose?** — Add it on its own first so you know what's causing any reaction.

Side effects & interactions · What to monitor

Side-effect notes

- Most side effects clear up within the first week.
- Reports come from users at a range of doses; side effects at the higher theoretical dose are unknown.
- Unknowns: no human safety data. NNMT also plays roles in detox and cancer biology; long-term effects of blocking it aren't known.

Interactions

- Medications that affect NAD+ or methylation
- Other compounds that raise your metabolic rate

Monitor

- Higher dose: baseline labs before (liver, kidney, metabolic panel)
- During: sleep, heart rate, jitteriness, anxiety
- Recheck labs at the end of the first cycle

Stop taking it if

- Palpitations, severe insomnia, or anything unusual

FAQ

FAQ

Is it a peptide?
No. It's a small molecule, which is why it works orally.

Will it help if I'm lean?
Probably not much. There's no overactive NNMT to fix.

Do microdoses work?
The pharmacology says probably not.

Is 50–100 mg the right dose?
Nobody knows yet. It's the author's theory from animal data and modeling, and the author hasn't tested it personally.

Why does it affect sleep?
It's mildly stimulating, so take it in the morning.

Do I need to cycle it?
Yes: 4–6 weeks on, 2–4 weeks off.

PART 4

04

Muscle Growth & Hormone Support

- Tesamorelin
- CJC-1295 + Ipamorelin
- IGF-1 LR3
- HGH 191AA



Tesamorelin

Egrifta / Egrifta WR

FDA approved (2010, Egrifta) for HIV lipodystrophy belly fat; prescription required; off-label for recomposition/anti-aging; WADA banned

An FDA-approved GHRH peptide that boosts your own growth hormone, best known for cutting visceral belly fat.

- FDA-approved GHRH peptide: tells your pituitary to release more of your own growth hormone.
- Known as "the visceral fat peptide": trials showed large visceral fat (VAT) drops.
- Little or no meaningful change in subcutaneous fat under the skin.
- Works the same way as CJC-1295 – the difference is human belly-fat trials backing it.

DOSE	ROUTE	TIMING
2 mg (2,000 mcg) daily	SubQ, belly below the navel	30–60 min before bed, fasted

HALF-LIFE	MIX WITH	CYCLE
~26 minutes	Bac water (acetic acid if it gels)	3–6 months consistent use



What it is & how it works

What it is

- A 44-amino-acid copy of your natural GHRH, modified to resist breakdown.
- Natural GHRH lasts about 2 minutes.
- FDA approved in 2010 as Egrifta to reduce belly fat in HIV lipodystrophy.
- A weekly-mix version, Egrifta WR, followed in 2025.
- Off-label uses: body recomposition and anti-aging.
- Pharmaceutical form needs a prescription.
- Banned by WADA.

How it works for you

- **Stage 1 – GH release**: GHRH (from your brain) tells your pituitary to release GH. Ghrelin (from your gut) amplifies that signal. When both fire together the GH pulse is much bigger – why your biggest pulse comes in deep sleep while fasted.
- **Stage 2 – IGF-1 conversion**: GH travels to your liver and is converted into IGF-1, which does the real work: fat mobilization, muscle protein synthesis, recovery, collagen and bone. Your liver needs insulin present to make this conversion.
- **The timing paradox**: GH releases best fasted but converts to IGF-1 best fed. Your body solves it naturally: a big fasted GH pulse overnight, then breakfast lets your liver turn it into IGF-1.

What it is & how it works

How it works for you (cont.)

- **Where tesamorelin fits**: It mimics GHRH so your pituitary releases your own GH. It keeps natural pulses and feedback brakes (somatostatin) intact, unlike injecting GH. It only hits the GHRH pathway – why people stack it with ipamorelin (ghrelin pathway).
- **Timing in the body**: Peaks in your blood within about 10 minutes (label Tmax ~0.15 h); half-life only about 26 minutes. Still triggers a 2–3 hour GH burst. IGF-1 stabilizes over 2–4 weeks of daily dosing.

The gelling debate

- Claim: tesamorelin shouldn't be refrigerated after mixing because it gels in the cold.
- Its structure is highly hydrophobic; in theory cold makes molecules stick together into a gel.
- Pharmacy Egrifta WR is labeled for room-temperature storage after mixing and has an anti-clumping stabilizer.
- Research-grade tesamorelin usually lacks that stabilizer.
- A standard COA won't catch clumping – purity tests check the molecule is intact, not clumped.
- Author's experience: has heard about it but never had gelling issues.
- Bottom line: refrigerate like any other peptide and use it quickly.

What it is & how it works · Who should NOT use it

If your vial gels: switch to acetic acid

- Cloudy, thick or gel-like vial? Toss it.
- Mix the next vial with 0.6% acetic acid instead of bac water (same fix as AOD-9604).
- The acid keeps molecules repelling each other instead of clumping.
- Still gelling? Try storing the mixed vial at room temperature, as the pharmacy version is labeled.
- This is a practical troubleshooting fix, not something clinical trials tested.

Don't use if

- Active cancer or any history of malignant tumors
- Pituitary disorder or tumor, or past pituitary surgery
- Past radiation to the head or brain
- Pregnant (Category X, can harm the fetus) or breastfeeding
- Allergic to tesamorelin

Use caution with

- Diabetes or prediabetes – monitor your glucose
- Head injury history
- Kidney or liver disease
- Heart disease
- Asthma or breathing problems
- Migraines or epilepsy
- Adrenal disorders

Results & what to expect

Headline numbers

15–18%
visceral fat drop over 26 weeks to 12 months (placebo rose 5%)

37%
drop in liver fat

+81%
IGF-1, landing in the mid-normal range

+1.4 kg
lean mass in a meta-analysis

The results

- Visceral fat: down 15–18% over 26 weeks to 12 months; placebo went up 5%.
- Muscle: lean mass preserved; increased 1.4 kg in a meta-analysis.
- Lipids: triglycerides dropped about 50 mg/dL; cholesterol/HDL ratio improved.
- Liver: fat fell 37%; 35% got below the fatty-liver threshold vs 4% on placebo.
- Liver fibrosis much less likely to progress: 10% vs 37%.
- IGF-1: up 81%, landing in the mid-normal range.
- Blood sugar: glucose tolerance didn't get worse overall.
- Cognition: early signals promising, but the latest trial found no significant difference from placebo.

Results & what to expect

What to expect

Weeks 1–4

- Some people sleep better
- The GH signal is still building

Weeks 4–6

- Recovery improves as IGF-1 stabilizes
- You start to feel it working

Weeks 8–12

- Visible body composition changes, if diet and training are dialed in

What to expect (cont.)

Weeks 12–26

- Peak visceral fat reduction

Overall

- Not a quick fix – plan on 3–6 months of consistent daily use
- Fat can come back when you stop; in trials some returned after discontinuing
- Your habits are what hold the results

The dosing protocol

Standard Protocol

FDA label & clinical trials

The 2 mg dose comes straight from the FDA label and every clinical trial.

Dose	2 mg (2,000 mcg) daily
Timing	30–60 min before bed, fasted
Or	Morning fasted, 2+ hrs before eating
Route	SubQ, belly below the navel
Cycle (trials)	26 weeks continuous
Cycle (off-label)	3–6 mo on, 1–2 mo off

- Why fasted before bed? Low insulin + high ghrelin = biggest GH pulse; GH mobilizes fat overnight.
- Breakfast then brings insulin, converting GH into IGF-1 that works all day.
- Poor sleep? Switch to morning: inject fasted, wait 2+ hours before eating. Both work.
- Lower dose to save money? No studies support doses below 2 mg for visceral fat.
- Rotate injection sites; avoid scarred, bruised or irritated skin.

The dosing protocol · Mixing & measuring your dose

Stacked with Ipamorelin

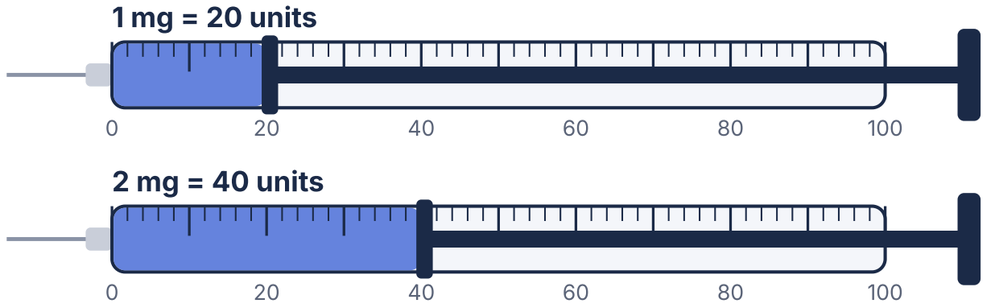
Tesamorelin	2 mg
Ipamorelin	100–200 mcg
Timing	Pinned together, before bed, fasted
Cycle	60–90 days

- Pin them together – synergy only happens when both pathways fire in the same window.
- Split them and you just get two smaller pulses.

Example: 5 mg vial

ADD
1 mL bac water

STRENGTH
5 mg/mL

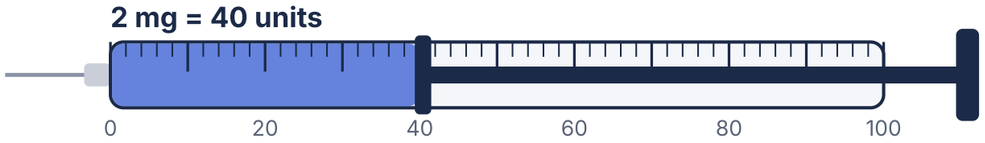


- Lasts 2.5 days at 2 mg/day.
- Bring both the tesamorelin vial and bac water to room temperature before mixing.

Mixing & measuring your dose · Tips & warnings

If it gels – Option 1 (preferred)

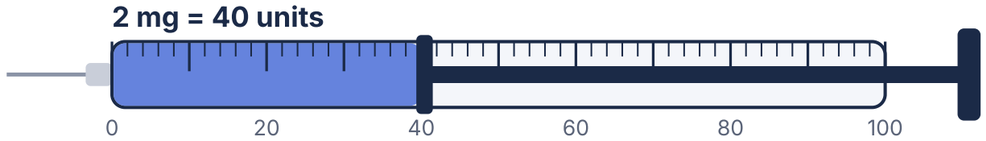
ADD	STRENGTH
1 mL 0.6% acetic acid	5 mg/mL



Same dose math as before

If it gels – Option 2 (50/50 mix)

ADD	STRENGTH
0.5 mL 0.6% acetic acid + 0.5 mL bac water	5 mg/mL



Same dose math as before

- Step 1: add 0.5 mL 0.6% acetic acid first.
- Step 2: let the powder start dissolving.
- Step 3: add 0.5 mL bac water slowly.

Why "the visceral fat peptide"?

Its trials measured visceral fat with CT scans, and that result got it approved.

- Mechanism is identical to CJC-1295 and Sermorelin: same receptor, pathway and downstream effects.
- A 26-week CT study of CJC-1295 would probably show similar results – it just never got funded.
- What was measured is different. What the peptide does isn't.

Tips & warnings · What it stacks with

Important limitation

Every major trial was in people with HIV lipodystrophy or fatty liver disease.

- No large trials in healthy adults for body composition or anti-aging.
- The mechanism supports those uses, but direct evidence doesn't exist.

Mixing technique

Applies when mixing, including the acetic acid fix.

- Drip the liquid slowly down the side of the vial – don't spray it on the powder.
- Don't shake. Swirl gently if needed.
- Let it dissolve on its own; it may take a few minutes.

What it stacks with

- **Ipamorelin** — The best pairing – covers the second GH pathway. Pin together, fasted, before bed.
- **BPC-157 / TB-500** — No conflict. BPC doesn't need fasting, so take it anytime.
- **GLP-1s** — No conflict.
- **TRT** — No conflict.
- **Direct GH injections** — GH triggers somatostatin, which shuts down tesamorelin's signal.

Side effects & interactions

Common side effects

- Injection site reactions (redness, itching, swelling, flushing), usually lasting 10–20 minutes.
- Site reactions are stronger than with CJC or ipamorelin.
- Joint pain, muscle pain, mild swelling, tingling or numbness.
- Blood sugar: fasting glucose may rise briefly around week 2, normalizing by 6 months.

Less common

- Sleep disruption (switch to morning dosing).
- Carpal tunnel from fluid retention.

Rare

- Allergic reactions (rash, hives, trouble breathing) – stop immediately.

Side-effect notes

- Prediabetic or insulin resistant? Track your blood sugar.
- Users report less head rush and less racing heart than with CJC-1295.

Interactions

- Other GH products: don't combine
- Estrogen therapy: may change your response
- Steroids (glucocorticoids): may blunt the effect
- Insulin or diabetes meds: may need adjusting

What to monitor · FAQ

Monitor

- IGF-1: main marker that it's working and that you're still in a safe range
- Fasting glucose and HbA1c, especially if prediabetic

Call a doctor for

- Allergic reaction (rash, hives, trouble breathing) – stop immediately

FAQ

Is it better than CJC-1295 for belly fat?
Same mechanism. No head-to-head study exists, so honestly, we don't know.

Can I refrigerate it after mixing?
Yes – the author does. Gelling-in-the-cold claims exist, but the author has never had the problem. Use it quickly either way.

My vial gelled. What now?
Toss it and mix the next one with 0.6% acetic acid.

Do I need to cycle it?
Trials ran it continuously for 26 weeks. Breaks are reasonable practice but not proven necessary.

CJC-1295 + Ipamorelin

CJC-1295 no DAC = Mod GRF 1-29

Neither compound is FDA approved

The standard starter GH peptide blend: boosts your own growth hormone while keeping natural rhythm and feedback intact.

- The standard starting point for GH peptides.
- Pushes your body to make more of its own GH; natural rhythm and safety feedback stay intact.
- Better sleep comes first, then recovery; fat loss comes with time.
- It works slowly, and it doesn't replace TRT.

DOSE	TIMING	CYCLE
100–300 mcg of each daily	Fasted, before bed	12–16 weeks on, 4 weeks off

MIX WITH	STORAGE
Bac water	Refrigerate, use within 4–6 weeks



What it is & how it works · Who should NOT use it

What it is

- CJC-1295 (no DAC) tells your pituitary to make more GH – "building production."
- Ipamorelin releases stored GH and takes the brake (somatostatin) off – "emptying the warehouse."
- Together they beat either alone: two separate pathways give a far bigger GH pulse.
- The no-DAC version clears in minutes, keeping GH in natural pulses, not flat and elevated.
- Neither compound is FDA approved.

Use caution with

- Type 2 diabetes or prediabetes
- History of carpal tunnel
- Heart disease or high blood pressure
- Kidney or liver disease

How it works for you

- **More GH, your way**: Your pituitary still controls output and your feedback loop stays intact. Injecting GH directly shuts that system down; these peptides don't.
- **Clean**: Ipamorelin doesn't spike cortisol, prolactin or ACTH, even at very high doses – why it replaced GHRP-2 and GHRP-6.
- **GH is the messenger, IGF-1 is the worker**: Your liver turns GH into IGF-1, and IGF-1 does the muscle, fat, repair and collagen work.

Don't use if

- Active cancer or tumors, or cancer history without your oncologist's clearance
- Diabetic retinopathy or uncontrolled diabetes
- Pregnant or breastfeeding

Results & what to expect

What to expect

Weeks 1–2

- Deeper sleep and vivid dreams
- Some wake more often at first – settles by weeks 4–6

Weeks 2–4

- Less soreness, more energy
- Faster recovery between sessions

Weeks 8–12

- Fat loss starts to show, if diet and training are already dialed in

Months 3–6

- Better skin
- More comfortable joints
- More resilient tendons

The dosing protocol

Standard Protocol

Clinical practice & community consensus

These protocols come from clinical practice and community consensus, not dose-finding studies.

CJC-1295 (no DAC)	100–300 mcg daily
Ipamorelin	100–300 mcg daily
Timing	Fasted (2+ hrs after eating)
Best time	Before bed, empty stomach
Cycle	12–16 weeks on, 4 weeks off

Split Dosing

Advanced

Morning (fasted)	100–150 mcg of each
Before bed	100–150 mcg of each

- = two GH pulses per day

The dosing protocol · Mixing & measuring your dose · more

3 Rules You Don't Break

1. Inject fasted	Wait at least 1–2 hours after eating; 2 is ideal
2. Fat loss goal	Inject before bed
2. Muscle goal	Inject in the morning, ~30 min before eating
3. Dose daily	Up to 16 weeks, then 4 weeks off – skip 5 on / 2 off

- Insulin blocks GH release – dosing after a meal is gas and brake at once.
- Fat loss: GH burns fat overnight while you sleep fasted.
- Muscle: the meal brings insulin, helping your liver convert GH into IGF-1.
- Two days off doesn't fix any real desensitization.
- Short-term desensitization clears within an hour.
- Long-term desensitization takes ~16 weeks to build and 4 weeks off to reset.
- Only real reason to dose 5 days/week: saving about 30% on product.

Example: 10 mg blend vial (5 mg CJC + 5 mg Ipamorelin)

ADD
2 mL bac water

STRENGTH
2.5 mg/mL of each

250 mcg of each = 10 units



- Lasts ~20 days at 250 mcg/day.
- Storage: refrigerate, use within 4–6 weeks.

Your dose is too high if you get

Lower the dose or pause. More isn't better with GH peptides.

- Persistent numb or tingling hands
- Carpal tunnel symptoms
- Joint swelling
- A puffy face

What it stacks with · Side effects & interactions

What it stacks with

- ✓ **TRT** — Complements it well.
- ✓ **GLP-1s (Reta, Sema, Tirz)** — No conflict, but eat enough to fuel recovery.
- ✓ **BPC-157 / TB-500** — No conflict. These don't need fasting, so take them anytime.
- ✓ **MOTS-c / SS-31** — No conflict.
- ✗ **HGH or IGF-1** — Somatostatin shuts the blend down. Coming off IGF-1? Wait 2–3 days before starting.

Common side effects

- Injection site redness
- Mild water retention
- Tingling hands
- Flushing after injection
- Vivid dreams
- Lightheadedness

Less common

- Headache
- Increased hunger
- Early fatigue
- Blood sugar swings

Side effects & interactions · What to monitor

Side-effect notes

- Most are mild and clear up within 2 weeks.

Interactions

- Diabetes medications may need adjusting – work with your doctor
- Steroids like prednisone blunt the GH response

Monitor

- IGF-1: main marker that it's working and that you're still in a safe range
- Fasting glucose and HbA1c
- Standard metabolic panel

Call a doctor for

- On diabetes medications: work with your doctor, doses may need adjusting
- Cancer history: get your oncologist's clearance first

FAQ

FAQ

Is CJC-1295 no DAC the same as Mod GRF 1-29?
Yes – two names for the same compound.

Can I run CJC alone?
You can, but you lose the two-pathway boost – the main reason to use the blend.

This or Tesamorelin?
General optimization (sleep, recovery, muscle support): the blend, since it hits two pathways. Stubborn belly fat: consider Tesamorelin – that's what its trials measured.

Will this replace TRT?
No. It's a recovery and optimization tool. Testosterone does the muscle building.

IGF-1 LR3

Not FDA approved; banned by WADA; no human clinical timelines

A longer-lasting modified IGF-1 that hits the receptor directly – a short-cycle muscle-building performance tool, not a longevity peptide.

- Modified, longer-lasting IGF-1 that goes straight to the receptor.
- A direct muscle-building tool for performance – not an optimization or longevity peptide.
- Run it in short cycles and take it with carbs.
- Don't stack it with GH secretagogues.

DOSE	TIMING	ROUTE
40–80 mcg daily	15–30 min post-workout	SubQ or IM

ACTIVE FOR	MIX WITH	CYCLE
20–30 hours	0.6% acetic acid (NOT bac water)	4–6 weeks on, 4–6 weeks off



What it is & how it works · Who should NOT use it

What it is

- Synthetic version of IGF-1, the growth factor your liver makes in response to GH.
- Modified so the binding proteins that normally hold IGF-1 back can't grab it.
- Result: roughly 3x more potent, active 20–30 hours instead of 12–15.
- Not FDA approved. Banned by WADA.

Don't use if

- Active cancer or a history of cancer
- Diabetes, insulin dependence, or diabetic retinopathy
- Pregnant or breastfeeding

How it works for you

- **Builds muscle two ways**: Makes existing fibers bigger (hypertrophy) and activates satellite cells that add new nuclei and potentially new fibers – the second mechanism sets it apart from most anabolics.
- **Blocks breakdown**: Drives protein synthesis and suppresses muscle protein breakdown at the same time.
- **Improves recovery**: The same satellite cell activation repairs training damage.
- **Improves partitioning**: Pushes glucose into muscle, helping glycogen refill post-workout.
- **Bypasses your natural system**: Doesn't rely on your pituitary or liver. Predictable, but you're outside your body's normal safety brakes.

Who should NOT use it · Results & what to expect

Use caution with

- Use extreme caution: pre-diabetes
- Use extreme caution: history of low blood sugar
- Use extreme caution: heart disease

Headline numbers

~3x

more potent than natural IGF-1

20–30 hrs

active, vs 12–15 for natural IGF-1

3–8 lbs

lean tissue per cycle, commonly (anecdotal)

What to expect

Weeks 1–2

- Fuller muscles, bigger pumps
- Some water retention

Weeks 3–4

- Visible body composition changes
- Better recovery

End of cycle

- Commonly 3–8 lbs of lean tissue, depending on dose, diet and training
- Results vary a lot between people

Note

- Anecdotal: timelines come from community reports; no human clinical timelines exist

The dosing protocol

Standard Protocol

Dose	40–80 mcg daily
Timing	15–30 min post-workout
Route	SubQ or IM
Cycle	4–6 weeks on, 4–6 weeks off

- SubQ vs IM: both work systemically.
- Some use IM into the trained muscle on training days, SubQ on rest days.

Beginner Protocol

Week 1	20–40 mcg daily (assess tolerance)
Weeks 2–4	40–60 mcg daily
Weeks 5–6	Maintain or taper down
After cycle	4+ weeks off before repeating

3 Rules You Don't Break

1. Eat carbs + protein	Around every dose – it drops blood sugar fast
2. Cycle it	Past ~6 weeks receptors downregulate and it stops working
3. No secretagogues	Run in sequence: finish LR3, wait 2–3 days, then start secretagogues

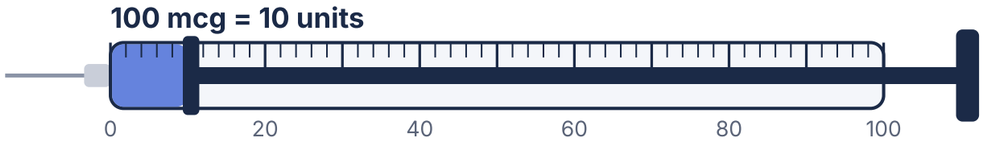
- Secretagogues = CJC-1295, Ipamorelin, Tesamorelin, Sermorelin, MK-677.
- Elevated IGF-1 triggers somatostatin, shutting secretagogues down – you'd pay for both and get neither.

Mixing & measuring your dose · Tips & warnings · more

Example: 1 mg vial

ADD
1 mL 0.6% acetic acid (NOT bac water)

STRENGTH
1 mg/mL



on an insulin syringe

- Storage: refrigerate, use within 28 days.

Hypoglycemia is the main risk

Shakiness, sweating, confusion, racing heart: take fast carbs immediately.

- Eat carbs and protein around every dose.

Low blood sugar: know the steps

Signs: shaky, sweaty, fast heartbeat, confused. Under 70 mg/dL (3.9 mmol/L): take 15 g of fast sugar (juice, glucose tabs) and recheck in 15 minutes. Under 54 mg/dL (3.0 mmol/L), confused or unable to swallow: call 911. (Added by expert review.)

What it stacks with

- **TRT** — No conflict.
- **BPC-157 / TB-500** — No conflict.
- **GLP-1s** — Both affect glucose – monitor blood sugar closely.
- **Secretagogues** — Counterproductive.

Side effects & interactions · What to monitor

Common side effects

- Hypoglycemia (the main one): shakiness, sweating, confusion, racing heart – take fast carbs immediately
- Water retention: cosmetic, goes away after the cycle – don't cut water or sodium to fix it

Side-effect notes

- Long-term, high doses: organ, gut and heart growth; insulin resistance.
- Chronically high IGF-1 is associated with higher prostate, breast and colorectal cancer risk.

Less common

- Joint pain
- Headaches
- Fatigue
- Injection site reactions

Monitor

- Fasting glucose (regularly) and fasting insulin
- Serum IGF-1: baseline around 120–160 ng/mL; risks climb above 300 ng/mL
- Stay current on cancer screening (PSA, mammogram, colonoscopy, skin checks)

FAQ

FAQ

LR3 or secretagogues?
Secretagogues are for optimization – they keep natural GH pulses intact. LR3 is a performance tool for pushing past your ceiling; understand the risks.

HGH 191AA

Genotropin / Norditropin / Humatrope / Saizen

Pharmacy brands approved for GH deficiency, Turner syndrome, Prader-Willi, HIV wasting and a few other conditions

Real, bioidentical growth hormone – the most powerful and riskiest GH option, because it bypasses your natural brakes.

- Real growth hormone, identical to what your pituitary makes.
- Most powerful option in the GH category – and the riskiest.
- Bypasses natural brakes and temporarily shuts down your own production; it returns after you stop.
- Low doses (2 IU) restore youthful levels with few side effects.
- High doses (5+ IU) are enhancement, with some risks.

REPLACEMENT DOSE	RECOMP DOSE	CONVERSION
1–2 IU daily	2–4 IU daily	1 mg ≈ 3 IU

TIMING	MIX WITH	RECOVERY AFTER STOPPING
Before bed OR morning fasted	Bac water	Natural GH back in 2–3 days



What it is & how it works

What it is

- 191-amino-acid growth hormone, bioidentical to your own, made with recombinant DNA.
- Pharmacy brands: Genotropin, Norditropin, Humatrope, Saizen.
- Approved for GH deficiency, Turner syndrome, Prader-Willi, HIV wasting and a few other conditions.
- The "growth hormone" people mean in bodybuilding and anti-aging.
- Every secretagogue peptide exists because real GH was so expensive and hard to get.

How it works for you

- **The natural system**: GHRH is the green light telling your pituitary to release GH. Somatostatin is the red light telling it to stop. Ghrelin makes pulses bigger. GH goes to your liver, which makes IGF-1, and IGF-1 does most of the work.
- **What HGH does directly**: Burns fat, especially visceral belly fat. Pulls amino acids into cells and increases protein synthesis. Raises blood sugar (it works against insulin).
- **What it does through IGF-1**: Muscle protein synthesis; bone growth and density; cartilage and collagen; tissue repair.

What it is & how it works

When does HGH make sense?

- Secretagogues first for most people.
- Goal is healthy-range IGF-1? CJC-1295 + Ipamorelin keeps your natural ceiling intact.
- Author's view: for maximal fat loss and anti-aging effects, "this is the secret."
- Checklist 1: foundation dialed in – sleep, nutrition, training, body composition.
- Checklist 2: thyroid checked – your pituitary needs thyroid hormone to respond.
- Checklist 3: sex hormones optimized – testosterone (men) or estrogen (women) directly affect IGF-1.
- Checklist 4: secretagogues tried, and still not moving your IGF-1.
- Makes sense if: documented GH deficiency, OR secretagogues failed after the checklist,

When does HGH make sense? (cont.)

- OR you specifically want supraphysiological results and accept the risks.

Replacement vs enhancement

- 1–2 IU (replacement): back to what you used to make; minimal side effects.
- 4+ IU (enhancement): above anything you made naturally; bigger results and bigger risk.

What it is & how it works

What happens when you stop

- HGH turns your own GH production down while you're on it, but doesn't break anything.
- Natural GH comes back within 1–3 days; the slower part is readjusting to no extra GH.
- Why: extra GH makes your body release somatostatin (the "off switch") and cut production.
- Same idea as testosterone shutting down natural T, but GH bounces back much faster.

What the studies showed (recovery)

- Healthy adults: natural GH pulses returned ~5 hours after a dose; women rebounded much more strongly than men.
- Healthy men after 5 days of GH: pituitary still a bit blunted 24 hours later.
- GH-2000 (99 healthy adults, 4 weeks high dose): IGF-1 took ~2 weeks to fade after stopping.
- GH-2000: some collagen/bone markers still up at 8 weeks – why doping tests catch GH weeks later.
- Non-deficient kids after 6–12 months of GH: natural GH normal within 2–3 days of stopping.

What helps you recover faster

- Testosterone or estrogen in your system
- Peptides like GHRP-2 or GHRH (CJC), especially combined
- Lower body fat – higher BMI slowed recovery

What it is & how it works · Who should NOT use it

Key studies: does HGH shut down natural GH?

- Adults 1 – Rosenthal 1986: 6 healthy men, GH for 5 days; response blunted 24+ hrs after last dose. Suppression is real. https://pubmed.ncbi.nlm.nih.gov/3080472/
- Adults 2 – Veldhuis 2005: pulses returned ~5 hrs after a dose; women rebounded harder. Recovery starts fast. https://pubmed.ncbi.nlm.nih.gov/15728217/
- Adults 3 – GH-2000, Dall 2000: 99 healthy adults, high dose 4 weeks; IGF-1 elevated ~2 weeks after, then faded. Closest to real-world use. https://pubmed.ncbi.nlm.nih.gov/11095453/
- Kids 4 – Rose 2000: 48 kids, GH 3x/week for 6 months; GH dipped the 2nd night after a shot, normal by the 3rd. https://pubmed.ncbi.nlm.nih.gov/10714753/
- Kids 5 – Idiopathic short stature (1990): GH for a full year; pulses normal 48 hrs after stopping, no lasting shutdown. https://pubmed.ncbi.nlm.nih.gov/2347896/

Don't use if

- Active cancer or any history of cancer (consult your oncologist)
- Active tumors
- Diabetic retinopathy
- Acute critical illness

Use caution with

- Diabetes or prediabetes
- Heart disease
- History of carpal tunnel
- Thyroid conditions
- Liver disease

Results & what to expect

Headline numbers

+8.8%
lean mass in men 60+ over 6 months (Rudman 1990)

−14.4%
fat in the same study

15,809
patients in cancer-safety data: rates matched the general population (GH-deficient)

~2 kg
lean mass gained and fat lost in healthy older adults (Liu 2007)

The results

- Rudman 1990 (men 60+, 6 months): lean mass +8.8%, fat −14.4%, skin thickness +7.1%, spine bone density +1.6%.
- Rudman: changes "opposite to those seen during 10–20 years of aging" – authors didn't claim to reverse aging.
- 10-year study (adults with GH deficiency): sustained strength and body composition gains.
- That study started around 2 IU, reducing to about 1 IU for maintenance.
- Cancer safety (15,809 patients): new cancer rates matched the general population in GH-deficient patients.
- Summary: clearly beneficial for true GH deficiency; for healthy adults, benefits are real but modest and side effects need managing.

Results & what to expect

What to expect

Weeks 1–4

- Better sleep, usually noticed first
- Water retention in hands and face
- Mild joint stiffness
- Possibly more energy

Weeks 4–8

- Fat loss starts, especially around the midsection
- Fuller-looking skin
- Better recovery

Months 2–3

- Visible body composition changes
- Skin, hair and nails improve
- Joints and connective tissue start improving

What to expect (cont.)

Months 3–6

- Peak recomposition
- Big drop in visceral fat

Month 6+

- Bone and connective tissue keep improving
- Early side effects usually settle down

Note

- Don't expect dramatic results in 2 weeks

The dosing protocol

Anti-Aging / Wellness

Replacement

Dose	1–2 IU daily
Frequency	5–7 days per week
Timing	Before bed OR morning fasted
Duration	Long-term, or 8 mo on / 1–2 mo off

- 1–2 IU (replacement): brings levels back to what you used to make; side effects minimal.

Body Recomposition

Dose	2–4 IU daily
Timing	Split (morning + afternoon/evening)
Duration	3–6 months minimum

- 4+ IU (enhancement): pushes levels above anything you made naturally – bigger results, bigger risk.

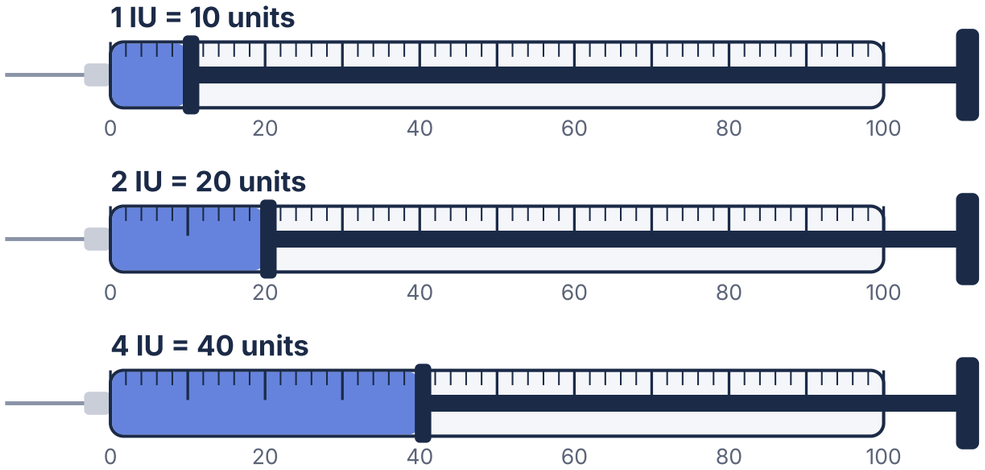
Progression

Weeks 1–4	2 IU daily
Weeks 5–8	3 IU daily
Weeks 9–12	4 IU daily

Mixing & measuring your dose · Tips & warnings

Example: 10 IU vial

ADD	STRENGTH
1 mL bac water	10 IU/mL



- Conversion: 1 mg ≈ 3 IU.
- Vial sizes vary. Formula: total IU ÷ mL of water = IU per mL.

The critical difference: no ceiling

You have to manage the dose yourself – nothing stops you from going too high.

- Secretagogues ask your pituitary for more of its own GH; feedback stays intact, so there's a natural ceiling.
- When IGF-1 gets high enough, your body dials itself back down.
- HGH skips the pituitary; your body senses high GH and shuts its own production down (via somatostatin).

Tips & warnings · Quick comparison

Reality check for healthy adults

Benefits are real but modest.

- Liu 2007 meta-analysis (healthy older adults): ~2 kg more lean mass, ~2 kg less fat.
- No improvement in strength or endurance; some of that "lean mass" is likely water.
- Increased swelling, carpal tunnel, joint pain, gynecomastia and blood sugar problems.
- IGF-1 and lifespan are U-shaped: very low and very high IGF-1 both raise cancer, heart disease and death risk.
- The moderate range is the sweet spot.

Bottom line on shutdown

HGH suppresses your natural GH while you use it, but it comes back within 1–3 days after stopping.

- No study shows permanent shutdown.
- Daily dosing can cause a temporary "crash" as the body readjusts.

Timeline after your last shot

WHEN	WHAT HAPPENS
~5 hours	Natural GH pulses start returning
24 hours	Pituitary can still be slightly blunted
2–3 days	Natural GH back to normal
~2 weeks	IGF-1 fades back to baseline
~8 weeks	Some collagen/bone markers still elevated

Quick comparison · What it stacks with

Monitoring schedule (essential, not optional)

TEST	SCHEDULE	TARGET / NOTES
IGF-1	Baseline → 4–6 wks → every 3 months	Replacement 120–175 ng/mL; Recomp 300–400 ng/mL
Glucose / HbA1c	Baseline → every 3 months	
Thyroid (Free T3, Free T4, TSH)	Baseline → every 6 months	
Metabolic panel		Liver + kidney function

What it stacks with

- **TRT** — Complementary. Testosterone raises IGF-1 inside muscle, amplifying GH's effects.
- **GLP-1s** — Potentially complementary: GH helps protect muscle while GLP-1s drive fat loss. The combo hasn't been studied.
- **BPC-157 / TB-500** — Complementary. BPC-157 increases GH receptors in tendons, which may boost repair.
- **Secretagogues (CJC, Ipamorelin, Tesamorelin)** — Don't work alongside HGH: one GH injection blocked GHRH-pathway peptides by 86% and ghrelin-pathway peptides by 32%. 'Protecting your pituitary' this way doesn't work – nor do clinics stacking low-dose HGH with peptides.

What it stacks with · Side effects & interactions

What it stacks with (cont.)

- **IGF-1 (LR3)** — Bodybuilding-only combo. Bypasses all regulation; serious risks of low blood sugar and heart problems.

Common side effects

- Water retention (face, hands, ankles)
- Joint stiffness
- Carpal tunnel symptoms (numb or tingling hands)
- Injection site reactions
- Extra sweating
- Metabolic (most important): insulin resistance and higher blood sugar – can unmask or worsen diabetes
- Thyroid: can lower free T4 and unmask hypothyroidism; some need thyroid support

Less common

- Early fatigue
- Mood changes
- Higher blood pressure from fluid retention

At high doses (6+ IU) or long-term use

- At high doses (6+ IU) or long-term supraphysiological use: organ growth, including intestines and heart
- Acromegaly-like changes (jaw, hands, feet)
- Higher cardiovascular risk
- Gynecomastia

Side effects & interactions · What to monitor

Side-effect notes

- Dose-dependent: usually minimal at 1–2 IU, increasing significantly above that.
- Glucose monitoring isn't optional.
- At 1–2 IU most side effects fade with time or a dose reduction.
- At 4+ IU they tend to persist and need active management.

Monitor

- IGF-1: baseline → 4–6 weeks → every 3 months
- IGF-1 target: replacement 120–175 ng/mL; recomp 300–400 ng/mL
- Glucose / HbA1c: baseline → every 3 months
- Thyroid (Free T3, Free T4, TSH): baseline → every 6 months
- Metabolic panel: liver + kidney function

Interactions

- Insulin or diabetes meds: may need adjusting
- Steroids (glucocorticoids): may reduce GH's effect
- Thyroid meds: doses may need to change

Call a doctor for

- Any history of cancer: consult your oncologist

FAQ

FAQ

HGH vs secretagogues?
Secretagogues work within your body's limits and keep the natural ceiling. HGH bypasses it – no ceiling, so you manage the dose yourself.

Why do bodybuilders use HGH instead of peptides?
A 250 lb shredded competitor needs more GH than any pituitary can make; secretagogues can't break that ceiling. They run 4–8+ IU and accept the risks.

Does it shut down my own production?
Yes. Some cycle it (8 months on, 1–2 off) or use secretagogues during the off period to help recovery.

What IGF-1 should I target?
Replacement: 120–175 ng/mL (below 120 is linked to frailty).
Recomp: 300–400 ng/mL.

FAQ (cont.)

Can I take it with my peptides?
No. Pick one approach.

PART 5

05

Healing & Recovery

- BPC-157
- Wolverine Stack
- KLOW Blend
- KPV
- Thymosin Alpha-1
- Cartalax



BPC-157

Body Protection Compound 157

Not FDA approved; not on the US compounding list (July 2026 advisory vote 8–6 in favor, no final rule). WADA S0: banned at all times.

New section: researched from published sources (listed at the end of this section)

A 15-amino-acid healing peptide from a stomach protein, used for tendons, ligaments, muscle and gut repair.

- The guide's main single healing peptide, and the base of the Wolverine, GLOW and KLOW blends.
- Drives local repair by growing blood vessels and amplifying growth signals already at the injury.
- Short half-life in animals; the guide's advice is to inject near a single injury (community practice).
- Lots of animal data (mostly from one lab), but only three tiny, uncontrolled human pilot studies published. Early controlled trials (ulcerative colitis, 2000s; a 2015 safety trial) never published full results.
- Not FDA approved, and banned in sport (WADA S0) at all times.

VIAL	ROUTE	DOSE
10 mg lyophilized powder	SubQ (near the injury if you have one)	250–500 mcg daily (community practice, not studied)

TIMING	DURATION	MIX WITH
Anytime, no fasting needed	2–12 weeks by injury (4–8 typical); stop once healed	4 mL bac water (beginner pick)



What it is & how it works

What it is

- A 15-amino-acid peptide (pentadecapeptide) based on a protective protein found in human gastric juice.
- First described in 1993 by Sikiric's group in Croatia. What you buy is synthetic.
- Sequence: Gly-Glu-Pro-Pro-Pro-Gly-Lys-Pro-Ala-Asp-Asp-Ala-Gly-Leu-Val.
- Drives local repair by growing blood vessels and amplifying growth signals.
- Main uses: tendons, ligaments, muscle tears, post-surgery recovery and gut issues.
- Not FDA approved for any use. Sold as a research compound.
- Prohibited by WADA under S0 (non-approved substances), in and out of competition.

How it works for you

- **Grows new blood vessels (VEGFR2)**: In cell and rat studies it raised VEGFR2, the receptor for the body's vessel-growth signal, and switched on the Akt-eNOS pathway. More vessels bring oxygen and nutrients to the injury.
- **Opens up circulation (nitric oxide)**: Works through the nitric oxide (NO) system, which relaxes vessels and supports blood flow. Shown in animal and tissue studies.
- **Helps repair cells move and anchor (FAK-paxillin)**: In rat tendon cells it boosted cell survival and migration through FAK and paxillin, the proteins cells use to grip and crawl.
- **Makes tendon cells more responsive to growth hormone**: Rat tendon fibroblasts made more growth hormone receptors after BPC-157 exposure (lab dish study).

What it is & how it works

How it works for you (cont.)

- **Amplifies signals that already exist**: The guide describes it as needing an injury to work on: it boosts repair already underway.
- **Short half-life (rats and dogs)**: Under 30 minutes in rat and dog blood after IV or IM dosing. Injecting near the injury is based on this, but local levels near the shot have never been measured.

What It's Used For

- Tendons and ligaments (main use): Achilles, rotator cuff, patellar tendonitis, tennis/golfer's elbow, ACL and MCL sprains
- Muscle strains and tears
- Post-surgery recovery: only with your surgeon's approval
- Chronic joint pain and wear: run it longer
- Gut issues: the guide says oral BPC-157 alone is the better choice

Where to Inject

- One injury: inject subQ near it (community practice; not tested).
- Multiple injuries or simplicity: belly or thigh.
- Rotate spots. Up to 1 mL per spot; 0.5 mL or less is most comfortable. 20 units = 0.2 mL.

Oral and Gut Use

- The guide says BPC-157 survives stomach acid. That claim comes mostly from the group that discovered it.
- No human study has measured how much oral BPC-157 is absorbed.
- This product is an injectable vial. Drinking the mixed solution is not a tested form.
- No oral dose is given here because none has been studied in humans.

What it is & how it works · Who should NOT use it

BPC-157 Alone or a Blend?

- BPC-157 alone: one injury, mild injuries, or gut issues.
- Wolverine (BPC-157 + TB-500): pure injury healing, multiple injuries.
- GLOW (Wolverine + GHK-Cu): healing plus skin and collagen.
- KLOW (GLOW + KPV): all of that plus inflammation and gut support.

Don't use if

- Active cancer or tumors: it grows blood vessels
- History of cancer, unless your oncologist has cleared you with imaging
- Pregnant or breastfeeding: no human safety data at all
- Allergy to BPC-157
- You're a tested athlete: WADA S0, banned at all times
- You're under 18

Use caution with

- Precancerous conditions or unexplained masses
- Autoimmune conditions or severe immunodeficiency
- Immunosuppressants or biologics: ask your doctor
- Heart conditions
- Liver or kidney problems
- Recent or upcoming surgery: only with your surgeon's approval
- Bleeding disorders or blood thinners (no human data)

Results & what to expect

The results

- Animal evidence: many rat studies show faster tendon, ligament, muscle and gut healing. Most come from one research group.
- Knee pain (2021): retrospective chart review, 16 patients, knee injections. 14 of 16 (87.5%) reported relief (4 of them also got TB-4). No controls, self-reported; side effects not tracked.
- Interstitial cystitis (2024): 12 women got 10 mg total, injected at several spots in the bladder wall during one cystoscopy. 10 of 12 reported complete relief; the other 2 rated success at 80%. No adverse events. No controls.
- IV safety pilot (2025): 2 adults who had used IV BPC-157 before got 10 mg then 20 mg IV. No side effects and no changes in heart, liver, kidney, thyroid or glucose labs.
- None of these used subQ dosing like the protocols below. Human evidence for subQ injury use is anecdotal.

Headline numbers

3

published human pilot studies, none with a control group

<30 min

plasma half-life in rats and dogs (IV/IM)

8–6

FDA advisory committee vote for compounding (July 23, 2026, non-binding)

40 doses

in one 10 mg vial at 250 mcg (discard 28 days after mixing)

The results (cont.)

- 2025 review conclusion: BPC-157 should be treated as investigational until proper trials are done.

Results & what to expect

What to expect (anecdotal: user reports, not studies)

Days 1–3

- Pretty mild improvement

Weeks 1–2

- Pain and inflammation start going down

Weeks 3–4

- Real functional gains
- Movements that used to hurt get easier; range of motion improves

Weeks 6–8

- Peak results for most injuries

The dosing protocol

Beginner Protocol

Community practice, not studied

Start low, stay consistent, stop once you're healed.

Weeks 1–2	250 mcg once daily (10 units on 4 mL mix)
Week 3 onward	Stay at 250 mcg, or move to 500 mcg (20 units) if needed and tolerated
Timing	Anytime, no fasting needed
Route	SubQ: near the injury, or belly/thigh if you want it simple
Duration	4–8 weeks

- Don't go above 500 mcg daily. Nausea shows up mostly above 500 mcg.
- Pick the same time each day so you don't miss doses.
- Start BPC-157 alone if you're new, so you know what's causing any reaction.
- Vials needed: 4 weeks ≈ 1 vial at 250 mcg or 2 at 500 mcg; 8 weeks ≈ 2 at 250 mcg or 3 at 500 mcg.
- Sit down for your first few shots in case of a head rush or dizziness.

The dosing protocol

Injury Protocol

Community practice, not studied

For one specific tendon, ligament or muscle injury.

Dose	250–500 mcg daily
Option: split	250 mcg twice daily (morning and evening) = 500 mcg/day
Where	SubQ as close to the injury as you comfortably can
Muscle strain or tear	2–4 weeks
Tendon or ligament	4–8 weeks
Chronic or old injury	8–12 weeks, results less predictable
Post-surgery	4–8 weeks, only with your surgeon's approval

- Splitting the dose is a common choice because of the short half-life. It hasn't been tested against once daily.
- SubQ only: inject into the fat near the injury, never into the tendon or joint yourself.
- Multiple injuries? Belly or thigh works; the guide suggests the Wolverine Stack (adds TB-500, which the guide says acts body-wide).
- Not everyone responds. Chronic, degenerative problems give the most mixed results.

The dosing protocol

Routes

Community practice, not studied

SubQ near the injury	Standard for one injury: higher local dose
SubQ belly or thigh	Systemic: for multiple injuries or general use
Oral	Guide's pick for gut issues; no human oral dose has been studied
Nasal	Very little research; subQ is still the standard for injuries

- The guide's nasal BPC-157 recipe is written for a 5 mg vial. Don't reuse that math with this 10 mg vial.
- Nasal sprays are usually made with sterile saline rather than bac water (see the nasal spray guide).

Cycling

Community practice, not studied

While injured	Run daily for the course above
Once healed	Stop: it works on damaged tissue
Repeat course	Take 4–6 weeks off between cycles

- It's a healing tool, not a hormone. No taper needed.

Mixing & measuring your dose

Option A (recommended for beginners): 10 mg vial + 4 mL

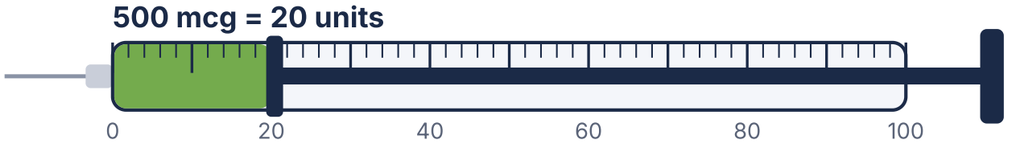
ADD
4 mL bac water

STRENGTH
2.5 mg/mL (2,500 mcg/mL)

250 mcg = 10 units



500 mcg = 20 units



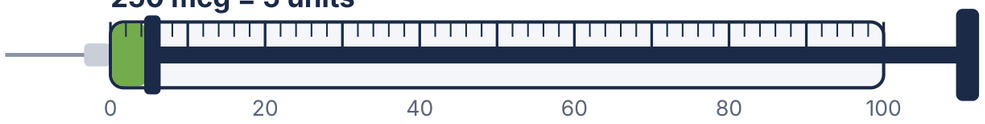
- Math: 10 mg ÷ 4 mL = 2.5 mg/mL. 250 mcg ÷ 2,500 mcg/mL = 0.1 mL = 10 units.
- Why 4 mL: bigger unit counts are easier to measure on an insulin syringe.
- Holds 40 doses at 250 mcg or 20 at 500 mcg. Date the vial when you mix it and discard what's left 28 days after mixing (about 12 doses remain at 250 mcg/day).
- Adding 4 mL takes four fills of a 1 mL syringe (or one 3–5 mL syringe). If your vial won't hold 4 mL, use Option B.
- BAC water bottle: date it at first puncture and discard 28 days after opening.

Mixing & measuring your dose · Tips & warnings

Option B: 10 mg vial + 2 mL

ADD	STRENGTH
2 mL bac water	5 mg/mL (5,000 mcg/mL)

250 mcg = 5 units



5 units falls between lines on a 1 mL syringe: use a 0.3 or 0.5 mL syringe, or Option A

500 mcg = 10 units



- Math: 10 mg ÷ 2 mL = 5 mg/mL. 250 mcg ÷ 5,000 mcg/mL = 0.05 mL = 5 units.
- Smaller shot volume, but each unit line matters more.
- Holds 40 doses at 250 mcg or 20 at 500 mcg. Discard 28 days after mixing.

Get diagnosed first

A full tear, fracture, a hot swollen joint or sudden loss of function needs a doctor, not a peptide.

Mixing and storage (both options)

- Let a cold vial sit 15–30 minutes at room temp before opening.
- Add the water slowly down the inside wall of the vial, then let it dissolve on its own or gently roll the vial. Don't shake it.
- Should be clear and colorless. Label it: date, peptide, concentration.
- Mixed vial: fridge (2–8°C), always. Keep it dark. Never freeze it.
- Powder: freezer for long-term storage, or the fridge. Dark and sealed.
- Wipe the stopper with alcohol every draw. Toss it if cloudy, discolored, particles, odd smell, or it froze.

Human safety data is tiny

Animal studies showed no toxicity, but humans have only three small pilot studies with no control groups. There is no long-term human safety data, and subQ use hasn't been formally tested.

- The FDA has flagged BPC-157 over immune reaction (immunogenicity) risk and peptide impurities, so your source matters.

Tips & warnings

Cancer rule

BPC-157 grows blood vessels. In theory that could feed a tumor. No human data either way. If you have active cancer, don't use it.

Tested athletes

WADA lists BPC-157 by name under S0. Banned in and out of competition. USADA says a medical exemption (TUE) is unlikely.

Not everyone responds

It speeds up healing, but your body still has to do the work. Chronic, degenerative problems give the most mixed results.

Regulatory status (as of October 2026)

Not FDA approved. Compounding is still not authorized.

- September 2023: FDA put BPC-157 in Category 2 (significant safety concerns) for compounding.
- April 2026: FDA moved it off Category 2 after its nominations were withdrawn. That alone doesn't make it legal to compound.
- July 23, 2026: FDA's compounding advisory committee voted 8–6 (1 abstention) to recommend adding it for ulcerative colitis, against FDA staff's recommendation. Non-binding.
- As of Oct 10, 2026, FDA has not proposed a rule to add it.
- No final rule adding it to the 503A compounding list has been published.
- Canada: unauthorized. Health Canada has seized injectable BPC-157 and warned against buying it online (April 2026).

Tips & warnings · What it stacks with

Basic hygiene, every time

Wash your hands, use a new sterile syringe for every shot, never share needles, syringes or vials, and put used needles straight into a sharps container.

What it stacks with

- **TB-500 (Wolverine Stack)** — The classic healing stack. BPC-157 works locally, TB-500 body-wide. Never tested head-to-head against either alone.
- **GHK-Cu (GLOW)** — Most common stack. GLOW dosing: GHK-Cu 1–2 mg + BPC-157 250–500 mcg + TB-500 250–500 mcg daily. The guide says the blend reduces GHK-Cu's sting (community report).
- **KPV** — The go-to gut stack. KPV calms inflammation, BPC-157 repairs tissue. You can take both orally. No research on the combo.
- **On top of Wolverine, GLOW or KLOW** — Don't double up. Those blends already contain BPC-157. Count it before adding more.

What it stacks with · Side effects & interactions

What it stacks with (cont.)

- **GLP-1s (Reta, Tirz, Sema)** — No conflict, but don't mix in the same syringe. Some say BPC helps GI discomfort; that hasn't been studied.
- **GH peptides (CJC/Ipa, Tesamorelin, Sermorelin)** — No conflict. Keep GH peptides fasted; BPC-157 anytime. Same syringe OK if timing lines up, but don't pre-mix and store.
- **HGH** — Complementary. BPC-157 increases GH receptors in tendon cells, which may boost repair.
- **TRT** — No conflict.
- **Thymosin Alpha-1** — No conflict. On a biologic for an autoimmune condition? Clear it with your doctor.

What it stacks with (cont.)

- **Cartalax** — No known interaction. BPC-157 for an active injury; Cartalax for maintenance.
- **Other guide peptides** — No conflict listed with AOD-9604, MOTS-c, IGF-1 LR3, DSIP, Semax, Selank, MT-1, MT-2 or SS-31.

Common side effects

- Injection site redness, swelling or bruising
- Nausea, mostly above 500 mcg

Side effects & interactions · What to monitor

Less common

- Head rush right after injecting (passes in minutes)
- Headache
- Dizziness

Side-effect notes

- Most side effects clear up within a few days.
- These come from user reports. Two of the three human pilot studies reported no side effects; the knee study didn't track them. All were tiny.
- Unknown purity is a real risk with unregulated products.

Interactions

- NSAIDs: in rats, BPC-157 protected the gut from NSAID damage (one research group). Whether NSAIDs blunt BPC-157's effect is unknown.
- Corticosteroids: in rats, BPC-157 offset steroid-slowed tendon healing. Not shown in humans; never stop a prescribed steroid on your own.
- No formal human drug-interaction studies exist.

Monitor

- Bloodwork: core panel only. No specific blood effects are known.
- Stay current on cancer screenings, since it grows blood vessels.
- Track healing (pain, range of motion, function) with your doctor or physical therapist.
- Check the vial before every shot: clear, no particles, no haze.

What to monitor · FAQ

Call a doctor for

- Spreading redness, heat, pus or fever after an injection (possible infection)
- Hives, facial or throat swelling, or trouble breathing (emergency: call 911)
- A new lump, mass or unexplained bleeding
- Your injury gets worse, or a tendon suddenly pops or gives way
- No improvement after 4 weeks, or worsening pain: get it examined/imaged

FAQ

2 mL or 4 mL of bac water?
4 mL for beginners. 250 mcg becomes 10 units instead of 5, which is much easier to measure. Same number of doses either way.

Do I need to inject near the injury?
For one injury, the guide recommends near it (based on the short animal half-life; not tested in people). For several injuries, belly or thigh is fine.

Do I need to fast?
No. Take it anytime.

Once or twice daily?
Either. Once daily is simplest. Some split 500 mcg into two 250 mcg shots because it clears fast; that's untested.

FAQ · Sources

FAQ (cont.)

Do I need to cycle it?
Use it while tissue is damaged and stop once healed. If you run another course, take 4–6 weeks off first.

Can I take it by mouth for my gut?
The guide prefers oral for gut issues, but no human oral dose has been studied, and this vial is made for injection.

Is it legal now that the FDA panel voted for it?
The July 2026 vote is only a recommendation. It isn't FDA approved, and no rule allows compounding it yet.

Is it better than the Wolverine Stack?
Never tested head-to-head. For mild injuries or gut issues, BPC-157 alone may be enough.

Sources

- FDA: Certain Bulk Drug Substances for Use in Compounding that May Present Significant Safety Risks (content current as of 04/22/2026): https://www.fda.gov/drugs/human-drug-compounding/certain-bulk-drug-substances-use-compounding-may-present-significant-safety-risks
- Goodwin Law: FDA Signals Potentially Evolving Stance Toward Compounding of Certain Peptides (May 2026): https://www.goodwinlaw.com/en/insights/blogs/2026/05/fda-signals-potentially-evolving-stance-toward-compounding-of-certain-peptides
- Good Morning America / ABC News: FDA advisory committee votes to add popular peptide BPC-157 (July 23, 2026): https://goodmorningamerica.com/news/story/fda-advisory-committee-votes-add-popular-peptide-bpc-134913891

Sources

Sources (cont.)

- American Med Spa Association: FDA Advisory Committee Recommends Adding BPC-157 to Compounding List: https://americanmedspa.org/news/fda-advisory-committee-recommends-adding-bpc-157-to-compounding-list
- USADA: BPC-157 peptide prohibited: https://www.usada.org/spirit-of-sport/bpc-157-peptide-prohibited/
- SUEK (Finnish Center for Integrity in Sports): Doping agent classes and substances 2026: https://kamu.suek.fi/en/dopingsubstances/
- Lee E, Padgett B. Intra-Articular Injection of BPC 157 for Multiple Types of Knee Pain. Altern Ther Health Med. 2021 (PMID 34324435): https://europepmc.org/article/MED/34324435

Sources (cont.)

- Lee E, Walker C, Ayadi B. Effect of BPC-157 on Symptoms in Patients with Interstitial Cystitis: A Pilot Study. Altern Ther Health Med. 2024 (PMID 39325560): https://europepmc.org/article/MED/39325560
- Lee E, Burgess K. Safety of Intravenous Infusion of BPC157 in Humans: A Pilot Study. Altern Ther Health Med. 2025 (PMID 40131143): https://europepmc.org/article/MED/40131143
- McGuire FP et al. Regeneration or Risk? A Narrative Review of BPC-157 for Musculoskeletal Healing. Curr Rev Musculoskelet Med. 2025 (PMID 40789979, PMC12446177): https://europepmc.org/article/MED/40789979
- He L et al. Pharmacokinetics, distribution, metabolism, and excretion of BPC 157 in rats and dogs. Front Pharmacol. 2022 (PMC9794587): https://pmc.ncbi.nlm.nih.gov/articles/PMC9794587/

Sources

Sources (cont.)

- Hsieh MJ et al. Therapeutic potential of pro-angiogenic BPC157 is associated with VEGFR2 activation and up-regulation. J Mol Med. 2017 (PMID 27847966): https://europepmc.org/article/MED/27847966
- Chang CH et al. The promoting effect of pentadecapeptide BPC 157 on tendon healing involves tendon outgrowth, cell survival, and cell migration. J Appl Physiol. 2011 (PMID 21030672): https://europepmc.org/article/MED/21030672
- Chang CH et al. Pentadecapeptide BPC 157 enhances the growth hormone receptor expression in tendon fibroblasts. Molecules. 2014 (PMC6271067): https://pmc.ncbi.nlm.nih.gov/articles/PMC6271067/

Sources (cont.)

- Krivic A et al. Achilles detachment in rat and stable gastric pentadecapeptide BPC 157: promoted tendon-to-bone healing and opposed corticosteroid aggravation. J Orthop Res. 2006 (PMID 16583442): https://europepmc.org/article/MED/16583442
- Józwiak M et al. Multifunctionality and Possible Medical Application of the BPC 157 Peptide: Literature and Patent Review. Pharmaceuticals. 2025 (PMC11859134): https://pmc.ncbi.nlm.nih.gov/articles/PMC11859134/

Wolverine Stack

BPC-157 + TB-500

Not FDA approved. BPC-157: off FDA Category 2 since April 2026 but still not legal to compound (see BPC-157). TB-500: restricted in 2023, check current status. Both banned by WADA.

The two main healing peptides in one vial, used for tendons, ligaments, muscle tears and post-surgery recovery.

- Two main healing peptides combined in a single vial.
- BPC-157 builds the healing infrastructure near the injury.
- TB-500 sends the repair crew throughout your whole body.
- Go-to for tendons, ligaments, muscle tears and post-surgery recovery.
- One vial, one injection, no fasting.

VIAL **5 mg BPC-157 + 5 mg TB-500 (10 mg total)**	ROUTE **SubQ**	FREQUENCY **Once daily**
TIMING **Anytime, no fasting needed**	DURATION **4–8 weeks**	MIX WITH **2 mL bac water**



What it is & how it works

What it is

- BPC-157: 15-amino-acid peptide derived from a protective protein in your stomach.
- BPC-157 drives local repair by growing blood vessels and amplifying growth signals.
- TB-500: synthetic version of Thymosin Beta-4, a protein found in almost every cell.
- TB-500 moves repair cells and works throughout the whole body.
- The vial: 5 mg BPC-157 + 5 mg TB-500 (10 mg total).
- Not FDA approved. In 2023 the FDA restricted both peptides from compounding.
- Banned by WADA, UFC, NFL, NCAA, NHL, MLB, NAIA and PGA.

How it works for you

- Healing is a chain of steps and no single peptide covers all of them, which is why these two are stacked.
- **BPC-157 — general contractor**: Grows new blood vessels, bringing more oxygen and nutrients to the injury. Opens up circulation. Helps repair cells anchor at the injury site. Makes tendon cells more responsive to growth hormone. Amplifies existing healing signals, so it needs an injury to work on. Short half-life (under 30 min), so it works hardest near where you inject.
- **TB-500 — construction crew**: Mobilizes repair cells and moves them to damaged tissue. Reduces scar tissue, so you heal with organized, functional tissue. Calms inflammation. Recruits stem cells to the injury. Travels freely, so it works everywhere, no matter where you inject.

What it is & how it works

How it works for you (cont.)

- **Together**: Both grow blood vessels, move cells and calm inflammation, each through different pathways. BPC-157 gives local repair; TB-500 covers your whole body.

What It's Used For

- Tendons and ligaments (main use): Achilles, rotator cuff, patellar tendonitis, tennis/golfer's elbow, ACL and MCL sprains
- Muscle strains and tears
- Post-surgery recovery: only with your surgeon's approval
- Chronic joint pain and wear: run it longer, 6–8+ weeks
- Wounds and scarring
- Multiple injuries at once: TB-500 reaches all of them
- Gut issues: oral BPC-157 alone is the better choice

Healing Time by Injury Type

- Muscle: 2–4 weeks
- Tendon: 4–8 weeks
- Chronic or old injuries: 8–12 weeks, results less predictable

Where to Inject

- One injury: inject near it. BPC-157 concentrates there; TB-500 reaches it anyway.
- Multiple injuries, or to keep it simple: belly or thigh. TB-500 finds damage everywhere; BPC-157 still circulates at lower concentration.
- Author's choice: belly.

What it is & how it works · Who should NOT use it

Blend or Separate Vials?

- Blend: one vial, one mix, one shot. The simplest option.
- Separate: better for different doses, different cycle lengths, or BPC-157 at the injury with TB-500 in the belly.

Don't use if

- Active cancer or tumors — both peptides grow blood vessels
- History of cancer, unless your oncologist has cleared you with imaging
- Allergy to BPC-157, TB-500 or thymosin peptides
- Pregnant or breastfeeding (no human safety data)

Use caution with

- Autoimmune conditions or severe immunodeficiency
- Heart conditions
- Liver or kidney problems
- Precancerous conditions or unexplained masses

Results & what to expect

What to expect (anecdotal: user reports, not studies)

Days 1–3

- Pretty mild improvement

Weeks 1–2

- Pain and inflammation start going down

Weeks 3–4

- Real functional gains
- Movements that used to hurt get easier; range of motion improves

Weeks 6–8

- Peak results for most injuries

The dosing protocol

Standard Protocol

Dose	250–500 mcg of EACH daily
Frequency	Once daily
Timing	Anytime, no fasting needed
Route	SubQ
Duration	4–8 weeks

By Injury

Acute (strain/sprain/tear)	500–1000 mcg, 4–6 wks
Post-surgery	500–1000 mcg, 4–8 wks
Chronic / joint support	500–1000 mcg, 6–8 wks
Multiple injuries	500–1000 mcg, 6–8 wks

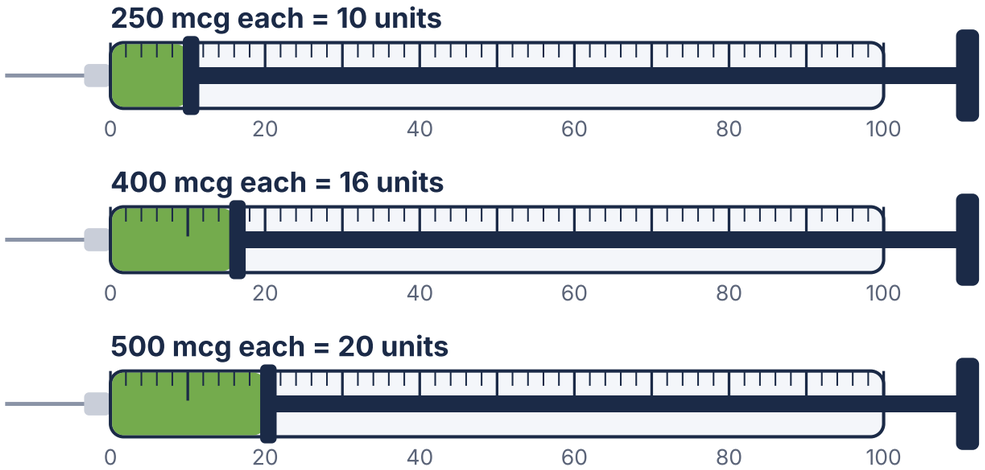
- Post-surgery use only with your surgeon's approval.

Mixing & measuring your dose · Tips & warnings

10 mg vial (5 mg BPC-157 + 5 mg TB-500)

ADD
2 mL bac water

STRENGTH
5 mg/mL total (2.5 mg/mL of each)



- Lasts 10–20 days depending on dose
- Mixing: add the water slowly down the side of the vial, then swirl gently. Don't shake it.

Not everyone responds

Chronic, degenerative problems give the most mixed results. It speeds up healing, but your body still has to do the work.

Safety data is limited

Neither peptide showed toxicity in animal studies, but human safety data is tiny and no one has tested the subQ combo for safety.

- The FDA has flagged BPC-157 over immune reaction risk and impure products, so your source matters.

What it stacks with · Side effects & interactions

What it stacks with

- **TRT** — No conflict.
- **GH peptides** — No conflict. Keep GH peptides fasted. Can draw both into the same syringe if timing lines up, but don't pre-mix and store.
- **GLP-1s** — No conflict, but don't mix in the same syringe. Volumes and schedules differ.
- **GHK-Cu** — Complementary. For max potency use a separate vial, since copper can degrade TB-500 over time. Loss is minimal if you finish the vial within 20–30 days.

Common side effects

- Injection site redness, swelling or bruising
- Fatigue or flu-like feeling for the first 1–3 days (usually from the TB-500)
- Nausea, mostly above 500 mcg of BPC-157

Less common

- Head rush right after injecting (passes in minutes)
- Headache
- Dizziness

Side-effect notes

- Most side effects clear up within a few days.

What to monitor · FAQ

Monitor

- No standard bloodwork exists for this stack. Track your healing with your doctor or physical therapist.

FAQ

Can I start both on day one?
Yes. That's how the blend is designed.

Do I need to cycle it?
No. It's a healing tool, not a hormone. Use it while tissue is damaged and stop once healed: 4–8 weeks for acute injuries, up to 8–12 weeks for chronic ones.

Do I need to inject near the injury?
No. Injecting near it helps BPC-157, but TB-500 works anywhere.

Is it better than BPC-157 or TB-500 alone?
Never tested head-to-head. It covers more of the healing process on paper, but for mild injuries or gut issues BPC-157 alone may be enough.

KLOW Blend

TB-500 + BPC-157 + GHK-Cu + KPV

Not FDA approved; the four-peptide combo is unstudied. BPC-157 left FDA Category 2 in April 2026 (still not legal to compound); check TB-500's current status. BPC-157 and TB-500 are banned by WADA.

The GLOW blend plus KPV: healing and collagen support with added anti-inflammatory and gut targeting.

- KLOW is the GLOW blend with KPV added.
- Same healing and collagen support, plus a dedicated anti-inflammatory.
- KPV also targets the gut and calms the GHK-Cu injection sting.
- Each peptide has its own research; nobody has studied the four together.
- Pick it over GLOW when inflammation or gut issues are part of the problem.

VIAL	ROUTE	DOSE
80 mg total (4 peptides)	SubQ	7.5–15 units

TIMING	MIX WITH	OFF-CYCLE
No fasting, any time of day	3 mL bac water	4–6 weeks between cycles



What it is & how it works

How it works for you

- **BPC-157 — calls in the blood supply**: Adds more receptors (VEGFR2) for your body's repair signals, so new vessels form at the damage. Needs damaged tissue to work.
- **TB-500 — moves the repair cells**: Works body-wide through actin, so it reaches the injury wherever you inject.
- **KPV — turns down inflammation**: Blocks NF-kB, the master switch for inflammatory signals like TNF-alpha and IL-6.
- **GHK-Cu — improves the rebuilt tissue**: Delivers copper for cross-linking collagen and elastin and shifts gene expression toward repair.
- **KPV targets inflamed gut tissue**: Enters cells through the PepT1 transporter, which inflamed gut tissue makes more of.
- **KPV calms injection reactions**: Stabilizes mast cells, which GHK-Cu sets off at the injection site.

What it is

- Vial contents (80 mg total): TB-500 10 mg, BPC-157 10 mg, KPV 10 mg, GHK-Cu 50 mg.
- GLOW + KPV. The "K" is KPV, an anti-inflammatory tripeptide taken from alpha-MSH.
- Four jobs: repair signaling, cell movement, inflammation control, tissue quality.
- Not FDA approved. BPC-157 and TB-500 are FDA Category 2 and banned by WADA.

How it works for you (cont.)

- **No tanning**: KPV doesn't act on the pigment receptor, so no skin darkening or appetite changes.
- **The simple version**: KPV is the fire department, BPC-157 the project manager, TB-500 the logistics crew, GHK-Cu the materials supplier and inspector.

What it is & how it works · Who should NOT use it

What It's Good For

- Injuries with a lot of inflammation: tendons, ligaments, muscle, post-surgery
- Inflammatory gut problems: BPC-157 repairs the lining; KPV quiets the inflammation driving the damage
- Skin and collagen: same GHK-Cu dose as GLOW, so expect the same skin results
- Guys who react to GHK-Cu: users report this blend stings the least of any GHK-Cu product

Healing Time by Injury Type

- Muscle injuries: 2–4 weeks
- Tendon injuries: 4–8 weeks
- Chronic injuries: 8–12 weeks, less predictable
- Skin and collagen: 8+ weeks of consistent use

Don't use if

- Active cancer or tumors (three of the four grow new blood vessels, which could feed a tumor)
- History of cancer, unless your oncologist clears it
- Wilson's disease (copper buildup disorder)
- Known reaction to any component or to copper
- Pregnant or breastfeeding (no human safety data)

Use caution with

- Liver or kidney impairment
- Severe heart conditions
- Autoimmune conditions
- Immunosuppressant medications
- Active infections

Results & what to expect

What to expect

Weeks 1–2

- Less pain and inflammation
- Gut comfort improves if inflammation was the cause

Weeks 3–4

- Clear functional gains in tendon and ligament injuries

Weeks 6–8

- Peak healing for most injuries
- Skin changes become visible

Weeks 8–12

- Continued collagen remodeling
- Possible hair effects

The dosing protocol · Mixing & measuring your dose

Protocols by Goal

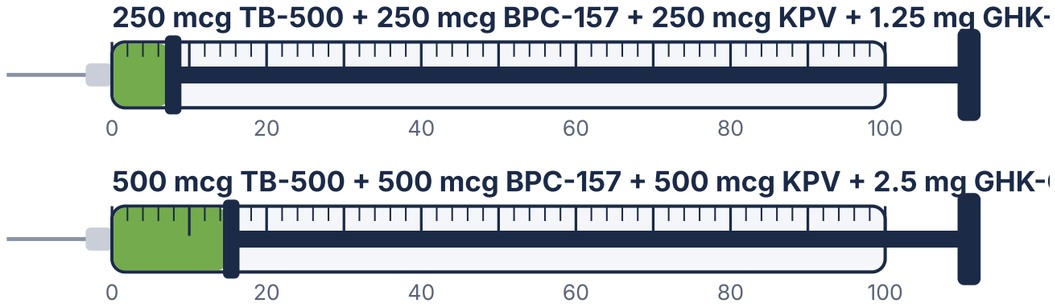
Healing + inflammation	7.5–15 units daily, SubQ, 4–6 weeks
Gut healing	7.5–15 units daily, SubQ, 6–8 weeks
Anti-aging / chronic inflammation	7.5–15 units every other day, 8–16 weeks
Maintenance	7.5–15 units, 2x per week, as needed

- Start at 7.5 units. Move to 15 if you tolerate it.
- Inject near the injury if you have one; BPC-157 clears fast, so local is better.
- For gut, skin or general use, anywhere SubQ works.
- No fasting, any time of day. Be consistent.
- Take 4–6 weeks off between cycles.
- Stop when you're healed: BPC-157 and TB-500 work on damaged tissue, so no reason to stay on once repaired.

80 mg vial

ADD

3 mL bac water



- Vial lasts 20 days at 15 units daily
- Vial lasts 40 days at 7.5 units daily
- More water means less sting: GHK-Cu is more diluted at 3 mL, easier on the injection site.
- Blue or green tint is normal (it's the copper). Cloudy or floating particles means throw it out.
- Discard 28 days after mixing, even if doses are left (multi-dose vial rule).

Tips & warnings · Quick comparison · more

What it won't fix

Bloating from food sensitivities, low digestive enzymes, or a microbiome problem. There's no tissue damage or inflammation there to treat. Fix your diet first.

Timelines are anecdotal

These timelines are from user reports, not studies.

What it stacks with

- **GLP-1s (Reta, Tirz, Sema)** — No interaction. May help skin quality during weight loss.
- **GH peptides (CJC/Ipa, Sermorelin)** — No interaction. Keep GH peptides fasted and take KLOW whenever.
- **TRT** — No interaction.
- **GLOW or Wolverine Stack** — Don't double up. KLOW already contains them.

Which blend?

BLEND	CONTENTS	BEST FOR
Wolverine	BPC-157 + TB-500	Pure injury healing
GLOW	Wolverine + GHK-Cu	Healing plus skin and collagen
KLOW	GLOW + KPV	All of that plus inflammation and gut support

Side effects & interactions

Common side effects

- Injection site redness, swelling or itching (usually milder than GLOW or GHK-Cu alone)
- Mild fatigue
- Blue-green color at the injection site

Less common

- Nausea at higher doses
- Headache
- Metallic taste
- Dizziness

Side-effect notes

- Most are dose-dependent and pass.
- No long-term human safety data for any of the four as injections.

Interactions

- NSAIDs: data is mixed. BPC-157 may protect the gut from NSAID damage, but NSAIDs may also blunt the healing response.

FAQ

FAQ

What's the difference between KLOW and GLOW?
KPV. Everything else is identical.

Will it fix my gut?
If the problem is inflammation or a damaged gut lining, it targets both. If it's food sensitivities, enzymes or your microbiome, no.

Does it burn less than GHK-Cu alone?
Users consistently say yes. Some get no reaction at all.

Can KPV replace my anti-inflammatory meds?
Don't swap a prescribed medication for it without your doctor. It isn't approved and has little human data.

Do I need to inject near the injury?
It helps for the BPC-157. TB-500 and GHK-Cu work body-wide either way.

FAQ (cont.)

Does KPV tan you like Melanotan?
No.

KPV

Not FDA approved; research compound only; animal data only, zero human trials

A tiny 3-amino-acid anti-inflammatory peptide, mainly used for gut inflammation, taken orally, by injection or on skin.

- Tiny 3-amino-acid anti-inflammatory peptide — "the gut peptide."
- Turns down the body's master inflammation switch without suppressing your immune system.
- Can be taken orally, by injection or on your skin.
- Tolerability is excellent.
- The catch: all data so far comes from animals. Zero human trials.

SIZE 3 amino acids	ROUTES Oral, SubQ, topical	ORAL DOSE 200–500 mcg, 1–2x daily
SUBQ DOSE 200–400 mcg once daily	DURATION 4–8 weeks	MIX WITH 2 mL bac water (5 mg vial)



What it is & how it works

What it is

- The tail end of alpha-MSH, the same parent hormone behind MT-1 and MT-2.
- KPV is the piece that carries the anti-inflammatory effect.
- No effect on tanning, appetite or libido — it doesn't touch melanocortin receptors.
- It's tiny, which is why it works orally, by subQ injection and topically.
- Not FDA approved. Research compound only.

How it works for you

- **Shuts down the master inflammation switch (NF-κB)**: Lowers TNF-α, IL-1β, IL-6 and IL-8, the signals that drive swelling, pain and tissue damage.
- **Blocks a second pathway (MAP kinase)**: Hitting two pathways gives a broad effect at very small amounts.
- **Works from inside the cell**: Gets in through PepT1, a transporter your gut uses to absorb small peptides from food.
- **Targets inflamed gut tissue**: An inflamed gut makes more PepT1, so it pulls in more KPV. That's why oral dosing makes sense for gut issues.
- **Not an immune suppressor**: Unlike prednisone, it doesn't shut down your immune system. It may even boost your ability to kill bacteria and fungus.

What it is & how it works · Who should NOT use it · more

What It's Used For

- Gut inflammation (most researched): bloating, leaky gut, IBD support
- Systemic inflammation and autoimmune support
- Skin: eczema, psoriasis, wound healing — no skin thinning like steroid creams
- Antimicrobial support: active against Staph and Candida in lab studies

Don't use if

- Allergy to KPV or related peptides
- Pregnant or breastfeeding

Use caution with

- Active cancer
- Immunosuppressive medications
- Autoimmune conditions: talk to your doctor first

What to expect (anecdotal: user reports, not studies)

Topical, within days

- Less redness and irritation

Weeks 2–4

- Less bloating and better digestion

Weeks 4–8

- Bigger improvements in inflammatory symptoms

The dosing protocol

Oral (Gut Focus)

Dose	200–500 mcg, 1–2x daily
Form	Capsule or solution
Duration	4–8 weeks (extend with monitoring)
Best for	Gut inflammation, leaky gut, IBD support

SubQ Injection (Systemic)

Dose	200–400 mcg once daily
Duration	4–8 weeks
Best for	Systemic inflammation, autoimmune support

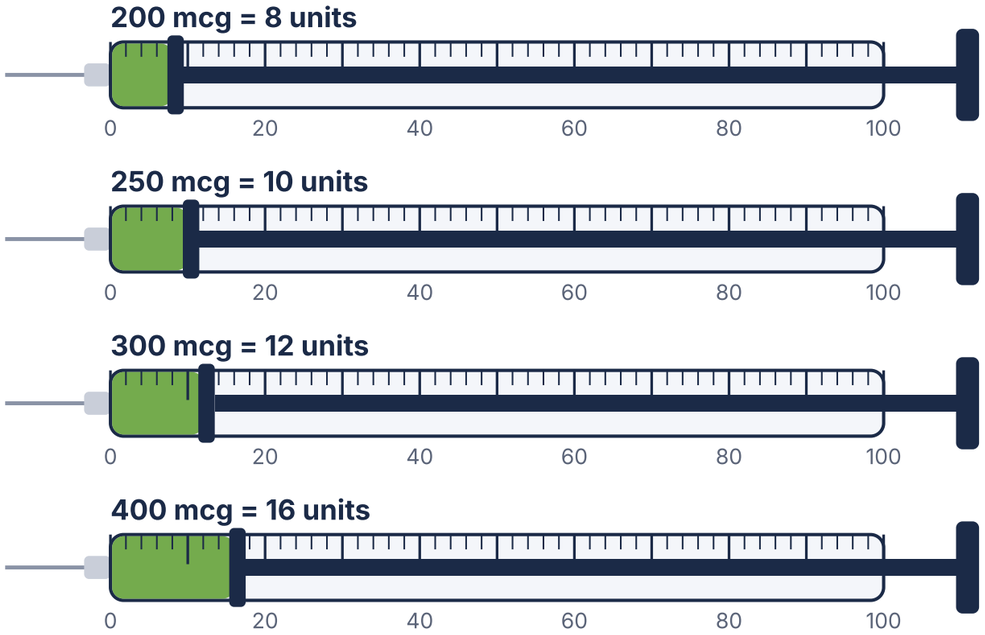
Topical (Skin)

Strength	0.01–0.1% in cream base
Frequency	Twice daily
Duration	As needed
Best for	Eczema, psoriasis, wound healing

Mixing & measuring your dose · Tips & warnings

5 mg vial (injectable)

ADD	STRENGTH
2 mL bac water	2.5 mg/mL



- Storage: refrigerate after mixing

Which route?

Gut issues: go oral, since the inflamed gut pulls it in directly. Whole-body inflammation or skin: use subQ, because more reaches your bloodstream.

Not a rescue drug

It works as a consistent daily tool that lowers inflammation over weeks. Results vary a lot depending on how severe the underlying issue is.

No human safety data

Long-term safety in humans is unknown.

What it stacks with · Side effects & interactions

What it stacks with

- **BPC-157** — The go-to gut stack. KPV calms inflammation, BPC-157 repairs tissue. Both can be taken orally. No research on the combo yet.
- **GLP-1s** — No conflict. May help with GI side effects, though that hasn't been studied.
- **GH peptides** — No conflict. Keep GH peptides fasted and take KPV anytime.
- **TRT** — No conflict.

Common side effects

- SubQ: mild injection site irritation
- Topical: brief skin redness
- Oral: occasional stomach upset at higher doses

Side-effect notes

- One of the best-tolerated peptides. Most consistent user report: no side effects at all.
- No human safety data, so long-term safety in humans is unknown.

What to monitor · FAQ

Monitor

- CRP and ESR (inflammatory markers), if using it for an inflammatory condition
- Symptom tracking for gut use
- Regular doctor check-ins if you have any chronic inflammatory condition

FAQ

Will it darken my skin like MT-2?
No. It doesn't touch melanocortin receptors, so no effect on tan, appetite or libido.

Oral or injection?
Oral for gut issues, subQ for whole-body inflammation.

How is it different from ibuprofen or prednisone?
It targets specific inflammation pathways without NSAIDs' gut and heart risks or steroids' whole-body immune suppression. Trade-off: those drugs have decades of human data; KPV has none.

Can it help autoimmune conditions?
It helped in animal models of arthritis, asthma, dermatitis and colitis. No human data, so check with your doctor, especially if on immunosuppressants.

Thymosin Alpha-1

Thymalfasin / Zadaxin

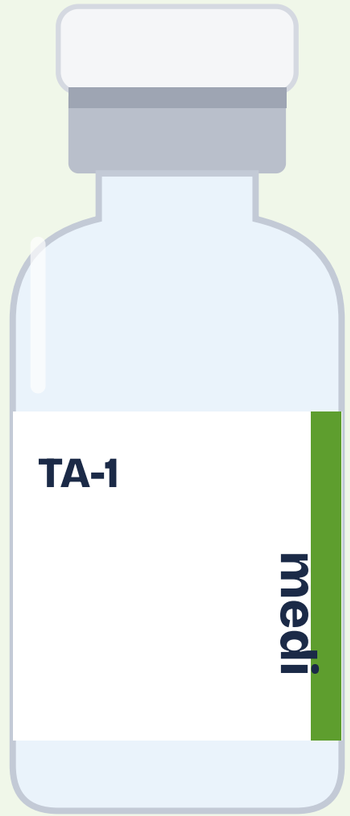
Not FDA approved in the US; approved in 35+ other countries; removed from FDA restricted compounding list in 2024; available as a research compound

Your thymus's immune-training peptide; balances immunity for fewer, shorter illnesses, and is one of the most-studied peptides.

- The immune peptide your thymus makes to train T cells; the thymus shrinks with age.
- Balances immunity: turns it up when weak, helps calm it when overactive.
- Not FDA approved in the US; approved in 35+ other countries and tested on 11,000+ people — one of the most-studied, safest peptides.
- Expect fewer and shorter illnesses, not something you feel.
- Benefits fade when you stop.

DOSE	FREQUENCY	ROUTE
1.6 mg (1,600 mcg)	Twice weekly (e.g., Mon + Thu)	SubQ (belly, thigh, or arm)

TIMING	MIX WITH	EVIDENCE
Anytime, no fasting needed	2 mL bac water (10 mg vial)	11,000+ people, 30+ clinical trials



What it is & how it works

What it is

- A 28-amino-acid peptide from your thymus, the gland behind your breastbone where T cells get trained.
- Synthetic version: thymalfasin (Zadaxin).
- Not FDA approved in the US; approved in 35+ other countries for hepatitis B, hepatitis C, and as an add-on to certain cancer treatments.
- Studied in 11,000+ people across 30+ clinical trials.
- FDA removed it from its restricted compounding list in 2024.
- Expected to return to the approved compounding list; available as a research compound.

How it works for you

- **Sharpens threat sensors**: Activates the "security cameras" on immune cells (TLR-2 and TLR-9), so your body spots viruses and bacteria faster.
- **Trains T cells**: Matures new T cells and boosts helper T cells (CD4+, the coordinators) and killer T cells (CD8+, which destroy infected and abnormal cells).
- **Revives exhausted T cells**: Lowers the "I give up" markers (PD-1 and Tim-3) on T cells that have been fighting too long.
- **Activates NK cells**: Your first responders against viruses and early tumors.
- **Improves dendritic cells**: These "teachers" show T cells what to attack.
- **Fights viruses directly**: Slows viral replication and makes infected cells more visible to killer T cells.

What it is & how it works

How it works for you (cont.)

- **Supports cancer surveillance**: Flips tumor-protecting immune cells (M2 macrophages) into tumor-attacking ones (M1).
- **The key difference: balance**: Raises pro-immune signals when your system is weak and anti-inflammatory signals (IL-10) when it's overactive.

Why It Matters as You Age

- Your thymus starts shrinking after puberty; by your 40s and 50s much of it has turned to fat.
- Fewer new T cells get made, and existing ones work worse (immunosenescence).
- Result: more infections, weaker vaccine responses and higher cancer rates with age.

What to Expect

- You probably won't feel it: it works at the cellular level over weeks — no buzz or sleep boost like a GH peptide.
- What people notice: fewer colds and flus.
- Faster recovery when they do get sick.
- Sometimes more energy, likely because the immune system is working better.
- Chronic conditions: lingering viral issues, long COVID or post-viral fatigue — varying degrees of improvement reported.
- Bloodwork: some see white blood cells, lymphocytes and CD4 counts rise.

Who should NOT use it · Results & what to expect

Don't use if

- You've had an organ transplant and take immunosuppressants
- You're on checkpoint inhibitors or other cancer immunotherapy, unless your oncologist approves
- You're allergic to Thymosin Alpha-1

Use caution with

- Autoimmune conditions, especially on biologics like Humira, Enbrel or Remicade — your doctor must sign off; don't run it behind their back
- Active cancer treatment: may help as an add-on, but only with your oncologist's supervision
- Pregnancy, breastfeeding, or anyone under 18

Headline numbers

35+
countries where it's approved

11,000+
people studied across 30+ clinical trials

6 of 7
hepatitis B patients cleared the virus vs 1 of 5 on placebo

19% → 6%
flu cases when added to the flu vaccine

Results & what to expect

The results

- Hepatitis B: early small trial, 6 of 7 treated cleared the virus vs 1 of 5 on placebo; results held for 26 months.
- Vaccines in older adults: boosted flu vaccine antibody responses in men aged 65–99.
- Another study: flu cases dropped from 19% to 6% when added to the vaccine.
- Liver cancer (add-on): better survival and fewer recurrences after surgery.
- Lung cancer (add-on): 724-patient meta-analysis showed improved response rates, CD4 counts and NK cells with chemo.
- Melanoma (add-on): promising response rates in smaller trials.
- Severe COVID: mortality dropped from 30% to 11% in one Wuhan review — retrospective; other studies mixed.

The results (cont.)

- Sepsis: largest trial ever (1,089 patients) did NOT reduce mortality (23.4% vs 24.1%); may help specific high-risk subgroups.

The dosing protocol

Standard Protocol

Matches approved Zadaxin dose

1.6 mg twice weekly is the clinical standard, matching the approved Zadaxin dose.

Dose	1.6 mg (1,600 mcg)
Frequency	Twice weekly (e.g., Mon + Thu)
Timing	Anytime, no fasting needed
Route	SubQ (belly, thigh, or arm)

- Where to inject: anywhere subQ works, since it acts on your whole body. Rotate sites.

By Goal

All at 1.6 mg twice weekly.

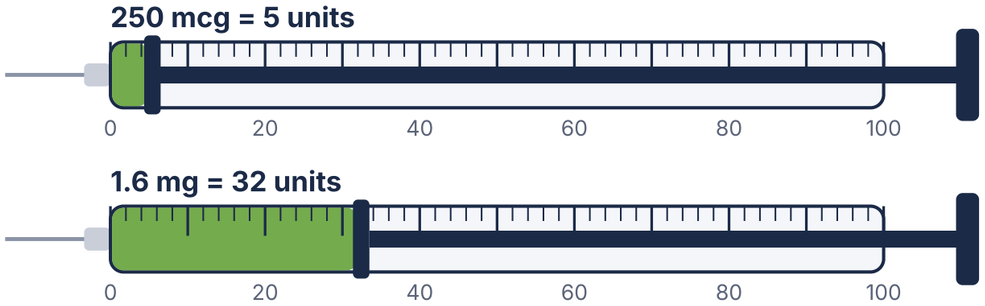
General immune	4–8 wks on, 4 wks off (or run cold/flu season)
Chronic infection	6–12 months, with a doctor
Vaccine boost	Start 2 wks before shot, continue 2–4 wks after

Mixing & measuring your dose · Tips & warnings

10 mg vial

ADD
2 mL bac water

STRENGTH
5 mg/mL



- Lasts ~3 weeks at 2x/week

The benefits are temporary

It fills in for a declining thymus. When you stop, the decline resumes. That's why people run it in cycles or seasonally.

Autoimmune note

Results are mixed. Some people with Hashimoto's report fewer flares; others feel worse before better as their immune system recalibrates.

What it stacks with · Side effects & interactions

What it stacks with

- **BPC-157 / TB-500** — No conflict. If you're on a biologic for an autoimmune condition, clear these with your doctor too.
- **KLOW blend** — Complementary. KPV calms inflammation while TA-1 balances immunity — good for immune dysfunction plus chronic inflammation.
- **GH peptides** — No conflict. Keep GH peptides fasted and take TA-1 anytime.
- **GLP-1s** — No conflict.
- **SS-31 / MOTS-c** — No conflict. Tip: with lots of inflammation, calm it first with TA-1 and KPV before adding metabolic compounds like MOTS-c; pushing metabolism on an inflamed system adds stress.

What it stacks with (cont.)

- **Cancer immunotherapy (Keytruda, Opdivo, other PD-1 drugs)** — In one case report the combination caused multi-organ failure. Never combine without your oncologist's explicit approval.
- **Transplant immunosuppressants** — It works directly against these drugs.

Common side effects

- Injection site redness or swelling
- Mild fatigue during the first few doses

Side effects & interactions

Less common

- Headache (usually only after the first shot)
- Insomnia
- Mild nausea

Rare

- Skin redness
- Muscle discomfort at the injection site
- Joint pain

Side-effect notes

- One of the safest peptides available. No serious side effects linked to TA-1 alone across 11,000+ trial participants.
- Most side effects clear up within the first week.

Interactions

- Safe combos in trials: interferon, ribavirin, chemotherapy and vaccines.
- Avoid: checkpoint inhibitors / PD-1 drugs (Keytruda, Opdivo) and transplant immunosuppressants — see stacks.

FAQ

FAQ

How is it different from vitamin C or zinc?
Vitamins and zinc are raw materials, like giving workers better tools. TA-1 is the foreman who trains, organizes and directs the workers.

Will I feel it?
Probably not directly. You'll notice it in fewer sick days.

Do I need to cycle it?
Not required — trials ran it 6–12 months straight. For general immune support, most run 4–8 weeks on with breaks, or seasonally.

Cartalax

AED peptide / T-31

Not FDA approved; no completed human clinical trials

A tiny Russian bioregulator peptide marketed for joint and connective-tissue upkeep, run in short cycles.

- Tiny 3-amino-acid Russian bioregulator marketed for joints and connective tissue.
- Run in short cycles a few times a year.
- Effects are subtle.
- All evidence is cell culture and animal work from one Russian lab, no human trials.
- Treat it as an experimental maintenance peptide; use BPC-157 for actual injuries.

ROUTE	DOSE	CYCLE
SubQ	2 mg once daily	10–20 days

REPEAT	TIMING	MIX WITH
3–4 cycles per year	Morning, with or without food	Bac water (2 mL per 20 mg vial)



What it is & how it works · Who should NOT use it

What it is

- A tripeptide: alanine, glutamic acid, aspartic acid (Ala-Glu-Asp).
- Also sold as "AED peptide" or "T-31."
- A Khavinson bioregulator, from the same Russian research family as Epithalon.
- Not just cartilage: it targets fibroblasts, the cells that build collagen and connective tissue.
- Fibroblasts are found in joints, skin, tendons and blood vessels.
- Not FDA approved. No human clinical trials have been completed.

Don't use if

- Active cancer or a history of cancer
- Known reaction to Cartalax

How it works for you

- **Works on gene expression**: Theory: small enough to enter the cell nucleus and bind DNA, nudging aged cells toward a younger pattern.
- **More building**: In aged fibroblasts it raised growth and regeneration markers (Ki-67, CD98hc).
- **Less breakdown**: It lowered MMP-9, a collagen-chewing enzyme that rises with age.
- **Less cell death**: It lowered caspase-3, a marker of cells self-destructing.
- **Fewer aging markers**: In kidney cells it lowered p16, p21 and p53 and raised SIRT-6, a longevity-linked protein.
- **A "normalizer"**: Claimed to turn up what's underactive and calm what's overactive. Not confirmed outside the original lab.

Who should NOT use it · Results & what to expect

Use caution with

- Pregnancy or breastfeeding
- History of peptide allergies
- Immunosuppressive medications
- Autoimmune conditions
- Under 18

Headline numbers

0
completed human trials

2 mg
daily dose, no titration

3–4
short cycles per year

The results

- Skin fibroblasts (2016, cell culture): more growth/regeneration markers, less cell death, less MMP-9; strongest in aged cells.
- Kidney cells (2014, cell culture): more growth, lower aging markers, higher SIRT-6 in young and old rat kidney cells.
- Cartilage cells: limited animal data suggests it stimulates cartilage cell growth in young and old animals.
- Human trials: none.
- Big limit: nearly all data comes from the lab that developed it. No Western lab has replicated it.

Results & what to expect

What to expect

Days 1–7

- Nothing noticeable for most people.

Weeks 1–2

- Some report joints feel a bit better in training. Others feel nothing.

Weeks 2–3

- Responders describe sturdier joints and less nagging discomfort.

Post-cycle

- Some say benefits hold or keep building after the cycle ends.

Keep in mind

- Subtle is the normal report. Expecting a BPC-157 type response leads to disappointment.
- Some guys feel nothing.
- User base is tiny: a handful of forum reports, and placebo can't be ruled out.

The dosing protocol · Mixing & measuring your dose · more

Standard Protocol

No human dose-finding study exists.

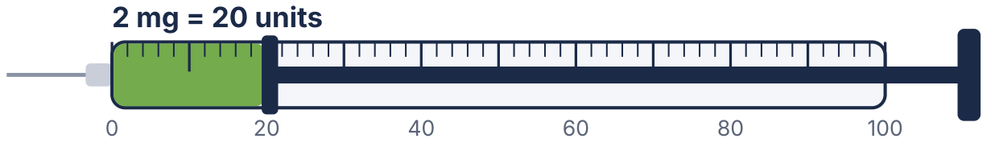
Route	SubQ
Dose	2 mg once daily
Cycle	10–20 days
Repeat	3–4 cycles per year
Break	3–4 months between cycles
Timing	Morning, with or without food

- No titration: start at 2 mg and stay there.
- Short cycles only; don't run it year-round. Theory: the gene changes outlast the dosing.
- Same time each day; morning is the usual choice.
- Judge it after the cycle. Any benefit builds slowly and may show up later.
- Have an injury? Use BPC-157. Cartalax is for maintenance.

20 mg vial

ADD
2 mL bac water

STRENGTH
10 mg/mL



- Vial lasts 10 doses.
- A 20-day cycle needs 2 vials.

Maintenance, not injury repair

Treat Cartalax as an experimental maintenance peptide. Use BPC-157 for actual injuries.

Tips & warnings · What it stacks with · more

Why the cancer warning

It pushes cell growth and lowers p53, one of your body's main tumor-suppressing proteins. It hasn't been studied in anyone with cancer.

What it stacks with

- **Epithalon** — Another Khavinson bioregulator with a different target. Can be run on the same cycle.
- **BPC-157** — No known interaction. BPC handles the injury, Cartalax the long-term upkeep.
- **GHK-Cu** — Both act on fibroblasts via different pathways. Reasonable pairing for skin and connective tissue.

Common side effects

- Injection site redness
- Mild swelling
- Itching

Less common

- Mild fatigue

Rare

- Mild stomach discomfort
- Allergic reaction

Side effects & interactions · FAQ

FAQ

Is it just for cartilage?
No. It works on fibroblasts, which are in joints, skin, tendons, blood vessels and kidneys.

Why are the cycles so short?
Bioregulators are thought to trigger gene expression changes that last beyond dosing. BPC-157 differs: it must be present to work.

Is the research credible?
Peer-reviewed and mechanistically plausible, but almost all from one Russian lab and never independently replicated.

Will I feel anything?
Maybe not. Most people call it subtle, and some notice nothing.

Side-effect notes

- Nothing serious has been documented, but there's no long-term human safety data either.
- It breaks down into three normal amino acids your body already uses.

FAQ (cont.)

Cartalax or BPC-157 for joints?
BPC-157 for an active injury. Cartalax is a maintenance option for aging connective tissue.

PART 6

06

Sleep Support

- DSIP



DSIP

Delta Sleep-Inducing Peptide

Not FDA approved; FDA restricted it from compounding in 2024; available as a research compound

A natural brain peptide that deepens slow-wave sleep without knocking you out, often used alongside GH peptides.

- Natural peptide that deepens slow-wave (deep) sleep.
- Deep sleep is when your body repairs itself and releases growth hormone.
- Not a sleeping pill: doesn't knock you out or suppress REM.
- Best for improving decent sleep and countering sleep disruption from GH peptides.

ROUTE	DOSE	TIMING
SubQ (nasal possible)	250–500 mcg nightly	30–60 min before bed

DURATION	HALF-LIFE	MIX WITH
5–10 nights, then evaluate	7–15 minutes	Bac water (SubQ); sterile saline (nasal)



What it is & how it works · Who should NOT use it

What it is

- A 9-amino-acid peptide your hypothalamus makes naturally.
- Discovered in 1977 in the blood of rabbits during deep sleep.
- Named for the delta brain waves of the deepest sleep stage.
- Crosses into the brain easily; affects sleep, stress hormones, pain and hormone release.
- Half-life 7–15 minutes, though carrier-protein binding may extend its effect.
- Not FDA approved. FDA restricted it from compounding in 2024. Available as a research compound.

Don't use if

- You're allergic to DSIP
- You're pregnant or breastfeeding

How it works for you

- **Turns up the calm**: Boosts GABA, your brain's brake pedal.
- **Turns down the alertness**: Dampens glutamate, the "stay awake" signal.
- **Lowers nighttime cortisol**: High cortisol drives racing thoughts and 3 AM wake-ups. DSIP helps normalize it.
- **Supports your body clock**: Influences serotonin and melatonin.
- **Boosts GH and LH**: More GH in sleep means better recovery and fat metabolism. LH may support testosterone (untested in humans).
- **Relieves pain**: Interacts with opioid pathways, without addiction or suppressed breathing.
- **Sleeping pill vs DSIP**: Pills force sedation. DSIP works with your natural sleep rhythm.

Who should NOT use it · Results & what to expect

Use caution with

- Sedatives, benzos or sleep meds
- Opioid medications
- Severe chronic insomnia: data suggests modest benefit at best
- Kidney or liver problems

Headline numbers

59%

more sleep time in healthy volunteers (within about 2 hours)

6 of 7

severe insomniacs normalized after 10 injections (open study, no placebo)

97% / 87%

opioid / alcohol detox patients with eased withdrawal (107 patients, no placebo)

The results

- Studies are clinical work from the 1980s.
- Healthy volunteers: 59% more sleep time within about 2 hours, faster onset and better efficiency next night, no classic sedation.
- Chronic insomnia (controlled trial, 16 people): weak improvements; researcher: "not likely to be of major therapeutic benefit" short-term.
- Severe insomnia (open study, 7 people): sleep normalized in 6 of 7 after 10 injections; benefits lasted 3–7 months.
- That severe-insomnia result had no placebo group, so it's likely inflated.
- Detox (107 patients): withdrawal eased in 97% of opioid and 87% of alcohol patients. No placebo group.
- Chronic pain: less pain, better mood; some patients cut back on pain meds.

Results & what to expect

The results (cont.)

- Stroke (rats): better motor recovery.

What to expect

10–30 minutes after injecting

- Calm sleepiness for some, a gradual settling for others.

Night 1

- Some fall asleep faster; others notice nothing. It isn't a "pass out" drug.

Nights 5–7

- Sleep improves progressively.
- Fewer middle-of-the-night wake-ups.
- Waking up more rested.
- More vivid dreams, better dream recall, sometimes lucid dreams.

Judging it

- Give it 5–7 nights in a row before judging it.

The dosing protocol

Standard Protocol

From clinical practice and community consensus.

Dose	250–500 mcg nightly
Timing	30–60 min before bed
Route	SubQ
Duration	5–10 nights, then evaluate

- Start low. Higher doses can backfire: worse sleep or grogginess lingering into the next day.
- Timing matters: 30–60 min before bed. Taking it 2–3 hours early seems less effective.
- Nasal use is possible: mix with sterile saline, not bac water. SubQ gives more precise dosing.

Cycling

Research hasn't established a cycling schedule. Community approaches:

Frequency	3–5 nights per week instead of every night
Stopped working?	Take a 1–2 week break

- Some notice temporarily worse sleep after stopping long daily use. Not true dependency, but cycling helps avoid it.

GH Peptide + DSIP

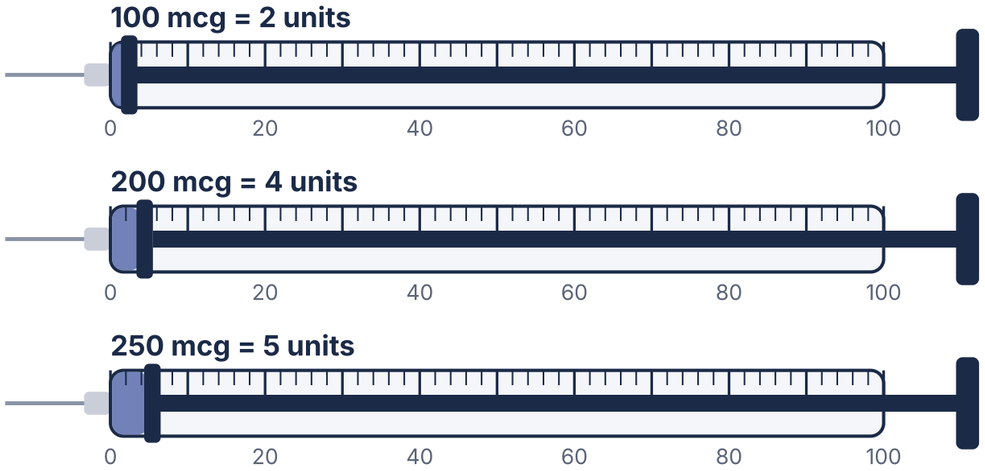
Stack

GH peptide	Morning or early afternoon (fasted)
DSIP	100–200 mcg, 30–60 min before bed

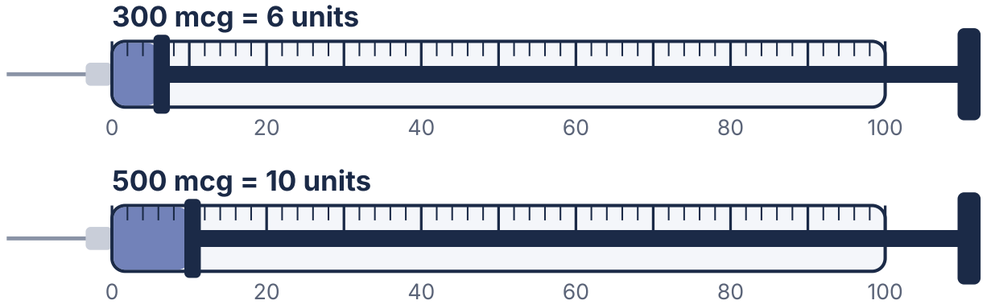
Mixing & measuring your dose

10 mg vial (2 mL)

ADD	STRENGTH
2 mL bac water	5 mg/mL



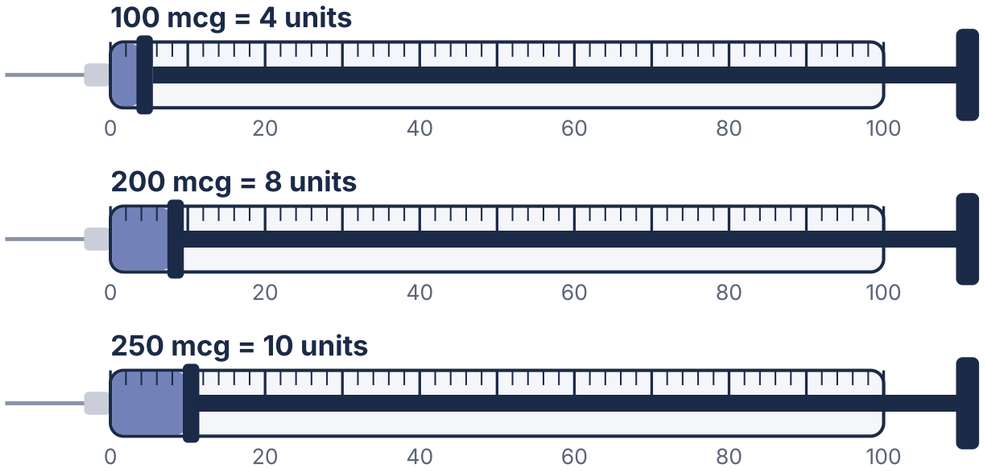
10 mg vial (2 mL) (cont.)



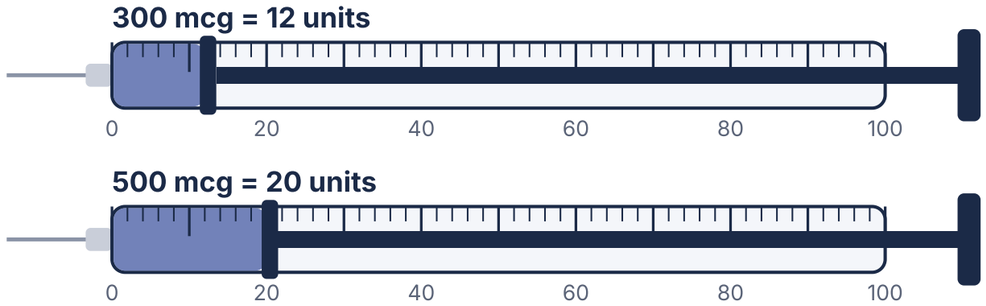
Mixing & measuring your dose · Tips & warnings

10 mg vial (4 mL, easier to measure)

ADD	STRENGTH
4 mL bac water	2.5 mg/mL



10 mg vial (4 mL, easier to measure) (cont.)



It can't fix a broken foundation

If you only have a 4–5 hour sleep window or your blood sugar crashes overnight, DSIP won't solve that.

Start low

Higher doses can backfire, causing worse sleep or next-day grogginess.

What it stacks with

What it stacks with

- **GH peptides (CJC/Ipa, Tesamorelin)** — One of its best uses. GH peptides, especially tesamorelin, can disrupt sleep. Move the GH peptide to a fasted morning dose; DSIP at bedtime.
- **Semax / Selank** — Good day-night combo: Semax in the morning for focus, DSIP at night for sleep.
- **BPC-157 / TB-500** — No conflict.
- **TRT** — No conflict.
- **Sedatives, sleep meds, benzos** — Can stack into too much sedation.
- **Opioid meds** — DSIP shares their pathways.

What it stacks with · Side effects & interactions

What it stacks with (cont.)

- **THC/CBD** — Blunts effectiveness.

Common side effects

- Mild headache
- Grogginess if the dose is too high
- Slight mood swings
- Vivid dreams

Less common

- Brief anxiety
- Sleepiness into the next day at high doses
- Temporarily worse sleep after stopping long daily use

Side-effect notes

- 1980s studies: favorable safety profile.
- No dependency, tolerance, suppressed breathing, rebound insomnia or memory impairment. A few patients got headaches.
- Doesn't suppress REM, cause next-day sedation at normal doses, or disrupt hormones.
- Long-term safety data is limited.

Interactions

- Sedatives, sleep meds, benzos: can stack into too much sedation
- Opioid meds: DSIP shares their pathways
- THC/CBD: blunts effectiveness

FAQ

FAQ

Is it a sleeping pill?
No. It improves your natural deep sleep instead of forcing unconsciousness.

Will it fix my chronic insomnia?
Maybe modestly. The only controlled trial found weak effects. Fix sleep schedule, stress and habits first.

Does it cause dependency?
None in studies.

Does it help with shift work?
Possibly. Dose before your target sleep time, whatever the clock says. Not studied in shift workers.

Will I be groggy?
Not at normal doses. Too high a dose can cause it, so start low.

PART 7

07

Cognitive & Mood Support

- Semax
- Selank



Semax

Prescribed in Russia (Essential Drugs list since 2011); not FDA approved; research compound

A Russian nootropic peptide that raises BDNF for clean, jitter-free focus, memory support and brain recovery.

- Russian nootropic peptide that raises BDNF, your brain's "fertilizer" for learning, memory and repair.
- Clean focus without stimulant jitters; makes caffeine hit better.
- Works fast: within about 20 minutes, lasting up to 24 hours.
- Used in Russia for stroke recovery; pairs perfectly with Selank.
- Cycle it 10–14 days on, then take a break.

ROUTE	DOSE	FREQUENCY
Intranasal (most common)	200–600 mcg per day	1–2x daily

TIMING	CYCLE	MIX WITH
Morning or early afternoon	10–14 days on, 2–4 weeks off	Sterile saline (NOT bac water)



What it is & how it works

How it works for you

- **Raises BDNF (the main effect)**: BDNF helps your brain grow neurons, form memories and adapt. Low BDNF is linked to depression and cognitive decline.
- **BDNF in numbers**: One dose raised BDNF about 1.4x and its receptor activation about 1.6x in rats. Starts ~20 min, peaks 90 min, lasts 20–24 hours.
- **Amplifies dopamine (without spiking it)**: Not a stimulant alone; it makes dopamine-releasing things work better. Caffeine hits harder; you feel interested, not wired.
- **Supports serotonin**: Increases serotonin turnover, linked to mood stability.
- **Protects your brain**: Lowers brain inflammation, acts as an antioxidant, raises nerve growth factor (NGF), supports brain repair systems.
- **Switches on 1,500+ genes**: Turns up neuroprotection and plasticity genes; turns down inflammation genes.

What it is

- A 7-amino-acid peptide developed in Russia in 1982 for stroke and brain injury recovery.
- Prescribed in Russia for 30+ years: stroke, traumatic brain injury, cognitive decline, optic nerve disease.
- Added to Russia's Essential Drugs list in 2011.
- Made from a small piece of ACTH (the stress hormone signal) plus a stabilizing Pro-Gly-Pro tail that helps it reach the brain.
- It doesn't affect cortisol.
- Not FDA approved. Available as a research compound.

How it works for you (cont.)

- **Boosts creative thinking**: Brain scans showed more default mode network activity: creativity, visualization, problem-solving.

What it is & how it works · Who should NOT use it · more

Semax vs N-Acetyl Semax Amidate

- Regular Semax: all the research uses this form.
- N-Acetyl Semax Amidate: both ends protected, more stable, reportedly more potent. Use lower doses.
- N-Acetyl Semax Amidate is more likely to cause anxiety at higher doses.
- N-Acetyl Semax Amidate has no clinical studies.

Don't use if

- You're on an MAO inhibitor
- You have uncontrolled high blood pressure
- You're pregnant or breastfeeding
- You have mania or a severe anxiety disorder

Use caution with

- Existing anxiety: start low, or run Selank first
- Diabetes: watch your blood sugar
- Other stimulants or nootropics
- Male pattern baldness

Headline numbers

71% vs 41%
memory-test accuracy after one 1 mg dose vs controls (fatigued healthy men)

~20 min
onset; effects last 20–24 hours

70–80%
effectiveness in optic nerve disease (Russian clinical data)

30+ years
of prescription use in Russia

Results & what to expect

The results

- Stroke recovery (110 patients): BDNF rose and stayed elevated; motor function and independence improved.
- Acute stroke (30 patients): faster return of neurological function, especially motor.
- Healthy men under fatigue: one 1 mg dose gave 71% memory-test accuracy vs 41% for controls; effect lasted up to 24 hours.
- Optic nerve disease: 70–80% effectiveness in Russian data; better sharpness, visual field and color vision.

What to expect

First 20 minutes to a few days

- Subtly sharper focus, easier speaking, clearer thinking.
- Brain feels "younger"; you feel more interested in things.
- Caffeine works better.

Weeks 1–2

- Deeper benefits: memory, learning speed, problem-solving.
- Some people don't notice anything until days 5–7.

The dosing protocol

Intranasal (most common)

Research doses ranged from 1 mg once up to 6 mg a day for stroke.

Dose	200–600 mcg per day
Frequency	1–2x daily
Timing	Morning or early afternoon
Cycle	10–14 days on, 2–4 weeks off

- Why cycle? Constant stimulation makes BDNF pathways adapt, so you get less over time. No year-round use without breaks.
- Timing: morning or early afternoon only. Taking it late can affect sleep.
- No fasting needed. Nasal doses work best when your nose is clear.

By Goal (daily)

Cognitive support	200–400 mcg
Neuroprotection	400–600 mcg
Post-injury recovery	600 mcg (stroke studies used up to 6,000 mcg)

Semax + Selank

Stack

Semax	200–400 mcg, morning
Selank	200–400 mcg, morning and/or afternoon

- Anxiety-prone? Start Selank 1 week first, then add Semax.

Mixing & measuring your dose · Tips & warnings

Nasal spray prep: 10 mg vial

ADD	STRENGTH
5 mL sterile saline (NOT bac water)	**2 mg/mL**

- Strength: 200 mcg per spray (~0.1 mL spray).
- Yield: ~50 sprays per vial.
- Why saline for nasal use? Bac water irritates the nose.

Context on the evidence

All human research is from Russia, with smaller samples than FDA-level trials. Promising, and 30 years of use suggests general safety, but not Western-proven.

A refinement, not a revolution

A healthy brain gets a subtle upgrade. A brain under stress, recovering from injury or inflamed usually notices more.

It won't fix bad basics

Five hours of sleep and a junk diet will beat any peptide. Semax optimizes a system that already works.

What it stacks with · Side effects & interactions

What it stacks with

- **Selank** — The classic pairing. Semax sharpens, Selank calms: focus without restlessness.
- **Caffeine** — Where Semax shines. Caffeine feels stronger, so go easy if you're caffeine-sensitive.
- **GH peptides** — No conflict. Keep them on their own fasting schedule.
- **BPC-157** — No conflict.
- **GLP-1s** — No conflict.
- **TRT** — No conflict. Doesn't touch your hormones despite coming from ACTH.

What it stacks with (cont.)

- **Nasal decongestant sprays (vasoconstrictors)** — Avoid them if you're dosing nasally.

Common side effects

- Nasal irritation or dryness
- Temporary nasal discoloration
- Mild headache (usually from dosing too high or dehydration)
- Restlessness at high doses

Side effects & interactions · What to monitor

Less common

- Irritability or mood changes
- Light sleep if taken late
- More anxiety at higher doses, especially if anxiety-prone
- Blood sugar rise in diabetics
- Blood pressure rise at higher doses

Side-effect notes

- Used clinically in Russia since the 1990s: no significant adverse effects, hormone disruption or dependency.
- The 110-patient stroke study at 6,000 mcg a day reported no major side effects.
- Hair shedding: some users report it. Not documented in clinical studies; the link is theoretical.
- Prone to male pattern baldness and notice shedding? Lower the dose or stop.

Interactions

- MAO inhibitors: do not use
- Nasal decongestant sprays (vasoconstrictors): avoid if dosing nasally
- Caffeine: effect feels stronger

Monitor

- Blood sugar if diabetic
- Hair shedding if prone to male pattern baldness

FAQ

FAQ

Does it affect cortisol?
No. It only uses the brain-active piece of ACTH.

Can I take it orally?
No. Stomach acid destroys it. Use nasal or subQ.

Is it a stimulant?
No. It amplifies dopamine rather than spiking it. Feels like optimization, not stimulation.

Can I use it long term?
Only in cycles: 10–14 days on, 2–4 weeks off.

Selank

Selanc (Russian nasal spray brand)

Approved in Russia since 2009; not FDA approved; research compound

An anti-anxiety peptide that calms without sedation, fog or addiction, and often sharpens focus too.

- Anti-anxiety peptide that calms without sedation, brain fog, tolerance or addiction.
- Often sharpens your focus too.
- Prescription drug in Russia for generalized anxiety.
- Best for mild to moderate everyday anxiety and stress, not severe panic.
- Mostly used as a nasal spray; no crash or taper when you stop.

ROUTE	NASAL DOSE	SUBQ DOSE
Intranasal (SubQ option)	200–400 mcg, 2–3x daily	100–300 mcg once daily

TIMING	CYCLE	STOPPING
Morning + early afternoon	10–14 days or 4–6 weeks	No taper needed



What it is & how it works

What it is

- A 7-amino-acid peptide built from tuftsin, a natural immune peptide your body makes.
- Russian scientists added 3 amino acids to make it stable enough to reach the brain.
- Approved in Russia since 2009 for generalized anxiety and neurasthenia (chronic mental fatigue).
- Sold in Russia as a nasal spray called Selanc.
- Not FDA approved. Available as a research compound.

How it works for you

- **Boosts your brain's brake pedal (GABA)**: Helps GABA work better without forcing the receptor open like benzos. Calmer without fog.
- **Protects natural calming chemicals (enkephalins)**: Slows the enzymes that break them down. People with anxiety tend to break them down too fast.
- **Balances serotonin and dopamine**: Shifts overall balance rather than blocking one chemical like SSRIs. Activates a dopamine receptor tied to memory and learning.
- **Raises BDNF**: The "fertilizer" for brain cells; helps form memories and new connections.
- **Calms stress inflammation**: Built from tuftsin, it lowers IL-6, IL-1β and TNF-α, helping break the stress–inflammation cycle.

What it is & how it works · Who should NOT use it

What People Report

- Anxiety: "a weight lifted" or "the background noise got quieter." Social situations feel easier; natural, not medicated.
- Physical vs mental: some get more help with physical symptoms (racing heart, tension) than anxious thoughts. Others get both.
- Cognition: better word-finding and speaking, sharper working memory, more focus.
- Duration: a single nasal dose lasts about 12–24 hours for many people.
- Falls short for severe anxiety, panic disorder and severe social anxiety; less consistent results.
- Works best for mild to moderate generalized anxiety and situational stress.

What People Report (cont.)

- Quality varies: nasal spray quality differs a lot between sources.

Selank vs Selank Variants

- Regular Selank: the original. All human data uses this form.
- N-Acetyl Selank: one end protected, so more stable.
- N-Acetyl Selank Amidate: both ends protected, most stable and longest-lasting.
- Variants have no human trials. Same mechanism, built to last longer.

Don't use if

- You're allergic to tuftsin or related peptides
- You have an active autoimmune condition where immune changes could be harmful

Who should NOT use it · Results & what to expect

Use caution with

- Pregnancy or breastfeeding: avoid
- Psychiatric meds (SSRIs, SNRIs, MAOIs, benzos): talk to your doctor first
- Diabetes: monitor your blood sugar
- Severe anxiety or panic disorder: evidence is strongest for generalized anxiety

Headline numbers

62

patients in a trial where Selank matched a benzodiazepine for anxiety relief

20.3 → 7.0

anxiety scores by day 3 in the 40% fast responders

12–24 h

a single nasal dose lasts for many people

The results

- 62-patient trial: matched a benzodiazepine for anxiety relief, with no sedation or cognitive impairment.
- Patients in that trial also got more energy and sharper thinking.
- A clinical study found Selank reduced benzo side effects.

Results & what to expect

What to expect

Minutes to days

- Some feel calmer within 10–20 minutes of a nasal dose, though often subtle.

Days 1–3

- In one study, 40% responded fast: anxiety scores fell from 20.3 to 7.0 by day 3.
- Fast responders tended to have more fatigue and brain fog at the start.

Day 14

- The other 60% improved gradually, reaching real improvement by day 14.

Weeks 1–2

- Focus and mood effects build.

What to expect (cont.)

Weeks 4–6

- Memory and learning benefits are strongest.

After stopping

- Calming effect can last about a week after your last dose.

Judging it

- Give it 1–2 weeks; many people don't feel much on day one.

The dosing protocol

Intranasal

Matches clinical research

All the human trials used the nasal route.

Dose	200–400 mcg per use
Frequency	2–3x daily
Total	400–1,000 mcg/day
Timing	Morning + early afternoon
Cycle	10–14 days (Russian protocol) or 4–6 weeks (community)

- Take it morning or early afternoon. Not a stimulant, but late doses can make winding down harder.
- No fasting needed.

SubQ Injection

Dose	100–300 mcg once daily
Timing	Morning
Cycle	4–6 weeks

- Nasal or injection? Nasal matches the clinical evidence and is easiest.
- Routes differ a bit: in mice, injection boosted GABA activity; nasal boosted NMDA activity (learning and memory).

Cycling

Short	10–14 days (acute stress, big event)
Standard	4–6 weeks (general anxiety, focus)
Break	1–3 weeks between cycles
Stopping	No taper needed

The dosing protocol · Mixing & measuring your dose · more

Selank + Semax

Stack

Selank	200–400 mcg nasal, 2–3x daily
Semax	200–600 mcg nasal, morning only (not after 2pm)
Start	Selank alone for 1 week, then add Semax

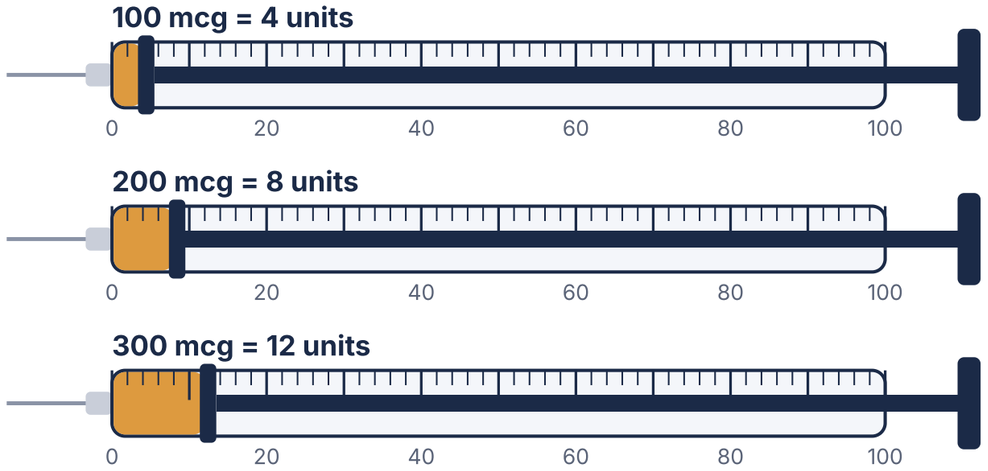
Why it's different from anxiety meds

- Benzos (Xanax, Valium): work, but sedate, hurt memory, build tolerance and cause dependency.
- SSRIs: take 4–6 weeks to kick in and can blunt emotions.
- Selank: matched a benzo in a 62-patient trial, no sedation or cognitive impairment, plus more energy and sharper thinking.
- You stay alert while feeling calmer.

Example: 5 mg vial (injectable)

ADD
2 mL bac water

STRENGTH
2.5 mg/mL



Don't stop prescribed meds

Don't stop prescribed anxiety medication without your doctor.

What it stacks with

What it stacks with

- **Semax** — Classic pairing: Selank calms, Semax sharpens. Starting Selank first helps prevent restlessness some get on Semax alone.
- **GH peptides** — No conflict. Keep GH peptides fasted at bedtime; take Selank during the day.
- **GLP-1s** — No conflict.
- **BPC-157** — No conflict.
- **TRT** — No conflict.
- **Benzodiazepines** — Only with medical supervision. A study found Selank reduced benzo side effects, but both hit the GABA system.

What it stacks with · Side effects & interactions

What it stacks with (cont.)

SSRIs, SNRIs or MAOIs — Not studied together. Theoretical risk of too much serotonin activity; check with your doctor.

Alcohol, gabapentin, pregabalin, barbiturates — Avoid combining without professional guidance.

Common side effects

- Nasal irritation
- Bad taste at the back of your throat
- Mild headache that passes within hours

Less common

- Fatigue or mild dizziness at higher doses
- At very high doses: more anxiety or emotional flatness (lowering the dose fixes it)

Side-effect notes

- Remarkably clean. Most common complaint: it isn't as strong as expected.
- Not reported: sedation, brain fog, tolerance, withdrawal or addiction.
- Diabetics: one source noted mild blood sugar increases in a small percentage of diabetic patients.

Side effects & interactions · What to monitor · more

Interactions

- Benzodiazepines: only with medical supervision (both act on GABA)
- SSRIs, SNRIs, MAOIs: not studied; theoretical excess serotonin risk
- Alcohol, gabapentin, pregabalin, barbiturates: avoid without professional guidance

Monitor

- Blood sugar if diabetic

Call a doctor for

- Before stopping any prescribed anxiety medication
- Before combining with SSRIs, SNRIs, MAOIs or benzos

FAQ

Can I replace my anxiety medication with it?
Don't stop prescribed meds without your doctor. Research shows it rivals benzos for generalized anxiety, but it's weaker for acute panic.

Selank vs Semax?
Partners, not competitors. Selank calms (GABA, enkephalins, serotonin). Semax sharpens (BDNF, dopamine).

Does it work right away?
For some. About 40% respond within days; the rest take up to 2 weeks.

Do I need to cycle it?
No tolerance has been shown. Cycling is just a precaution.

Can I use it for sleep?
It isn't a sleep aid. May help if anxiety keeps you up, but late doses can keep you alert.

PART 8

08

Sexual Health

- Kisspeptin-10
- Melanotan 2



Kisspeptin-10

Not FDA approved; sold as a research peptide

A gentle peptide that switches on your own testosterone and fertility signals without shutting anything down.

- Kisspeptin is the master switch at the top of your testosterone axis.
- Raises your own T and supports fertility; your body's natural brakes stay on.
- The gentlest option for boosting T, but subtler than HCG or enclomiphene.
- It doesn't work if you're on TRT.

ROUTE	DOSE	FREQUENCY
SubQ	100–200 mcg	Every other day

TIMING	CYCLE	MIX WITH
Anytime, no fasting needed	4–8 weeks	Bac water (2 mL per 5 mg vial)



What it is & how it works

What it is

- The active 10-amino-acid fragment of kisspeptin, a signal your hypothalamus makes naturally.
- Sits at the very top of your testosterone chain: Kisspeptin → GnRH → LH + FSH → testosterone + sperm.
- Not FDA approved. Sold as a research peptide.

Where it fits

- TRT shuts the whole axis down.
- HCG bypasses your brain and goes straight to your testes.
- Enclomiphene takes the brake off by blocking your brain's view of estrogen.
- Kisspeptin presses the gas at the top of the axis and leaves every feedback brake in place.
- Same idea as CJC-1295 for GH: the higher up the axis you step in, the more your body stays in control.

How it works for you

- **Raises your own T**: Triggers LH, and LH tells your testes to make testosterone.
- **Supports fertility**: Also triggers FSH, which drives sperm production. HCG is inconsistent on FSH.
- **Self-regulating**: As T rises, estrogen feedback tells your brain to ease off, so it's very hard to overshoot.
- **Libido and desire**: In a 2023 trial, it increased sexual brain activity and arousal response by up to 56% vs placebo.
- **No crash when you stop**: Nothing gets shut down, so there's no PCT or recovery period.
- **No emotional flattening**: Unlike SERMs, it doesn't block estrogen.

Who should NOT use it · Results & what to expect

Don't use if

- Primary hypogonadism (your testes themselves aren't working); the problem is downstream, so kisspeptin can't fix it
- Pituitary tumor or pituitary dysfunction
- Hormone-sensitive cancer
- Allergy to kisspeptin

Use caution with

- Pregnancy or breastfeeding
- Hypothalamus or pituitary conditions
- Running it alongside other HPG drugs (SERMs, HCG, HMG): loop in your doctor

What to expect

30–40 min after injection

- LH peaks, then drops back to baseline within about 3 hours

Weeks 2–3

- Some people notice more energy, libido and better mood

Week 4

- Changes should show on bloodwork

Headline numbers

56%

max increase in sexual brain activity/arousal vs placebo (2023 trial)

30–40 min

time to LH peak after injection

~3 hours

LH returns to baseline

The dosing protocol

Standard Protocol

Dose	100–200 mcg SubQ
Frequency	Every other day
Timing	Anytime, no fasting needed
Cycle	4–8 weeks
Labs	Baseline + 4 weeks in

By Body Weight

Every-other-day dosing

Under 150 lbs	100 mcg
150–200 lbs	100–150 mcg
Over 200 lbs	150–200 mcg

Labs to Monitor

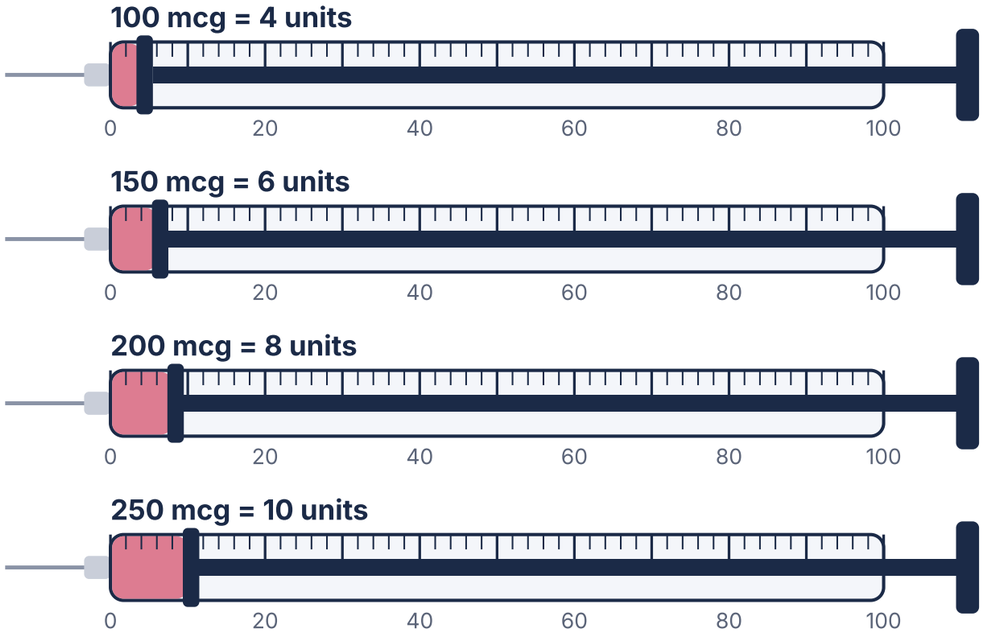
LH	Is it firing the axis?
Total/Free T	Is T responding?
FSH	Fertility side responding?
Estradiol	Watch aromatization as T rises

Mixing & measuring your dose · Tips & warnings

5 mg vial

ADD
2 mL bac water

STRENGTH
2.5 mg/mL (2,500 mcg/mL)



Reality check: the effects are subtle

Subtler than HCG or enclomiphene. Expect a moderate, physiological lift, not HCG-level jumps.

- Kisspeptin clears fast: one subQ dose gives an LH bump for about 3 hours, then it's gone.
- How much that lifts T over a week of every-other-day dosing hasn't been studied.
- That's probably why so many users call it “subtle.”
- Your 4-week labs tell you whether it's working for you.

Tips & warnings · What it stacks with · more

2 rules you don't break

- 1. Don't dose it daily. Constant exposure desensitizes the receptor.
- In one study, twice-daily dosing lost most of its effect by week 2; twice-weekly held for 8 weeks.
- Dose every other day, or twice a week.
- 2. Don't use it on TRT. TRT silences the neurons kisspeptin needs, so it's unlikely to do anything.

Common side effects

- Injection site irritation
- Mild flushing
- Mild headache

What it stacks with

Enclomiphene — Makes sense in theory (gas plus brake release), but there's no human data on the combo.

HCG — Complements it. Add HCG if kisspeptin alone isn't getting your testes to respond enough.

PT-141 — No conflict. Different systems: kisspeptin handles T, PT-141 handles desire.

GH peptides — No conflict. Keep GH peptides fasted; take kisspeptin anytime.

TRT — Pointless, because the axis is already shut down.

Side effects & interactions · What to monitor

Less common

- Temporary warmth
- Lightheadedness

Side-effect notes

- Side effects are very mild. No adverse events were reported in the published human studies.
- The main risk is desensitization, not side effects. Follow the dosing frequency.

Monitor

- LH: is it firing the axis?
- Total/Free T: is T responding?
- FSH: is the fertility side responding?
- Estradiol: watch aromatization as T rises
- Timing: baseline + 4 weeks in

Call a doctor for

- If combining with other HPG drugs (SERMs, HCG, HMG), loop in your doctor

FAQ

FAQ

Kisspeptin or enclomiphene?
Enclomiphene has more human data. Kisspeptin works more naturally and doesn't cause the emotional flatness some get on SERMs.

Kisspeptin or HCG?
HCG has decades of data and gives bigger results. Kisspeptin is newer and gentler, and keeps your brain in the loop.

Does it help fertility?
In theory, yes, because it triggers both LH and FSH. No human studies have tested it for fertility at community doses.

Melanotan 2

MT-2

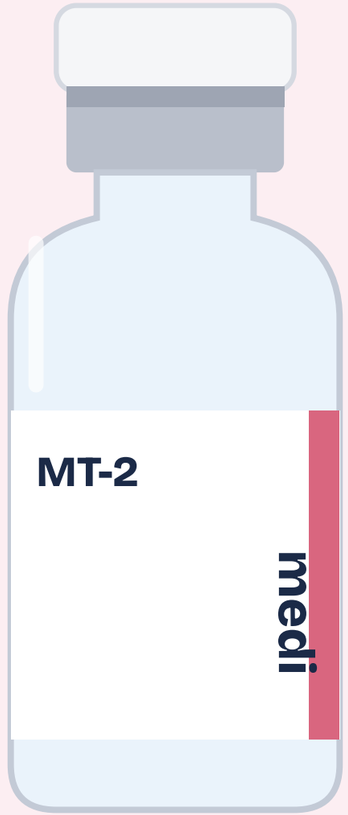
Never went past early trials; never FDA approved; completely unregulated

A tanning peptide that also cuts appetite and boosts sex drive, giving a visible tan in days.

- A tanning peptide that also cuts appetite and boosts sex drive.
- You get all three effects whether you want them or not.
- Gives a real, visible tan in days with little or no sun.
- Trade-offs: nausea at first, occasionally darker moles, and rare but serious side effects.

ROUTE	LOADING DOSE	MAINTENANCE
SubQ, belly or thigh	0.25–0.5 mg daily	0.25–0.5 mg, 2–3x per week

TIMING	HALF-LIFE	MIX WITH
Before bed	About 1 hour	Bac water (2 mL per 10 mg vial)



What it is & how it works · Who should NOT use it

What it is

- A 7-amino-acid synthetic version of alpha-MSH, the hormone that tells your skin to make pigment.
- Developed in the 1980s at the University of Arizona to prevent skin cancer via a tan without UV.
- Never went past early trials and has never been FDA approved. Completely unregulated.
- PT-141 (bremelanotide) was developed from MT-2 to target just the sexual effects; PT-141 got FDA approval, MT-2 didn't.

Don't use if

- You or a family member has had melanoma
- Active skin cancer or precancerous lesions
- Lots of atypical moles (dysplastic nevus syndrome)
- Allergy to MT-2

How it works for you

- You have 5 melanocortin receptors, like switches for different systems. MT-2 flips several at once, so you can't pick your effects.
- **MC1 — tanning**: Tells pigment cells to make melanin, with or without sun. Sun speeds it up and deepens it.
- **MC3 and MC4 — appetite**: Send a “you're full” signal to your brain, so you eat less without trying.
- **MC4 — sex drive**: Boosts dopamine in the brain's arousal center. Works on the want, not just blood flow, unlike Viagra and Cialis.
- **Half-life**: About 1 hour. Effects last much longer, and the tan stays because the melanin is already in your skin.

Who should NOT use it · Results & what to expect

Use caution with

- Pregnancy or breastfeeding
- Heart conditions
- Kidney or liver problems
- A history of priapism
- Very fair skin that burns and never tans

Headline numbers

3–5 days
to visible darkening, even without sun

17 of 20
men with ED got erections in trials

68% vs 19%
men with increased sexual desire vs placebo

The results

- Tanning: visible darkening in 3–5 days, even without sun, across all skin types. Full effect takes 2–3 weeks.
- Sexual function: in men with ED, 17 of 20 got erections (over 80% rigidity, lasting 40+ minutes on average).
- Sexual desire rose in 68% of men vs 19% on placebo.
- Appetite: consistently reduced.

Results & what to expect

What to expect

Weeks 1–2 (loading)

- Nausea and facial flushing are common early on
- Skin starts darkening around days 3–5
- Sexual effects and appetite suppression start within the first week

Weeks 2–3

- The full tan develops
- Moles and freckles darken; new freckles may appear

Week 3+ (maintenance)

- Drop to 2–3 doses a week to hold the tan
- Some people only dose before sun exposure

After stopping

- Tan fades gradually over 4–8 weeks after your last dose as your skin turns over

The dosing protocol

Loading Phase

Community consensus

Protocols come from community consensus, not dose-finding studies.

Start	0.1–0.25 mg (test nausea tolerance)
Dose	0.25–0.5 mg daily
Duration	7–14 days (until desired tan)
Timing	Before bed (sleep through nausea)
Route	SubQ, belly or thigh

- Trials used about 0.7–2.1 mg per dose for a 155 lb person; community doses are much lower to limit nausea.
- Why before bed? You sleep through both the nausea and the flushing.
- Going above 1 mg? Some experienced users load at 1–1.5 mg a day, but side effects go up significantly.

Maintenance Phase

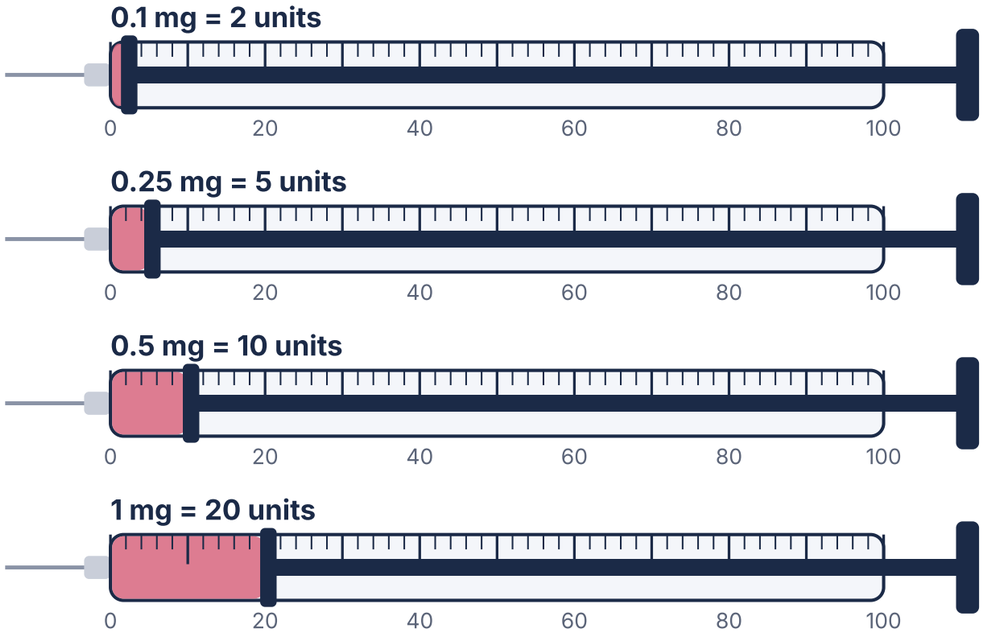
Community consensus

Dose	0.25–0.5 mg
Frequency	2–3x per week
Option	Only dose before sun exposure

Mixing & measuring your dose · Tips & warnings

10 mg vial

ADD	STRENGTH
2 mL bac water	5 mg/mL



Erection lasting more than 4 hours?

Go to the ER. Spontaneous erections are a common effect; priapism (prolonged, painful erection) can cause permanent damage.

Author's experience

I've used MT-2. My skin tone changed visibly within a few days, my appetite dropped significantly (especially with retatrutide), and my sexual function increased.

Fun fact

The sexual effect was found by accident: a researcher self-testing took a double dose and had an 8-hour erection. That led to PT-141.

Tips & warnings · What it stacks with

The melanoma question

- No study has proven MT-2 causes melanoma. Case reports exist.
- Higher rates in users are mostly blamed on UV-seeking behavior: the same people use tanning beds and chase sun.
- One preclinical study actually found it slowed melanoma.
- The real danger: MT-2 darkens moles, which makes cancerous changes harder to spot.

Before and during use

- Get a baseline dermatology exam and photograph all your moles before you start.
- Get regular skin checks while using it.
- Stop immediately and see a dermatologist if any mole changes shape, border or color unevenly.

What it stacks with

- **GLP-1s (Reta, Sema, Tirz)** — No conflict, but appetite suppression stacks. Make sure you eat enough protein (the author noticed this on retatrutide).
- **GH peptides** — No conflict. You can take it alongside your evening GH dose.
- **TRT** — No conflict.
- **BPC-157 / TB-500** — No conflict.
- **PT-141** — Redundant. Hits the same MC4 receptor, so you'd get more nausea and blood pressure effects.

Side effects & interactions

Common side effects

- Nausea: 10–60 minutes after injecting, dose-dependent
- Facial flushing and warmth: lasts 30–60 minutes
- Spontaneous erections: 1–5 hours after injecting
- Darker moles and freckles, plus possible new ones
- Injection site darkening
- Yawning and stretching (odd, but documented)

Less common

- Fatigue or flu-like feeling early on
- Feeling cold
- Stomach cramps
- Headache

Rare

- Kidney infarction (case reports): blocked blood flow to the kidney, potentially fatal
- Rhabdomyolysis (case reports): muscle breakdown that can lead to kidney failure
- Priapism (case reports): prolonged, painful erection that can cause permanent damage

Side-effect notes

- Moles: most lighten again after you stop, but some darkening can be permanent.

What to monitor · FAQ

Monitor

- Baseline dermatology exam before starting
- Photograph all your moles before you start
- Regular skin checks while using it

Call a doctor for

- Erection lasting more than 4 hours: get to an ER
- Any mole changes shape, border or color unevenly: stop immediately and see a dermatologist

FAQ

Do I need sun?
No. It works without UV, but sun makes the tan faster and deeper.

Can I get the tan without the sexual effects?
No. You get all the effects or none. Melanotan I (afamelanotide) is more tan-specific, but it's only available as a prescription implant for a rare light-sensitivity condition.

Why is it called the “Barbie peptide”?
A social media nickname from people sharing their tanning results on TikTok.

PART 9

09

Skin Health

- GHK-Cu
- Melanotan 1



GHK-Cu

Copper Tripeptide-1

Topical legal and widely sold; injectable is a research chemical, not FDA approved

A natural copper peptide that signals repair: used topically for skin and hair, injected for whole-body repair.

- A copper peptide your body already makes to trigger repair.
- Tells cells to build collagen, grow blood vessels and fix damaged tissue.
- Your levels drop by more than half as you age.
- Topical for skin and hair; injectable for whole-body repair.
- Expect it to burn when you inject it.

ROUTE **SubQ injection or topical**	INJECTABLE DOSE **1–3 mg daily**	CYCLE **4–8 weeks on (up to 12), 4–6 weeks off**
HALF-LIFE **Under an hour**	MIX WITH **Bac water (2.5 mL per 50 mg vial)**	COLOR **Blue is normal (copper)**



What it is & how it works

What it is

- 3 amino acids bound to copper. You naturally have it in your blood, saliva and urine.
- Your body's “construction foreman”: when tissue is damaged, it coordinates the rebuild.
- Drops with age: about 200 ng/mL at age 20 vs about 80 ng/mL at 60.
- As it falls, repairs get slower and lower quality: thinner skin, slower healing and recovery, thinning hair.
- Topical is legal and everywhere; labelled as Copper Tripeptide-1.
- Injectable is a research chemical, not FDA approved. In 2023 the FDA restricted compounding pharmacies from using it.

How it works for you

- **Builds collagen and elastin**: Firmer skin; stronger tendons, ligaments and connective tissue.
- **Delivers copper safely**: Your body needs copper to cross-link collagen so it's strong instead of weak.
- **Balances breakdown and rebuild**: Old, damaged collagen is cleared while new collagen is made.
- **Grows new blood vessels**: More blood flow means faster healing. BPC-157 works the same way.
- **Calms inflammation**: Lowers TNF-α, IL-6 and IL-1β and switches on antioxidant defenses.
- **Shifts gene expression**: In lab data it shifted about 31% of human genes toward repair, away from inflammation and breakdown.
- **Recruits repair cells**: Pulls repair and stem cells to damaged areas.

What it is & how it works · Who should NOT use it · more

What it's used for

- Skin: wrinkles, firmness, thickness, age spots, and loose skin after weight loss
- Healing: wounds, scars, and tendon and ligament recovery
- Hair: follicle size and growth, best topically with microneedling
- Gut: reduced colitis in mice (no human data)

Headline numbers

55.8%
less wrinkle volume after 8 weeks topical, twice daily

32.8%
less wrinkle depth vs control serum

70%
of users improved collagen (vs 50% vitamin C, 40% retinoic acid)

200 → 80 ng/mL
typical levels at age 20 vs 60

Don't use if

- Active cancer or tumors (it grows blood vessels)
- Wilson's disease or another copper metabolism disorder
- Allergy to copper or GHK-Cu
- Active infection at the injection site

Use caution with

- Pregnancy or breastfeeding
- Autoimmune disorders
- Liver or kidney disease
- Immunosuppressants or blood thinners
- A history of cancer: check with your oncologist
- High-dose zinc: zinc competes with copper

Results & what to expect

The results

- Topical, human — 8 weeks twice daily: wrinkle volume down 55.8%, depth down 32.8% vs a control serum.
- Topical, human — 12 weeks: better skin density and thickness, less sagging, fewer fine lines.
- Collagen head-to-head: improved in 70% of users vs 50% with vitamin C and 40% with retinoic acid.
- Injectable: no published human data. Evidence comes from animal studies and user reports.

What to expect

Weeks 1–2 (injectable, anecdotal)

- Softer, smoother skin and a visible “glow”

Weeks 4–6

- Fewer fine lines, thicker skin
- Minor aches and injuries healing

Weeks 8–12

- Shallower wrinkles, firmer skin
- Age spots fading

Hair

- Slower and inconsistent from injections alone
- Topical plus microneedling works better, with results at 16–24 weeks

Note

- Not everyone responds. Some people see nothing even at high doses.

The dosing protocol

Standard Injectable (SubQ)

Dose	1–3 mg daily
Frequency	Daily or 5 days/week
Duration	4–8 weeks (up to 12)
Break	4–6 weeks between cycles

- Why daily? Half-life is under an hour, so smaller, frequent doses beat big, occasional ones.
- Where to inject: anywhere works for whole-body benefits; injecting closer to a target gives a higher local dose.

Conservative Start

Dose	0.5–1 mg
Frequency	3–5x per week
Purpose	Test tolerance before going up

Topical

Strength	0.5–4% face, 2% eye area
Frequency	1–2x daily
Cycling	None needed, use continuously
Results	8–16 wks skin, 16–24 wks hair

Loose Skin After Weight Loss

Dose	1–2 mg daily (injected)
Duration	8–12 weeks

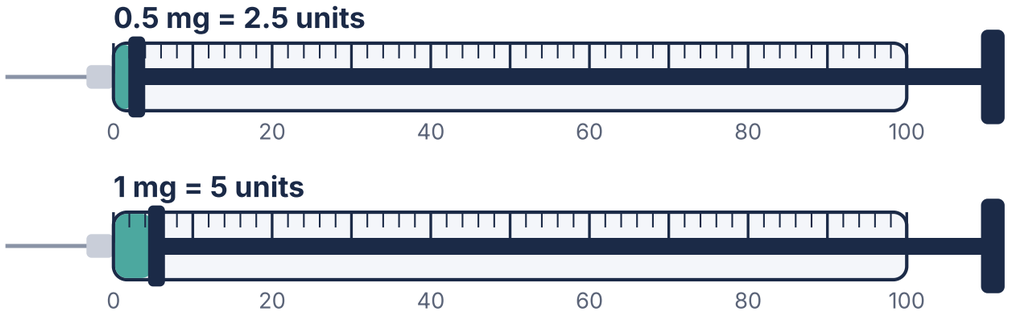
- Topical doesn't penetrate deep enough to fix real laxity.

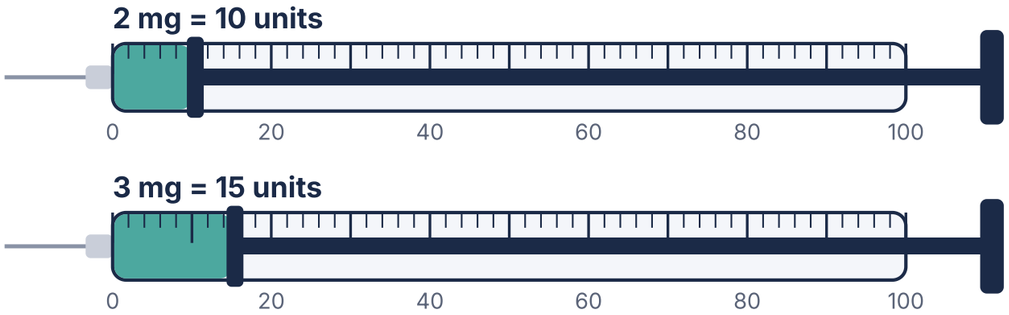
Mixing & measuring your dose

50 mg vial

ADD
2.5 mL bac water

STRENGTH
20 mg/mL





- Color: blue is normal (it's the copper).
- Corrected math: the source said 3 units ≈ 0.5 mg; at 20 mg/mL, 3 units = 0.6 mg.
- 2.5 units is hard to read on a 100-unit syringe: use a 0.3 mL (30-unit) syringe.

Tips & warnings · What it stacks with

How to stop the burn

Burning and stinging at the injection site is the #1 complaint and can last 15–20 minutes.

- Dilute it: draw 30–90 extra units of bac water into the syringe with your dose.
- Inject into fattier areas and rotate sites.
- Use the GLOW blend: mixing with BPC-157 reduces the burn.
- Take an antihistamine 30 minutes before you inject.

Cancer rule

GHK-Cu, BPC-157 and TB-500 all grow blood vessels. If one is off-limits for you because of cancer, all three are.

What it stacks with

GLOW blend (GHK-Cu + BPC-157 + TB-500) — The most common stack. GHK-Cu 1–2 mg daily, BPC-157 250–500 mcg daily, TB-500 250–500 mcg daily. Start all three together from day one.

KLOW blend — GLOW + KPV, for extra anti-inflammatory support.

GLP-1s — No conflict. Popular for tightening loose skin during fat loss.

GH peptides — No conflict. Keep GH peptides fasted; take GHK-Cu anytime.

TRT — No conflict.

What it stacks with · Side effects & interactions

What it stacks with (cont.)

New to GHK-Cu? — Start it alone first so you know what's causing any reaction.

Cancer rule — GHK-Cu, BPC-157 and TB-500 all grow blood vessels. If one is off-limits because of cancer, all three are.

Common side effects

- Injectable: burning or stinging, redness, a hive-like bump, or temporary blue-green skin at the injection site

Less common

- Injectable: metallic taste, headache, fatigue, appetite or energy changes

Rare

- “Copper uglies”: skin looks worse before it improves. Mostly reported with high-strength topicals; some dermatologists question whether it's real.

Side-effect notes

- Topical: very safe, with decades of use. Occasional mild redness or itching.
- Injectable side effects are from user reports.

Interactions

- Immunosuppressants or blood thinners: use caution
- High-dose zinc competes with copper

What to monitor · FAQ

Call a doctor for

- History of cancer: check with your oncologist before using

FAQ

Topical or injectable?
Topical for face and hair. Injectable for whole-body repair, recovery, healing and loose skin.

Does it cause cancer?
No study shows it does; in lab data it reversed cancer-linked gene activity. But it grows blood vessels, so it's off-limits with active cancer.

Do I need to cycle it?
Cycle the injectable at 4–8 weeks on and 4–6 weeks off. Topical can be used continuously.

Why is it blue?
The blue comes from the copper. If it isn't blue, that's the red flag.

Melanotan 1

MT-1 / Afamelanotide (Scenesse)

FDA approved (Oct 2019) only as Scenesse implant for EPP; injectable not approved for tanning or cosmetic use

The tanning-only Melanotan: darker skin and real UV protection without MT-2's appetite or libido effects.

- The tanning-only version of Melanotan.
- Darkens skin and adds real UV protection.
- No appetite loss, random erections or libido effects like MT-2.
- Best-studied tanning peptide: FDA approved as an implant for a rare light-sensitivity disorder.
- Works slower and takes more dosing than MT-2.

ROUTE	LOADING	MAINTENANCE
SubQ	**0.25–0.5 mg daily, 10–14 days**	**0.25–0.5 mg, 1–2x per week**

HALF-LIFE	MAIN RECEPTOR	MIX WITH
About 30 minutes	**MC1R**	**Bac water (2 mL per 10 mg vial)**



What it is & how it works

What it is

- Synthetic alpha-MSH: a stable copy of the pituitary hormone that tells skin cells to make pigment.
- The natural hormone breaks down in minutes.
- Selective: mainly hits MC1R, the receptor that controls skin pigment.
- FDA approved (Oct 2019) as Scenesse, a 16 mg implant releasing over about 60 days, for erythropoietic protoporphyria (EPP).
- The injectable version is not approved for tanning or anything cosmetic.

How it works for you

- **Makes melanin without much sun**: Binds MC1R on pigment cells and ramps up melanin production.
- **Makes the protective kind**: Shifts toward eumelanin (brown-black, absorbs UV), away from pheomelanin (red-yellow, creates free radicals under UV).
- **Fewer burns**: Treated subjects had 47% fewer sunburn cells after UV exposure.
- **Good for guys who burn first**: Builds a base level of pigment before you tan.
- **Not a sunscreen replacement**: It's an extra layer of protection.
- **Short half-life**: About 30 minutes: why injections need frequent dosing and the approved version is a slow-release implant.

Who should NOT use it · Results & what to expect

Don't use if

- Personal history of melanoma
- Family history of melanoma (talk to a dermatologist first)
- Atypical or dysplastic moles
- Known reaction to melanocortin peptides
- Pregnant or breastfeeding

Use caution with

- Fair skin and a lot of moles
- Autoimmune conditions
- Liver or kidney impairment

Headline numbers

47%

fewer sunburn cells (high-dose Phase 1 injections)

Up to 8 yrs

of implant use with no serious drug-related adverse events

1,023

implants in 115 EPP patients, long-term study

~0.27 mg/day

average release of the 16 mg / 60-day implant

Results & what to expect

The results

- Phase 1 (2004): daily injections for 10 days plus small UV-B doses; 47% fewer sunburn cells and much deeper tan than controls. Mild nausea and flushing. https://pubmed.ncbi.nlm.nih.gov/15262693/
- Phase 3 EPP (NEJM 2015): 168 adults, 16 mg implant every 60 days vs placebo; more pain-free sun time, better quality of life. https://pubmed.ncbi.nlm.nih.gov/26132941/
- Long-term (2015): 115 EPP patients, 1,023 implants, up to 8 years; no serious drug-related adverse events. Burn tolerance rose 1.8x to 180x. https://pubmed.ncbi.nlm.nih.gov/25494545/
- Vitiligo pilot (2013): 4 patients, implant plus narrowband UV-B; faster repigmentation than phototherapy alone, mostly face and arms. Phase 3 started 2023. https://pubmed.ncbi.nlm.nih.gov/23407924/

What to expect

Week 1

- Little visible change
- Nausea and flushing are most likely here

Days 7–14

- First signs of darkening, especially with some sun

Weeks 2–4

- Tan becomes obvious
- Freckles and moles may darken

Results & what to expect

What to expect (cont.)

After

- 1–2 shots a week holds the tan
- Color lasts weeks after stopping

Who responds

- Best: people who can tan but do it slowly
- Weakest: people who never tan at all
- Users report a more even, natural-looking tan than MT-2, just slower

The dosing protocol

Loading Phase

Dose	0.25–0.5 mg daily
Duration	10–14 days
Route	SubQ
Sun	15–30 min moderate sun

Maintenance Phase

Dose	0.25–0.5 mg
Frequency	1–2x per week
Duration	Ongoing as desired
Sun	Moderate exposure for best results

Studied Doses

What the trials actually used

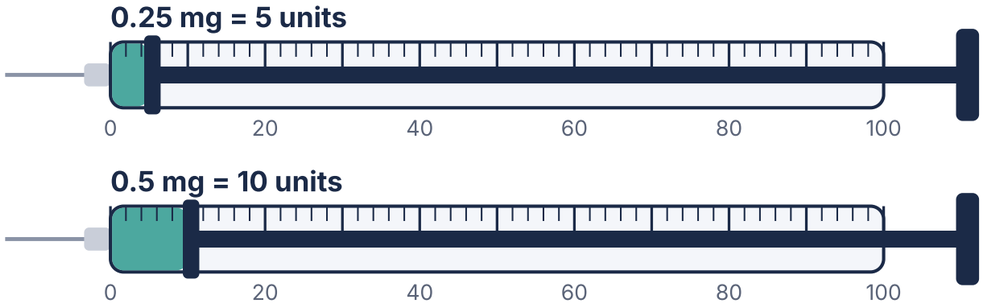
Phase 1 injections	0.08–0.16 mg/kg daily, SubQ, 10 days with UV exposure
80 kg guy	6.4–12.8 mg per day; 64–128 mg total over 10 days
Scenesse implant	16 mg slow-release, 1 implant every 60 days
Implant average	About 0.27 mg per day

- Trial injections were 13 to 50 times the community dose: 6.4–12.8 mg/day vs 0.25–0.5 mg/day.
- The community dose matches the implant: ~0.27 mg/day is where the 0.25–0.5 mg range lands.
- The 47% fewer sunburn cells result came from high-dose injections. Don't assume the same protection at 0.25 mg.
- Nobody has run a dose-finding study on low-dose daily injections; that part is community experience.

The dosing protocol · Mixing & measuring your dose · more

10 mg vial

ADD	STRENGTH
2 mL bac water	5 mg/mL



- Storage: refrigerate after mixing.

Pick one: MT-1 or MT-2

MT-1 for a clean tan. MT-2 for a tan plus appetite and libido effects.

- Do not run both. They compete for the same receptors.

Rules

- Start at 0.25 mg. Move to 0.5 mg only if you tolerate it.
- Inject before bed if nausea hits. Most guys sleep through it.
- Don't burn. Sun is there to activate pigment cells; stay within what your skin handles now.
- Be patient. Protection and color build over weeks.
- Get your skin checked first (see moles and melanoma).

Moles and melanoma

- No melanoma signal in the afamelanotide data: up to 8 years of continuous use showed no increased risk.
- But it darkens moles, making a mole that's actually changing harder to spot.
- Mole darkening usually reverses after you stop.
- Any mole that changes shape, border or size, or bleeds: stop and see a dermatologist.

Quick comparison · What it stacks with · more

What it stacks with

- **BPC-157 / TB-500** — No known interaction, no timing conflict.
- **GLP-1s (Reta, Tirz, Sema)** — No known interaction.
- **GH peptides** — No known interaction. GH peptides need fasting; MT-1 doesn't.
- **MT-2** — Don't combine. Choose one.

MT-1 vs MT-2

	MT-1	MT-2
Receptors	MC1R (mainly)	MC1R, MC3R, MC4R, MC5R
Tanning	Yes, slower	Yes, faster
Appetite loss	Minimal	Yes
Libido/erections	Minimal	Yes
Dosing	More, more often	Less, less often
Human data	FDA approved	Never approved

Common side effects

- Most common (over 10%): nausea, headache
- Common (1 to 10%): facial flushing in the first few days, fatigue, injection site reactions

Side-effect notes

- Skin: darker moles and freckles, sometimes new ones, overall darkening.
- Mostly missing vs MT-2: appetite suppression, spontaneous erections, libido changes.

What to monitor · FAQ

FAQ

Is MT-1 the same as MT-2?
No. MT-1 targets the tanning receptor. MT-2 hits four receptors and affects tanning, appetite and sexual function together.

Do I need sun for it to work?
No, but it works faster and deeper with moderate sun. The trials paired it with UV.

Why does it take more than MT-2?
It's selective and clears fast, so it needs more frequent dosing for the same color. That's the trade for fewer side effects, and why it costs more to run.

Will my freckles and moles get darker?
Yes. Expect it. Some guys get new ones. It usually fades after stopping.

Monitor

- Before starting: dermatology exam with your moles documented
- Photograph every mole so you have a comparison
- Regular skin checks during and after use

Call a doctor for

- Any mole that changes shape, border or size, or bleeds: stop and see a dermatologist
- Family history of melanoma: talk to a dermatologist first

FAQ (cont.)

Does it cause melanoma?
The clinical data doesn't show it. The real risk is darker moles hiding a problem, which is why the baseline skin exam matters.

PART 10

10

Longevity & Anti-Aging

- SS-31
- NAD+
- Glutathione



SS-31

Forzinity

FDA approved (Forzinity, 2025) for Barth syndrome; age-related dosing comes from clinical practice

A mitochondria-repair peptide that fixes the damage behind poor cellular energy, used for low energy and slow recovery.

- SS-31 is the repair peptide for your mitochondria.
- It fixes the structural damage that makes your cells produce energy poorly.
- Over 35–40 with low energy, slow recovery or metabolic issues? Start here.
- Rule of thumb: repair first, then optimize.

ROUTE	DOSE	TIMING
SubQ	1–2 mg daily	Anytime, no fasting needed

DURATION	MIX WITH	CLEARED BY
4–8 weeks	2 mL bac water (10 mg vial)	Kidneys (100%)



What it is & how it works

What it is

- A 4-amino-acid peptide that goes straight to the inner mitochondrial membrane, where energy is made.
- FDA approved (Forzinity, 2025) for Barth syndrome, a rare genetic mitochondrial disease.
- The first mitochondria-targeted drug ever approved.
- Analogy: NAD+ = fuel, MOTS-c = supercharger, SS-31 = mechanic.
- Fuel and upgrades don't do much for a damaged engine. Fix the engine first.

How it works for you

- **The problem — a vicious cycle**: With age, electrons leak from the energy chain. Leaks create free radicals, which damage cardiolipin, the fat holding energy machinery together. More damage, more leaks, less energy.
- **The fix — a magnet for cardiolipin**: SS-31 is positively charged and cardiolipin is negative, so it locks on. It reaches ~5,000x the rest-of-cell concentration in mitochondria within 15 minutes.
- **The result**: Stabilizes the membrane, keeps energy machinery lined up, plugs the leak (free radicals down ~40–60%), and gets more ATP from existing mitochondria.
- **Not just another antioxidant**: Antioxidants clean up pollution after it's made. SS-31 fixes the leak that causes it.
- **Quality, not quantity**: It doesn't create new mitochondria. It makes the ones you have work better.

What it is & how it works · Who should NOT use it

Who It's For

- Over 35–40 with low energy, slow recovery or metabolic issues. Assume 10–20 years of built-up damage.
- You take NAD+ and feel nothing: damaged mitochondria can't use the fuel, so repair them first.
- Younger and metabolically healthy? You may not need it. Start with MOTS-c instead.

Sequencing vs Running Together

- Significant dysfunction: run SS-31 first for 4–8 weeks, then add MOTS-c. Fix the engine before upgrading.
- Moderate decline, still active: SS-31 and MOTS-c can run together from day one.
- A 2026 study found they reduce free radicals in different places (SS-31 at membrane, MOTS-c at nucleus), so no overlap.

Don't use if

- Severe kidney disease (SS-31 is cleared 100% through the kidneys)
- Allergy to the peptide
- Pregnant or breastfeeding

Use caution with

- Mild to moderate kidney issues
- Heart conditions
- Autoimmune conditions
- Medications that affect mitochondria

Results & what to expect

Headline numbers

~5,000x

concentration in mitochondria vs rest of cell, within 15 minutes

40–60%

approximate cut in free radical production

3+ years

of daily use in trials, no consistent serious drug-related events

What to expect

First few days

- Some people feel a little tired before the improvement kicks in

Weeks 1–2

- Subtle, steadier energy and better recovery
- Not a stimulant buzz; more like "things just work better"

Weeks 4–8

- The full repair phase

The dosing protocol

Repair Protocol

From clinical practice

Barth syndrome trials used 40 mg/day, but those mitochondria are broken from birth. For age-related decline, use this lower dose.

Dose	1–2 mg daily
Timing	Anytime, no fasting needed
Route	SubQ
Duration	4–8 weeks

- This dose comes from clinical practice, not a dose-finding study.
- Seeing 5, 10 or 50 mg/day online? Those doses are for disease.
- At 40 you have built-up damage, not Barth syndrome; a lower dose is enough to repair it.

Repair → Optimize

35+ with decline

Wks 1–4 (up to 8)	SS-31 1–2 mg daily + NAD+ 100 mg SubQ 3x/wk
Wks 5–12	Switch to MOTS-c 10 mg/wk (split M/W/F) + NAD+ 100 mg 3x/wk
After	4–8 wks off
Repeat	2–3x per year

The dosing protocol · Mixing & measuring your dose · more

Prevention First

Younger / healthier

Start	MOTS-c 10 mg/wk (split M/W/F) + NAD+ 100 mg 3x/wk
Wk 4–8: still fatigued or recovering poorly?	Add SS-31 1–2 mg daily for 4–8 wks
Wk 4–8: feeling good?	Stay on MOTS-c + NAD+

Foundation first

Training, nutrition and sleep come before any peptide. Without them, SS-31 is a band-aid.

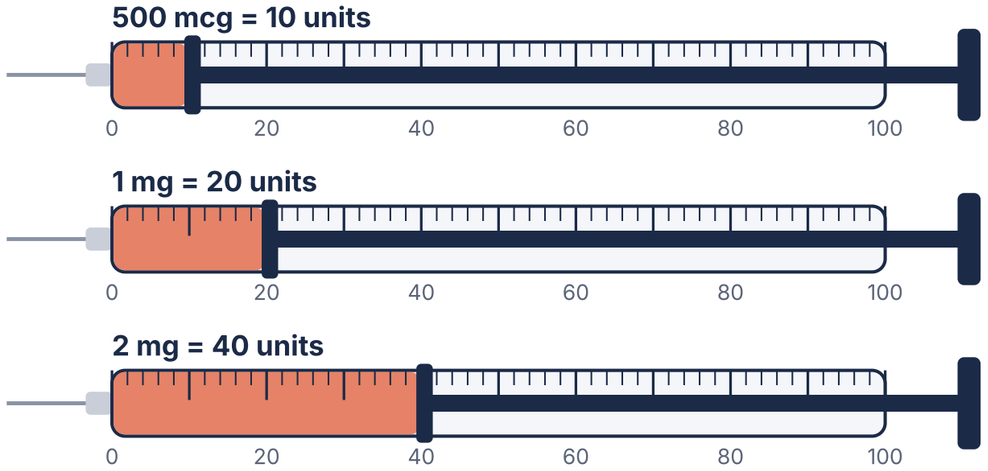
Heads up: early tiredness

Some people feel a little tired for the first few days before the improvement kicks in.

Example: 10 mg vial

ADD
2 mL bac water

STRENGTH
5 mg/mL



What it stacks with · Side effects & interactions

What it stacks with

- **NAD+** — Pairs directly. SS-31 repairs, NAD+ fuels.
- **MOTS-c** — Sequence it or run it concurrently (see Sequencing).
- **Epithalon + FOXO4-DRI** — A 50+ longevity stack. Then move to MOTS-c + NAD+.
- **GLP-1s** — No conflict.
- **GH peptides** — No conflict. Keep GH peptides fasted; take SS-31 anytime.
- **BPC-157 / TB-500** — No conflict.

Common side effects

- Injection site reactions (the main one): in trials 57% redness, 47% itching, 20% pain, 20% hives

Less common

- Headache
- Early fatigue
- GI discomfort (rare)

Side effects & interactions · What to monitor · more

Side-effect notes

- Strong safety profile: 3+ years of daily use in trials, no consistent serious drug-related events.
- Injection site fix: rotate sites; use an antihistamine or hydrocortisone cream if needed.
- Injection site reactions usually fade over time.

Call a doctor for

- Check with your doctor if you have kidney issues (cleared entirely by the kidneys)

FAQ

SS-31 or MOTS-c first?
Significant damage → SS-31 first. Moderate decline → both together is fine. Young and healthy → MOTS-c alone may be enough.

Can I just take NAD+?
You can, but damaged mitochondria can't make the ATP needed to use it. That's why some people feel nothing from NAD+.

Is it hard on the liver?
No. It's cleared entirely by the kidneys, so check with your doctor if you have kidney issues.

NAD+

Nicotinamide Adenine Dinucleotide

Not a peptide; controlled trials on subQ NAD+ are limited

The cellular fuel for energy and DNA repair that drops with age; people raise it to restore energy and recovery.

- NAD+ is the fuel cells need to make energy and repair DNA, and it drops with age.
- Raise it with injections, oral precursors (niacin, NMN, NR) or exercise.
- Niacin is the cheapest proven option; injections skip the gut problem.
- Catch 1: it may not work if mitochondria are damaged (repair with SS-31 first).
- Catch 2: you must cycle it, or risk weakening your natural production.

TYPE	ROUTE	MAINTENANCE
Coenzyme (not a peptide)	SubQ / IM injection or oral precursors	50–100 mg, 1–3x per week

TIMING	MIX WITH	CYCLE
Morning	Extra bac water (3 mL per 500 mg)	8–12 weeks on, 4–8 weeks off



What it is & how it works

What it is

- Not a peptide. It's a coenzyme, a helper molecule found in every cell.
- Without it, cells can't make energy efficiently, repair DNA, or run hundreds of basic reactions.
- Your body stores almost no ATP, so it remakes your entire body weight in ATP daily. NAD+ is essential to that.
- It declines with age. By middle age levels can be dramatically lower, linked to lower energy, slower repair and metabolic problems.

How it works for you

- **Energy shuttle**: NAD+ picks up electrons from food (becoming NADH) and carries them to mitochondria, where ~90% of ATP is made. Then it cycles back.
- **Sirtuins**: Powers SIRT1–7 "longevity proteins": DNA repair, inflammation, new mitochondria, fat metabolism, insulin sensitivity and body clock.
- **DNA repair**: Repair enzymes (PARPs) burn through NAD+ to fix damaged DNA.

Why It Drops

- More gets burned: CD38 and PARPs use more NAD+ with age; CD38 rises further with inflammation.
- Less gets made: NAMPT, behind ~80% of NAD+ production, becomes less efficient.
- Damaged mitochondria recycle it poorly: less NAD+ → more mitochondrial stress → even less NAD+. A vicious cycle.

What it is & how it works · Who should NOT use it

Support Nutrients

- TMG: replaces methyl groups NAD+ metabolism uses up. Consider it with high-dose precursors.
- Quercetin and apigenin: natural CD38 blockers that slow NAD+ breakdown.
- Resveratrol: activates sirtuins alongside NAD+, though human evidence is mixed.

Storage

- Powder: room temperature or fridge, dry and away from light.
- Mixed: fridge, don't freeze, keep away from light.
- Oral: cool and dry. NMN breaks down with heat and moisture.

Don't use if

- Active cancer (cancer cells may also use the extra NAD+)
- Severe liver or kidney disease
- Allergy to NAD+

Use caution with

- Pregnancy or breastfeeding
- Bleeding disorders (injectable)
- Gout or high uric acid: niacin can raise uric acid
- Metformin or other drugs that affect metabolism: ask your doctor
- Niacin at 500+ mg: can affect liver enzymes and blood sugar

Results & what to expect

The results

- ✅ Precursors raise blood NAD+: oral NMN and NR raise blood levels 40–90%. How much reaches tissues is less clear.
- ✅ Insulin sensitivity: in women with prediabetes, NMN 250 mg/day for 10 weeks improved muscle insulin sensitivity.
- ⚠️ A 2024 meta-analysis: NMN raised NAD+, but most real outcomes (body composition, performance, metabolic markers) didn't improve.
- Higher NAD+ doesn't automatically mean you'll see results.
- ⚠️ The gut problem: gut bacteria convert most oral NMN and NR into niacin before absorption — you may be paying for expensive niacin.
- Liposomal NMN may partly get around the gut problem.
- ✅ Niacin works: cheap and proven to raise NAD+. Catch: flush (red, hot, itchy skin for 20–30 minutes).

Headline numbers

~90%

of your ATP is made in mitochondria, using NAD+ as the shuttle

40–90%

rise in blood NAD+ from oral NMN and NR

~80%

of NAD+ production depends on the NAMPT enzyme

The results (cont.)

- ❓ Injections skip the gut and the flush. Controlled subQ trials are limited, though clinical experience is positive.
- 🐭 Animals: extended lifespan and reversed some aging markers. Whether this happens in humans is unknown.

Results & what to expect

What to expect

Week 1

- More energy, especially with injections
- Sharper thinking, sometimes better sleep
- More depleted people tend to notice more

Weeks 2–4

- Steady energy and better recovery from training
- Clearer thinking

Long term

- DNA repair and mitochondrial benefits build up, but you can't feel them

After stopping

- Levels drift back to baseline
- No withdrawal, but benefits fade over weeks to months

The dosing protocol

SubQ Injection — Loading

NAD+ decline affects everyone with age, so most adults over 40 may benefit, with or without symptoms.

Dose	100–200 mg daily
Duration	7–10 days
Purpose	Refill depleted reserves

SubQ / IM — Maintenance

Dose	50–100 mg
Frequency	1–3x per week
Timing	Morning (can disrupt sleep if taken late)

- IM absorbs slightly faster.

Oral Options (daily)

Niacin	Start 100–250 mg → 500–1,000 mg
NMN	Start 250–500 mg → 500–1,000 mg
NR	Start 250–500 mg → 500–1,000 mg

- Niacin: cheapest and most proven. Causes flush.
- NMN: pricier; much may convert to niacin in the gut.
- NR: same gut conversion concern as NMN.

Cycling

Non-negotiable

On	8–12 weeks
Off	4–8 weeks
Off-cycle	Train hard — exercise can double NAMPT and muscle NAD+ naturally

The dosing protocol · Mixing & measuring your dose

The Cellular Energy Protocol

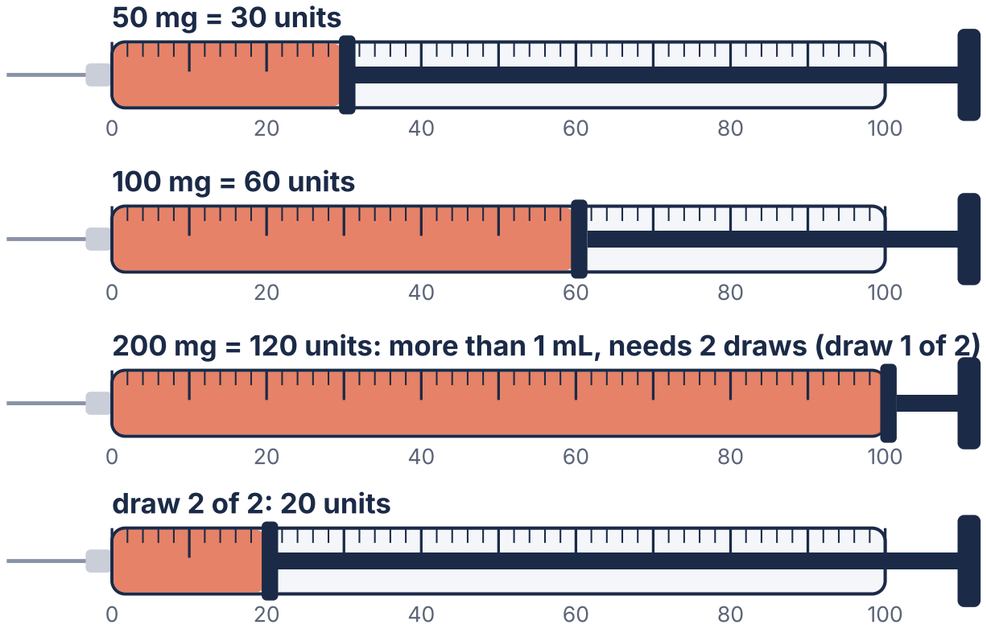
Ties all mitochondrial compounds together

Phase 1: Repair (Wks 1–4, up to 8) — SS-31	Repairs mitochondrial structure
Phase 1 — NAD+	Injectable or niacin (fuel)
Phase 1 — 5-Amino-1MQ	Stops NAD+ building blocks from being wasted
Phase 1 — Creatine	Supports the ATP system
Phase 2: Optimize (after SS-31, through Wk 12) — MOTS-c	Replaces SS-31, optimizes the repaired mitochondria
Phase 2 — NAD+	Continue
Phase 2 — Creatine	Continue
Phase 2 — 5-Amino-1MQ	Optional

NAD+ needs MORE water: 500 mg vial

ADD
3 mL bac water

STRENGTH
~167 mg/mL



- Storage: fridge

Mixing & measuring your dose

1,000 mg vial

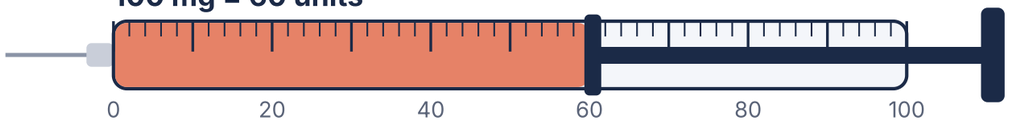
ADD
6 mL bac water

STRENGTH
~167 mg/mL

50 mg = 30 units



100 mg = 60 units



200 mg = 120 units: more than 1 mL, needs 2 draws (draw 1 of 2)



draw 2 of 2: 20 units



- Storage: fridge
- Why more water? NAD+ is large and crystallizes if too concentrated. The standard 2 mL won't work.
- It usually comes in 10 mL vials, so there's plenty of room.
- Mixing: drip water slowly down the side of the vial, swirl gently, don't shake.
- Check before every injection: should be clear and colorless.
- Cloudy, discolored or has particles? It has fallen out of solution — toss the vial.

Tips & warnings · What it stacks with

What it stacks with

- **SS-31** — SS-31 fixes the machinery, NAD+ fuels it. Repair first.
- **MOTS-c** — MOTS-c optimizes, NAD+ fuels.
- **5-Amino-1MQ** — Stops your NAD+ building blocks from being wasted.
- **Creatine** — Supports the ATP system NAD+ feeds, and helps build new mitochondria.
- **Epithalon** — Complementary. Epithalon supports telomeres; NAD+ supports mitochondria and DNA repair.
- **GLP-1s** — No conflict.

The Catch

Your body needs ATP to convert precursors into usable NAD+. Damaged mitochondria can't make enough ATP to use the fuel — why some feel nothing. If that's you, repair with SS-31 first.

Cycling Is Non-Negotiable

Long-term use can suppress NAMPT, your main NAD+-making enzyme. In one human study NR raised NAD+ but lowered NAMPT. Run it too long and stop, and you could make less NAD+ than before.

What it stacks with (cont.)

- **GH peptides** — No conflict. Keep GH peptides fasted; take NAD+ on its own schedule.

Side effects & interactions · What to monitor

Common side effects

- Injection sting: subQ NAD+ burns more than typical peptides
- Flushing (mainly with niacin)
- Nausea, especially at higher doses
- Headache
- Fatigue
- Stomach discomfort

Side-effect notes

- Common effects are usually mild.
- For sting: inject slowly, let the solution warm to room temperature, a slightly larger needle may help.
- Poor sleep: take it in the morning.
- Niacin flush fades with daily use. Start low and build up.
- Long-term safety: data beyond 12 months is limited.

Interactions

- Metformin or other metabolism-affecting drugs: ask your doctor
- Niacin 500+ mg with blood pressure meds, blood thinners or diabetes meds: check with your doctor

Monitor

- Niacin at 500+ mg: get periodic liver labs
- Before every injection: solution should be clear and colorless

Call a doctor for

- On metformin or other drugs that affect metabolism
- Taking niacin 500+ mg while on blood pressure meds, blood thinners or diabetes meds

FAQ

FAQ

NAD+ vs NMN vs NR?
NAD+ is the active molecule. NMN is one step away from NAD+; NR is two. Oral NAD+ itself absorbs poorly.

Injections or oral?
Injections skip the gut problem. Some experts argue oral precursors may raise NAD+ inside cells better; still debated.

Why not just take niacin?
If you can handle the flush, you should. It's the cheapest proven option.

When should I take it?
In the morning.

Glutathione

The Master Antioxidant

No dose-finding studies for subQ; protocols come from clinical practice

Your body's main antioxidant and detox molecule, used to restore levels that drop with age.

- Your body's main antioxidant and detox molecule.
- Neutralizes free radicals, helps the liver clear toxins, and recycles vitamins C and E.
- Levels drop with age (about 46% lower in older adults).
- Regular oral capsules barely absorb: use injectable, liposomal, or NAC (the cheapest option).
- Heads up: it can lighten skin, and it needs a LOT more water to mix than other peptides.

TYPE	ROUTE	SUBQ STANDARD
Tripeptide (glutamate, cysteine, glycine)	SubQ, IM, or oral (liposomal / NAC)	200 mg, 3x/week, 8–12 weeks

MIX WITH	CHEAPEST OPTION
3 mL bac water per 600 mg (200 mg/mL)	NAC 600 mg daily



What it is & how it works

What it is

- A tripeptide of 3 amino acids (glutamate, cysteine, glycine). Your body makes it, mostly in the liver.
- In every cell, and the most abundant antioxidant inside your cells.
- Two forms: active (GSH) and used-up (GSSG). Cells recycle used-up glutathione back to active.
- Think of it as your cells' exhaust system: it clears the damaging waste your body makes just by running.

How it works for you

- **Neutralizes free radicals**: Before they damage your cells, DNA and membranes.
- **Detoxes**: The liver attaches glutathione to toxins, heavy metals (arsenic, mercury, cadmium), drug byproducts and pollutants to flush them in bile and urine.
- **Recycles other antioxidants**: Brings used-up vitamins C and E back to life.
- **Supports immunity**: NK cells, T cells and macrophages all need glutathione to work.
- **Protects mitochondria**: Neutralizes free radicals right where they're made.

What it is & how it works · Who should NOT use it

Why It Drops

- Age: people 60–75 had 46% lower levels than people 30–40.
- Main cause is running low on the raw material, cysteine. The machinery itself still works.
- Other drains: chronic stress, illness, toxins, alcohol, medications (especially acetaminophen/Tylenol), poor diet.
- Low levels linked to: brain diseases, liver and heart disease, weaker immunity and faster aging.

NAC or Injectable?

- If your body makes glutathione well, NAC does the job for a fraction of the cost.
- Injectable may do better when demand is high (illness, heavy toxin exposure).
- Or when production is weaker (older age, liver issues).
- Many people use both.

Don't use if

- Allergy to glutathione
- Asthma, especially if sulfite-sensitive: inhaled (nebulized) glutathione can trigger serious airway tightening. Talk to your doctor about other forms too.

Use caution with

- Pregnancy or breastfeeding
- High toxin exposure: start low
- Liver or kidney problems
- Active chemotherapy: ask your oncologist
- Nitroglycerin or nitrate meds

Results & what to expect

Headline numbers

46%

lower glutathione at ages 60–75 vs 30–40

40%

rise in levels in 2 weeks with liposomal 500–1,000 mg/day

30–35%

rise in levels with oral 1,000 mg/day for 6 months

The results

- Oral (1,000 mg/day, 6 months): levels up 30–35%; NK cell activity more than doubled by 3 months.
- Liposomal (500–1,000 mg/day): levels up 40% in 2 weeks. NK activity rose up to 400% (tiny 12-person study).
- Diabetics (500 mg/day, 6 months): big increase in glutathione and big drop in DNA damage markers.
- Skin: 5 randomized trials found noticeable skin lightening at 250–500 mg a day.
- Parkinson's: across 7 trials, motor scores improved modestly. Real-world impact is debatable.
- Aging: NAC plus glycine for 2 weeks nearly doubled glutathione in older adults, back to younger levels.

Results & what to expect

What to expect

Weeks 1–2

- Some notice clearer thinking and more energy, especially with injections
- Some get a "detox reaction" (headache, fatigue, flu-like), especially with high toxin exposure

Weeks 2–4

- Energy steadies
- Any detox symptoms fade

Weeks 4–8

- Skin brightening shows up for some people
- Immune improvements are often reported

After stopping

- Levels drift back to baseline and benefits fade, with no withdrawal
- Keep taking NAC and eat sulfur-rich foods (cruciferous vegetables, eggs, garlic) to hold levels

The dosing protocol

SubQ Injection

From clinical practice

No dose-finding studies exist for subQ glutathione.

Conservative	100 mg, 3x/week, 8–12 weeks
Standard	200 mg, 3x/week, 8–12 weeks
Intensive	200 mg, daily or 5x/week, 4–8 weeks

IM Injection

Start	200 mg weekly, 4 weeks
Maintenance	400–600 mg weekly
Max	800–1,000 mg weekly

- Increase every 4 weeks based on tolerance.

Oral

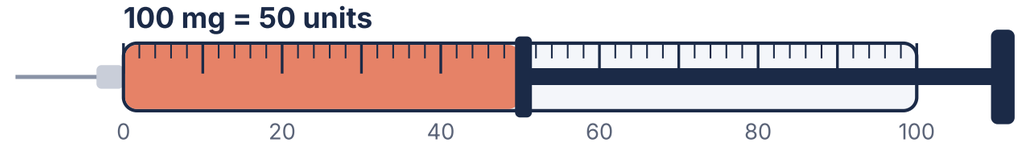
Liposomal	500–1,000 mg daily, ongoing
NAC	600 mg daily (up to 600 mg 2x/day)

Mixing & measuring your dose

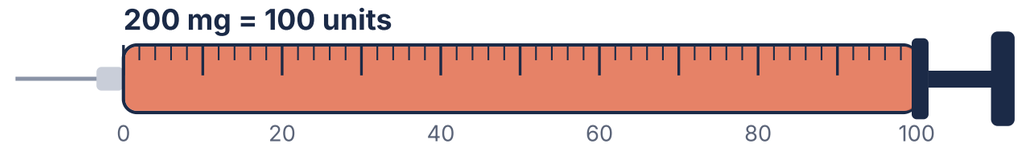
Option A: Standard (200 mg/mL) — smaller shots

ADD
3 mL bac water (600 mg vial)

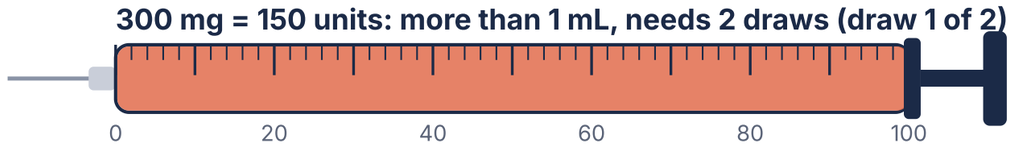
STRENGTH
200 mg/mL

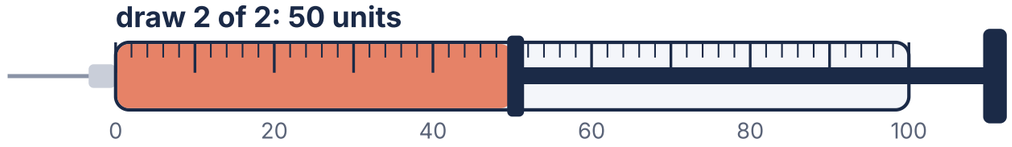


0.5 mL



1.0 mL





1.5 mL

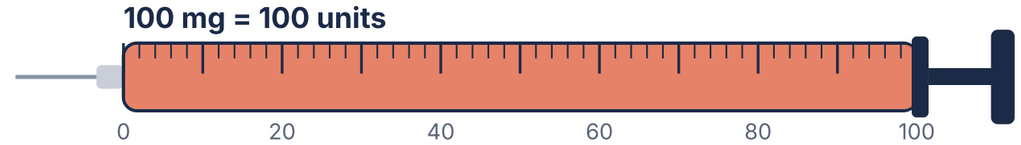
- Common strength, used by many compounding pharmacies.
- A full 200 mg dose in a single 1 mL shot — most practical for most people.
- At 200 mg/mL it may take longer to fully dissolve; give it time.

Mixing & measuring your dose

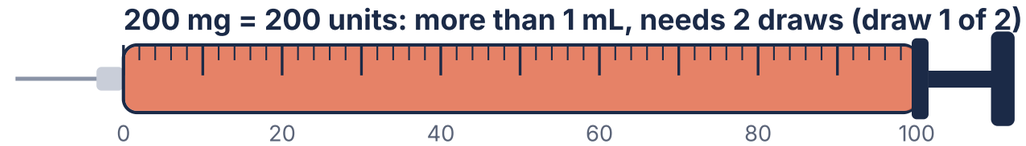
Option B: Comfort (100 mg/mL) — easier to mix, gentler

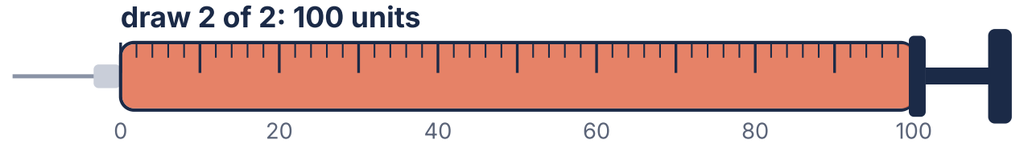
ADD
6 mL bac water (600 mg vial)

STRENGTH
100 mg/mL

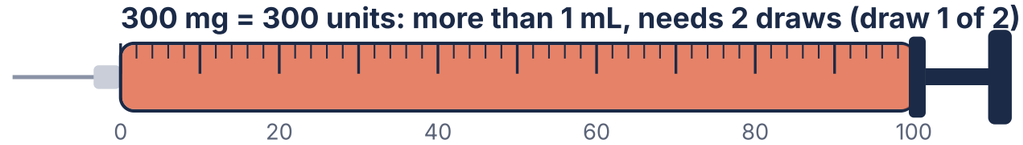


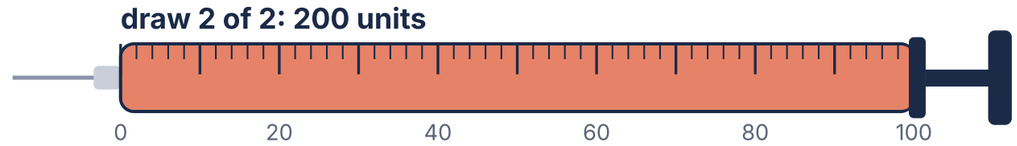
1.0 mL





2.0 mL





3.0 mL

- For maximum comfort: dissolves more easily and may sting less.
- Trade-off: much bigger volumes, usually split across sites or injected IM.

Tips & warnings · Quick comparison

Tylenol connection

Acetaminophen creates a toxic byproduct only glutathione can neutralize. That's why hospitals treat Tylenol overdoses with NAC, which rebuilds glutathione.

Mixing tips

- Drip water slowly down the side of the vial. Don't spray it on the powder.
- Swirl gently; don't shake.
- At 200 mg/mL it may take longer to dissolve — give it time.
- Still flakes after 30 minutes? Add more water (and redo your dose math).

Big volumes

Over 1 mL of subQ is a lot. Split it across two sites, or use IM.

Source quality matters

The FDA has flagged compounded injectable glutathione made from supplement-grade material for bacterial contamination.

Which Form?

FORM	ABSORPTION	COST	NOTES
Regular oral	Poor	Low	Broken down in gut
Liposomal oral	Good	Med	Proven to raise levels
NAC (precursor)	Good	Lowest	Your body makes its own
Injectable	Direct	Higher	Skips the gut entirely
IV	Direct	Highest	Highest risk, med supervision only

What it stacks with · Side effects & interactions

What it stacks with

- **NAD+** — A classic pairing. NAD+ keeps energy production running; glutathione cleans up the damage it creates.
- **NAC** — Supports your own production while you inject.
- **Vitamin C** — They recycle each other.
- **Alpha lipoic acid** — Regenerates glutathione and works in both water and fat.
- **SS-31 / MOTS-c** — Complementary. Glutathione handles general cleanup; mitochondrial peptides work at the source.
- **Thymosin Alpha-1** — Both support immunity, through different paths.

What it stacks with (cont.)

- **Chemo drugs and nitroglycerin** — Glutathione may change how they're processed. Ask your doctor.

Common side effects

- Injection site pain, redness and lumps (more than with most peptides)
- Mild nausea
- Fatigue in the first week

Side effects & interactions · What to monitor

Less common

- Headache and dizziness
- Detox reactions
- Skin lightening (unwanted by some)
- Irritability or mood changes (forum reports only)

Rare

- IV only: allergic reactions including anaphylaxis, and liver problems
- One skin-lightening IV study had a 32% side effect rate

Side-effect notes

- The Philippine FDA has warned against cosmetic IV glutathione.
- Oral forms have the best safety record. IV has the worst.

Interactions

- Chemo drugs and nitroglycerin: glutathione may change how they're processed
- Zinc and glutathione affect each other in both directions

Monitor

- Check zinc periodically if using injectable glutathione long term

Call a doctor for

- Asthma: talk to your doctor about other forms
- Active chemotherapy: ask your oncologist
- On chemo drugs or nitroglycerin: ask your doctor

FAQ

FAQ

Will it lighten my skin?
It can. It's gradual, dose-dependent and reversible. Some want that effect, others don't.

How do I know if I need it?
Signs: chronic fatigue, getting sick often, brain fog, slow recovery or chemical sensitivity. Also consider if over 40, chronically stressed or with documented toxin exposure. At minimum, eat enough protein and take NAC.

Why won't my vial dissolve?
You didn't use enough water. Add more, up to 12 mL total.

Can I take NAC instead?
Yes, if your body makes glutathione well. It's much cheaper.

PART 11

11

Bloodwork: What to Monitor

The labs to get before you start, and while you're on each peptide.



Before you start

Why bloodwork matters

- Find every peptide you're running. Get the core panel plus each peptide's markers, and follow the timing.
- Running a stack? Combine the lists.
- Bloodwork is NOT required before peptides, but a baseline certainly helps.
- Expect it to cost a few hundred bucks.
- Author's view: you're here to become your healthiest — it's time to invest in it.

Before You Start: Core Panel (Everyone): Blood count & chemistry

- CBC with differential
- CMP (liver, kidney, electrolytes)

Before You Start: Core Panel (Everyone): Blood sugar

- Fasting glucose
- Fasting insulin
- HbA1c

Before You Start: Core Panel (Everyone): Lipids

- Lipid panel + ApoB

Before You Start: Core Panel (Everyone): Liver & kidney extras

- GGT
- Cystatin C

BLOODWORK

Before you start

Before You Start: Core Panel (Everyone): Thyroid

- TSH
- Free T3
- Free T4

Before You Start: Core Panel (Everyone): Growth hormone

- IGF-1

Before You Start: Core Panel (Everyone): Inflammation & nutrients

- hs-CRP
- Vitamin D
- Ferritin

Before You Start: Core Panel (Everyone): Men only

- Total T
- Free T
- SHBG
- Estradiol (sensitive)
- PSA (40+)

Baseline notes

- Standard timing: Baseline → 4–8 weeks → every 3 months while on.
- Core-only timing: Baseline → every 6–12 months.

BLOODWORK

Before you start

Timing Key

- Standard: Baseline → 4–8 weeks → every 3 months while on.
- Core only: Baseline → every 6–12 months.

How to Get Your Blood Drawn

- Order the core panel yourself via a direct-to-consumer lab service (drawn at a national lab chain).
- Or ask your doctor to order it.
- Either way, prepare for the draw the same way.

The Night Before

- Sleep 7+ hours
- No alcohol (24–48 hrs before)
- No intense workout

The Morning Of

- Fast 10–12 hours
- Water is OK
- Draw between 7–10 AM
- Stay hydrated

If Your Result Is Low

- Repeat in 1–2 weeks
- Same conditions (fasted, morning, rested)
- 2 low readings needed before any decision

Peptide by peptide

Peptide by peptide (1/5)

PEPTIDE	TESTS	WHEN	WHY / NOTES
CJC-1295 + Ipamorelin	IGF-1, Fasting glucose, Fasting insulin, HbA1c	Standard (Baseline → 4–8 weeks → every 3 months while on)	Raises GH → IGF-1. More GH can nudge glucose up. IGF-1 target: 120–175 (normal) | 300–400 (performance)
Sermorelin	IGF-1, Fasting glucose, HbA1c	Standard	Same GHRH pathway as CJC.
Tesamorelin	IGF-1, Fasting glucose, Fasting insulin, HbA1c	Standard (add a glucose check at week 2–4 if prediabetic)	Glucose can rise briefly around week 2.
GHRP-2 / GHRP-6 / Hexarelin	IGF-1, Fasting glucose, Morning cortisol, Prolactin	Standard	Unlike Ipamorelin, these can raise cortisol and prolactin.
MK-677 (Ibutamoren)	IGF-1, Fasting glucose, Fasting insulin, HbA1c	Baseline → 4–6 weeks → every 8–12 weeks	Most likely GH compound to raise blood sugar and hurt insulin sensitivity.
HGH (Somatropin)	IGF-1, Fasting glucose, Fasting insulin, HbA1c, TSH, Free T3, Free T4, CMP	IGF-1 + glucose: Standard; Thyroid: every 6 months	No natural ceiling. Raises glucose, can lower T4.
IGF-1 LR3	Fasting glucose, Fasting insulin, HbA1c, Home glucometer around doses	Baseline → during cycle (glucometer) → end of cycle	#1 acute risk is low blood sugar. Standard IGF-1 test may not reflect LR3.

Peptide by peptide

Peptide by peptide (2/5)

PEPTIDE	TESTS	WHEN	WHY / NOTES
Semaglutide	HbA1c, Fasting glucose, Fasting insulin, Lipid panel + ApoB, CMP + Cystatin C, IGF-1, Total T (men)	Standard	Shifts glucose + lipids. Dehydration from GI side effects can hit kidneys. Undereating drops IGF-1. Severe stomach pain → check lipase (pancreatitis)
Tirzepatide	Same as Semaglutide	Standard	Same as Semaglutide. T often rises with fat loss.
Retatrutide	Same as Semaglutide, Resting heart rate at home	Standard	Raises resting HR ~10 bpm (peaks ~week 24). Flag if resting HR stays 100+
Cagrilintide	HbA1c, Fasting glucose, CMP	Standard	Adds to GLP-1 blood sugar effects.
AOD-9604	Core panel only	Core only (Baseline → every 6–12 months)	Didn't change glucose, insulin or IGF-1 in trials.
5-Amino-1MQ	CMP, GGT, Cystatin C, Fasting glucose	Baseline → end of first cycle → every cycle	No human safety data, especially at higher doses.
SS-31	Cystatin C, CMP	Baseline → end of cycle	Cleared 100% by the kidneys.

Peptide by peptide

Peptide by peptide (3/5)

PEPTIDE	TESTS	WHEN	WHY / NOTES
MOTS-c	Fasting glucose, Fasting insulin, HbA1c	Standard	Improves insulin sensitivity. Can lower glucose, especially with diabetes meds.
NAD+	Injectable: Core panel, Niacin route: CMP, GGT, uric acid, fasting glucose	Baseline → end of each 8–12 week cycle	High-dose niacin can raise liver enzymes, uric acid and blood sugar.
Epithalon	Core panel only	Core only	No validated blood marker. Telomere tests aren't reliable enough to track it.
FOXO4-DRI	CBC with differential, CMP	Baseline → 2–4 weeks after cycle	Senolytic (clears old cells). Minimal human data, so watch blood counts, liver and kidneys.
Kisspeptin-10	LH, FSH, Total T, Free T, SHBG, Estradiol (sensitive)	Baseline → 4 weeks → every 3 months	Confirms it's actually firing your testosterone axis.
PT-141 (Bremelanotide)	Core panel, Blood pressure at home	Core only	Can briefly raise blood pressure after dosing.
Melanotan 2	Dermatology exam + mole photos, Blood pressure, CMP (optional)	Skin check at baseline → regularly while on	Main risk is hiding mole changes. Rare kidney issues in case reports.

Peptide by peptide

Peptide by peptide (4/5)

PEPTIDE	TESTS	WHEN	WHY / NOTES
BPC-157	Core panel	Core only	No specific blood effects. Stay current on cancer screenings (grows blood vessels).
TB-500	Core panel	Core only	Same as BPC-157.
Wolverine Stack (BPC-157 + TB-500)	Core panel	Core only	
GHK-Cu	Core panel, Zinc (optional, long-term use)	Core only	Copper and zinc compete. Grows blood vessels, so keep up with cancer screenings.
KPV	hs-CRP, ESR	Baseline → 4–8 weeks	Tracks whether inflammation is actually dropping.
Glutathione	GGT, Zinc (long-term injectable use)	Baseline → end of cycle	Liver detox marker + zinc/glutathione interaction.
Thymosin Alpha-1	CBC with differential (white cells, lymphocytes), CD4/CD8 (optional)	Baseline → end of cycle	Works directly on immune cells.

Peptide by peptide

Peptide by peptide (5/5)

PEPTIDE	TESTS	WHEN	WHY / NOTES
Selank	Core panel, Fasting glucose if diabetic	Core only	No specific blood effects.
Semax	Core panel, Fasting glucose if diabetic, Blood pressure at home	Core only	Can raise glucose in diabetics and BP at high doses.
DSIP	Core panel, Morning cortisol (optional)	Core only	Lowers elevated cortisol, so useful to track if stress/cortisol is your reason for using it.

medi labs

Go slow. Measure twice. Ask when unsure.

Re-read Parts 1 and 2 before your first injection, and the full section for every peptide you run.

If you are ever unsure, do not inject.

Talk to your doctor, and seek immediate medical help for any sign of a serious reaction.

medilabsresearch.com

