



Peptides and Their Benefits

MITOCHONDRIA, HORMONAL, SKIN, AND
REGENERATIVE PEPTIDES

INCLUDING SCIENTIFIC REFERENCES

Disclaimer

- ▶ I am not your doctor. Always consult your doctor before starting any supplement or peptide protocol.
- ▶ Most of these peptides are still in the preclinical stage, meaning they have only been studied in cell cultures (in vitro), ex vivo tissues, or animal models, and have not yet undergone adequate human testing.
 - ▶ However, the observations from people using the peptides are astounding and people are able to heal after years of prescription drugs not working.
- ▶ Some of the peptides I discuss today are not FDA approved... however...

**FDA approves first
fruit-flavored e-
cigarette for adults**



Does the
FDA really
care about
your health?
Or MONEY?



Does Anyone
Know What Was
the FIRST Peptide?



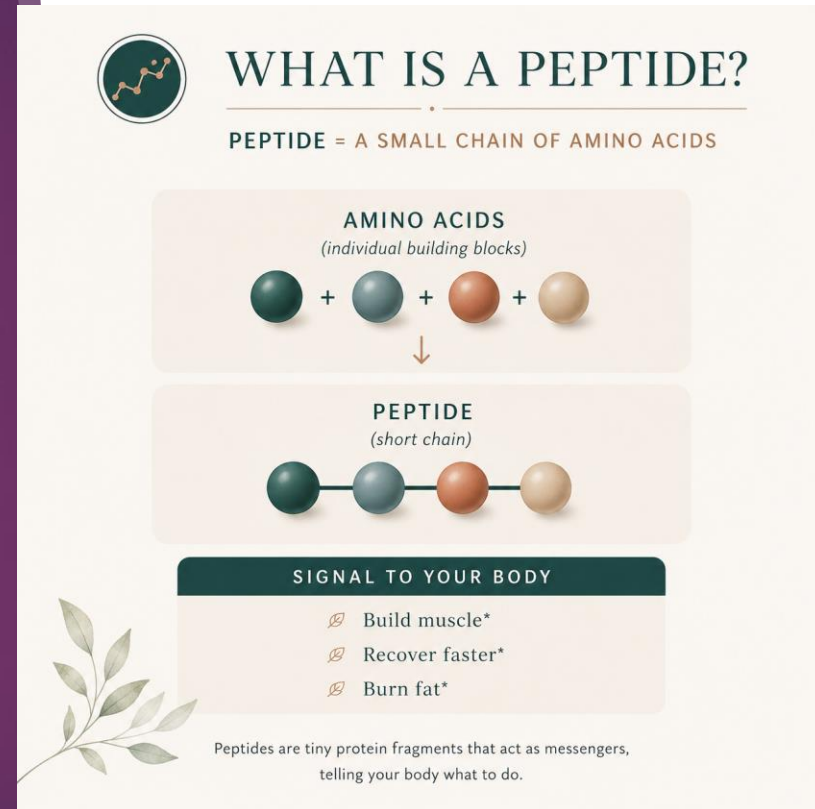
**Dr. Clarkson
has just been**

Don't waste your money

- ▶ Let me start by saying, if you do not have diet dialed in, sleep dialed in, stress dialed in; do not waste your money on these peptides.
- ▶ These protocols cannot and will never cover up a bad diet; or even an 80/20 diet.
- ▶ What I am trying to say is, focus on your hormones (consider HRT which will help you way more than peptides), sleep, diet and exercise before investing your hard-earned money on peptides.

What are Peptides

- ▶ Peptides are short chains of 2 to 50 amino acids that act as building blocks for proteins and signaling molecules in the body.
- ▶ They are crucial for regulating physiological processes,
 - ▶ including metabolism, tissue repair, and inflammation.
- ▶ Naturally occurring in foods and the body, synthetic peptides are widely used for anti-aging, muscle growth, and weight loss.

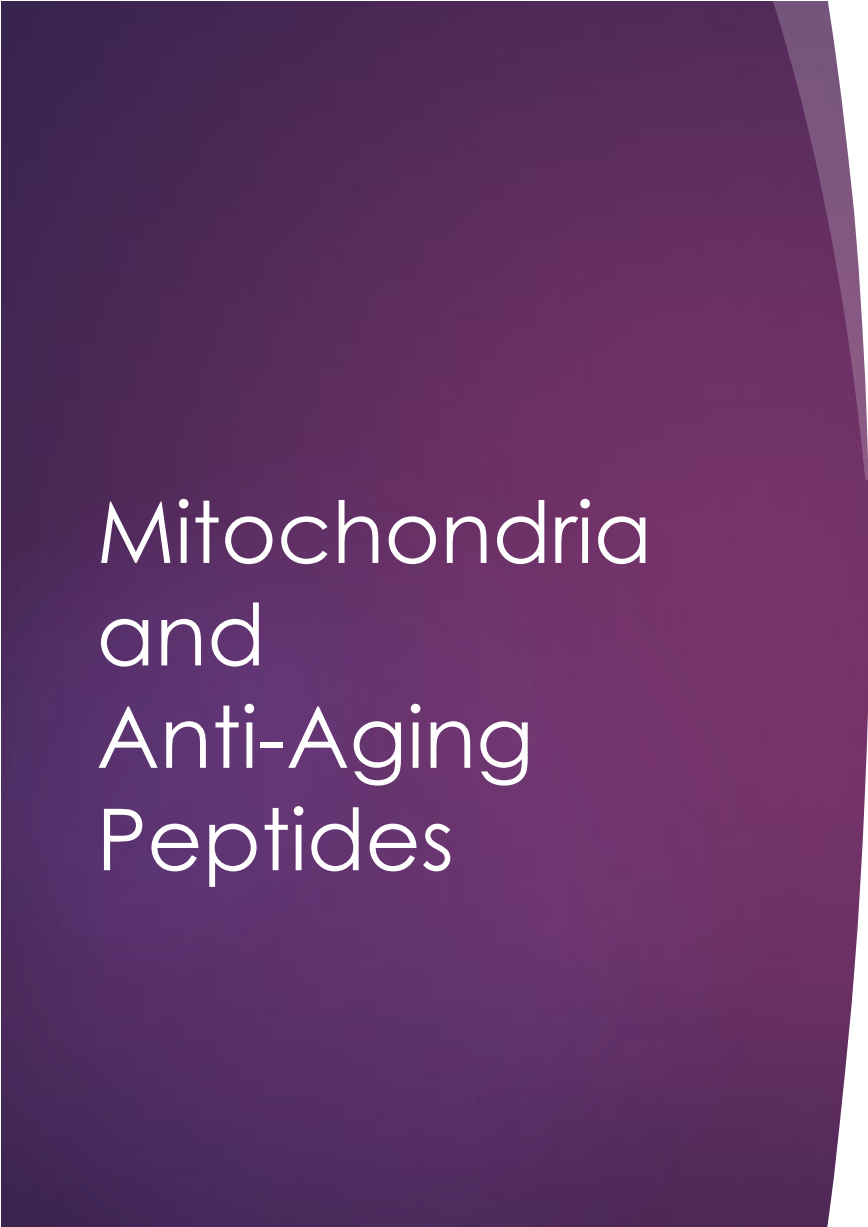


PEPTIDE TIPS

- ▶ Make sure your liver is healthy before investing in peptides.
- ▶ If your liver is not healthy, you can not break down and utilize the peptides.
 - ▶ Things other than alcohol that cause a toxic liver:
 - ▶ hot tubs, pools, scented candles, max makeup, lotions, shampoos, anything you put on your skin that has chemicals.
- ▶ Do a bottle of Accelerated Liver Care before starting peptides: <https://mariamindbodyhealth.com/accelerated-health-products/>

PICK A MAIN GOAL

- ▶ What is the most important thing you want to fix?
 - ▶ You need to know where you want to go
 - ▶ Weight Loss/Muscle Building
 - ▶ Autoimmune Health
 - ▶ Anti-Aging
 - ▶ Gut Health
 - ▶ Fertility
 - ▶ Brain Health
 - ▶ Heart Health/Stroke Recovery/TBI



Mitochondria and Anti-Aging Peptides

PEPTIDES TO IMPROVE
MITOCHONDRIA
FUNCTION

What are Mitochondria

- ▶ Mitochondria are small organelles found in almost all cells.
 - ▶ Often referred to as the "**powerhouse of the cell**" because they generate most of the cell's chemical energy in the form of ATP.
- ▶ When mitochondria aren't working normally, debilitating, sometimes life-threatening conditions may occur.

Healthy Mitochondria

1. Play a key role in the aging process and most age-related diseases
2. Are vital to cell health, including by regulating how nutrients get into individual cells
3. Contain DNA that is easily damaged with age, is prone to mutation, and has limited ability to repair
4. Play a key role in immune function.

MOTS-c

- ▶ **Mitochondrial-derived peptide that improves metabolism.**
- ▶ Increases insulin sensitivity and exercise capacity
- ▶ Reference: Lee et al., Cell Metabolism (2015)



MOTS-c

- ▶ Is a mitochondria uncoupler
- ▶ It is also an exercise mimetic
- ▶ Research has shown this peptide to
 - ▶ 1. improve exercise capacity
 - ▶ 2. reduce obesity
 - ▶ 3. Reduce insulin resistance and other disease processes such as osteoporosis and the mitigation of metabolic disorders and age-associated diseases.

MOTS-c dosing

- ▶ 2mg (every other day for 8 weeks) with 4 week break
 - ▶ You can work up to 5mg every other day
 - ▶ Once the vial is reconstituted, it degrades fast.
 - ▶ Once thought to inject the entire 5mg or 10mg vial
 - ▶ MANY different protocols
 - ▶ Once a week for 6 weeks
 - ▶ Once a day for 15 days
 - ▶ BOTTOM LINE: DO NOT OVER DO. YOUR BODY WILL BECOME DESENSITIZED
 - ▶ IF 2mg is too high (too stimulating and experience low blood sugar), lower to 0.5mg daily.



HOWEVER, MOTs-c
doesn't work well if
mitochondria is
damaged

What damages mitochondria?

What damages mitochondria?

Oxidative Stress: An imbalance between free radical production and antioxidants, often triggered by inflammation and environmental toxins, is a primary threat.

Lifestyle Habits: Poor diet (high sugar, ultra-processed foods), lack of exercise (sedentary lifestyle), chronic psychological stress, and lack of sleep (<7 hours)

Environmental Toxins: Exposure to heavy metals (mercury, arsenic), pesticides, herbicides, bisphenols, and phthalates directly harms mitochondrial structure.

Medications & Substances: antibiotics and statins, alcohol, smoking, vaping, recreational drugs

Infections & Aging: Chronic infections, viral infections (e.g., Hepatitis C, HPV), and chronic diseases (Alzheimer's, diabetes, muscular dystrophy)

Physical Factors: Radiation, excessive blue light, and lack of natural light exposure

SS-31

- ▶ **Mitochondria-targeted antioxidant peptide.**
 - ▶ also known as **elamipretide**
- ▶ Reduces mitochondrial ROS and improves ATP production
- ▶ Reference: Zhao et al., J Am Soc Nephrol (2004)

 PEPTIDE SCIENCES

REF 188-152-PS

SS-31

Mitochondria-Targeted Peptide

CAS #: 736992-21-5

Formula: $C_{32}H_{49}N_9O_5$

M.W.: 639.8 g/mol

PURITY 99% HPLC

RUO Research use only

Not for human or veterinary use.



SS-31 before MOTs-c

- ▶ Think of your mitochondria like an engine.
 - ▶ SS-31 is like giving the engine a complete tune up.
 - ▶ MOTS-C is like adding a nitrous boost.
- ▶ The nitrous boost will have a greater effect if the engine is tuned up and running optimally.
- ▶ Also, SS-31 has a long-lasting effect like a tune up would.
 - ▶ MOTS-C is a temporary effect like nitrous, but you reap the rewards of the downstream effects of temporarily boosting the mitochondria.

SS-31 Benefits

- ▶ **SS-31** helps improve mitochondrial function and overall production of energy via ATP synthesis.
- ▶ Reduce inflammatory cytokines which cause oxidative stress and inflammatory diseases such as:
 - ▶ Alzheimer's, Parkinson's, heart disease, diabetes, kidney disease.
- ▶ Proven to improve exercise capacity after 5 treatments.
- ▶ Most compelling application is the treatment of heart disease.

SS-31

- ▶ Individuals look into SS-31 for potential benefits related to
 - ▶ Muscle performance & recovery
 - ▶ Anti-aging
 - ▶ Cellular health

SS-31 Dosing

► Starting Dose

- **Low Range (1–5 mg per injection)**

- SS-31 is often measured in milligrams (mg), and some individuals start at the lower end (around 1 mg) to assess any side effects or improvements.
- Frequency can range from several times a week to daily, depending on specific goals and tolerance.

- **Moderate Range (5–10 mg per injection)**

- If the lower dose is well-tolerated and more pronounced benefits are desired, some users move to mid-level doses—often 5 mg or slightly higher.
- Dosing schedules still vary. For ongoing mitochondrial support, some prefer daily or every-other-day injections; others do a few weekly doses.

- **If money isn't an issue, people go up to 40mg daily!**

Fox04

Is a senolytic peptide designed to eliminate "zombie" (senescent) cells by disrupting their interaction with the p53 protein, inducing apoptosis.

It promotes anti-aging benefits, including improved physical function, increased energy, enhanced liver/kidney function, reduced inflammation, and improved tissue regeneration.

FOX04

- **Targeted Senolytic Action:** Selectively kills senescent cells that cause inflammation and damage to surrounding healthy tissue.
- **Anti-Aging & Longevity:** Studies suggest it can combat physical decline, increasing healthspan and reducing age-related dysfunction.
- **Improves tissue function,** including hair growth and reduced liver/kidney damage in mouse models.
- **Improved Metabolism & Energy:** May improve metabolic function and increase cellular energy production.
- **Reduced Chronic Inflammation:** By eliminating senescent cells (which secrete harmful factors known as SASP), it reduces age-related inflammation.
- **Reverses age-related osteoporosis, vascular aging, and enhancing stamina.**

FOX04 Dosing

- ▶ Weeks 1-4 250mcg
- ▶ Weeks 5-8 375mcg
- ▶ Weeks 9-16 500mcg
- ▶ CYCLE LENGTH: 8-16 weeks



Human Growth Hormone Peptides

What is Human Growth Hormone

- ▶ Human growth hormone, also known as HGH is a natural hormone your [pituitary gland](#) makes and releases that acts on many parts of the body to promote growth in children.
- ▶ Once the growth plates in your bones have fused, HGH no longer increases height, but your body still needs HGH.
- ▶ After you've finished growing, HGH helps to maintain normal body structure and metabolism, including helping to keep your [blood sugar levels](#) within a healthy range.

WHEN TO TAKE

- ▶ The largest surge of Human Growth Hormone is about 30 minutes after you fall asleep
 - ▶ IF YOU DON'T EAT BEFORE BED
- ▶ Another large surge is after intense strength training
- ▶ These are the times to mimic your natural rise
 - ▶ Especially as we age and it lowers

CJC-1295 (DAC and No DAC)

- ▶ **Growth hormone-releasing hormone analog.**
- ▶ Increases GH and IGF-1 levels
- ▶ DAC version has longer half-life
- ▶ Reference: Teichman et al., J Clin Endocrinol Metab (2006)



CJC-1295

- ▶ **CJC-1295** is a synthetic analogue of growth hormone releasing hormone (GHRH) that increases plasma levels of growth hormone and insulin-like growth factor 1 (IGF-1).
 - ▶ BENEFITS:
 - ▶ 1. Helps with abnormal growth
 - ▶ 2. Promotes ovulation in infertile females
 - ▶ 3. Promotes good sleep
 - ▶ 4. Boosts muscle repair

CJC-1295 (DAC and No DAC)

- ▶ DAC vs NO DAC
 - ▶ DAC stands for drug affinity complex
 - ▶ With DAC means it has a LONG half-life (some say TOO LONG)
 - ▶ NO DAC means it has a short half-life (which mimics our own body's human growth hormone output)

CJC-1295 Dosing

- ▶ CJC 1295 with and without DAC is the dose difference.
 - ▶ When it has the DAC added in, you're looking at between 1000mcg and 2000mcg per dose.
 - ▶ VERY LONG half-life (probably too long)
 - ▶ Without DAC, these doses are much smaller at 100mcg per dose and can be taken up to three times in a day, making your daily dose 300mcg.

Ipamorelin

- ▶ **Selective GH secretagogue.**
- ▶ No significant impact on cortisol or prolactin
- ▶ Promotes lean muscle mass
- ▶ Reference: Svensson et al., Eur J Endocrinol (1998)



Ipamorelin Dosing

- **Typical dose:** 200 to 300 mcg once or twice daily
- **Best time to take:** In the morning before food or at night before bed on an empty stomach
- **Cycle:** 8 to 12 weeks, followed by a break
 - Taking 2 days off a week

CJC and Ipamorelin

- ▶ Ipamorelin and CJC-1295 are two peptides that are often stacked together due to their complementary effects.
 - ▶ Ipamorelin is a growth hormone-releasing peptide (GHRP) that stimulates the release of growth hormone from the pituitary gland.
 - ▶ CJC-1295 is a growth hormone-releasing hormone (GHRH) analog that stabilizes and prolongs the release of growth hormone.

CJC and Ipamorelin

- **Increased growth hormone levels:** increase growth hormone levels by up to 300% = increased muscle mass, improved fat loss, & accelerated wound healing.
- **Improved body composition:** increase muscle mass & reducing body fat.
- **Enhanced recovery from workouts:** they reduce muscle soreness & inflammation, & promote muscle protein synthesis. Helps recover faster.
- **Improved sleep quality:** Growth hormone is known to play a role in regulating sleep cycles & promoting deep sleep.
- **Increased energy levels**
- **Improved mood and cognitive function**

Tesamorelin

- ▶ **Synthetic GHRH peptide.**
- ▶ Reduces visceral adipose tissue in HIV patients
- ▶ Reference: Falutz et al., NEJM (2010)



Tesamorelin

- ▶ Tesamorelin was originally developed to manage excess visceral fat accumulation in HIV-associated lipodystrophy and has since been studied for its metabolic and anti-aging properties.

Tesamorelin Dosing

- **Typical dose:** 2 mg injected under your skin once a day
- **Best time to take:** In the morning before food or at night before bed on an empty stomach
- **Cycle:** 8 to 12 weeks, followed by a break
 - Taking 2 days off a week

AOD 9604

- ▶ **Fragment of human growth hormone.**
- ▶ Stimulates lipolysis without affecting blood sugar
 - ▶ TIP: It gets VERY thick and hard to draw into insulin syringe after it sits
 - ▶ Once reconstituted, fill your insulin syringes and set in the fridge for future use.
- ▶ 250-500mcg at bedtime for up to 12 weeks with 4 weeks off.

Other HGH Peptides

- ▶ Sermorelin
 - ▶ Oldest and weakest HGH peptide
- ▶ GHRP 2 and GHRP 6
 - ▶ Increase hunger and appetite
 - ▶ Increase in cortisol
 - ▶ More for bodybuilders
- ▶ Hexarelin
- ▶ MK6-777

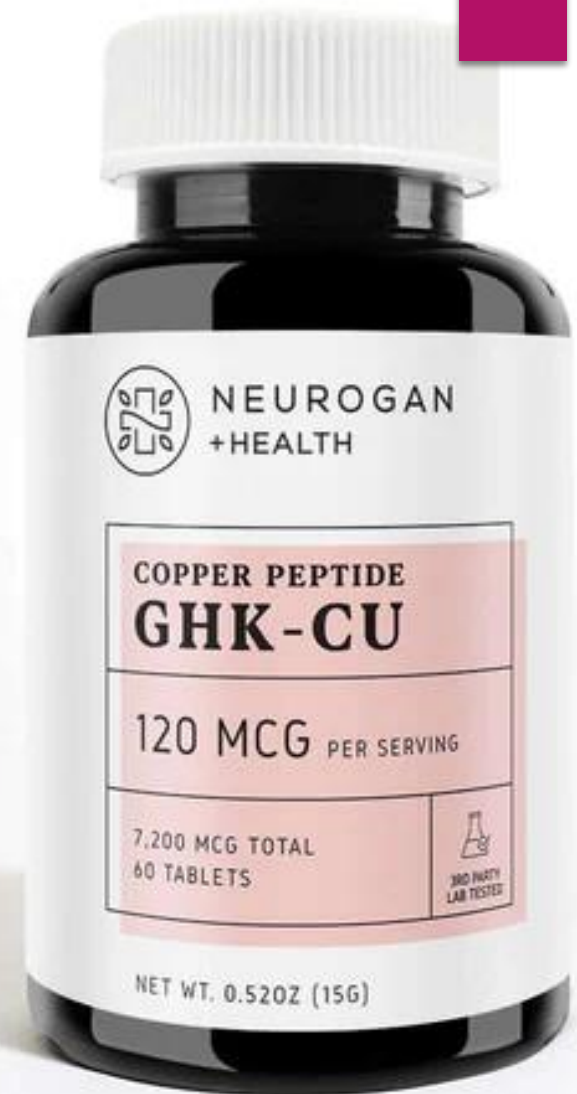
DOWNSIDES of Increasing HGH

- ▶ Extreme water retention in some cases: Testamorelin
- ▶ Nerve, muscle, or joint pain.
- ▶ Carpal tunnel syndrome.
- ▶ Numbness and tingling of the skin.
- ▶ Increased insulin resistance
- ▶ Enlargement of breast tissue in males (gynecomastia).
- ▶ Increased risk of certain cancers.
- ▶ Other potential side effects include hip, knee, or other joint pain, headache, and progression of spine curvature in patients with scoliosis.

SKIN PEPTIDES

GHK-Cu

- ▶ **Copper peptide for skin regeneration.**
- ▶ Promotes wound healing and collagen production
- ▶ Reference: Pickart et al., J Invest Dermatol (1980)



GHK-cu Benefits

- ▶ **Profound regenerative, anti-inflammatory, and tissue-repairing properties.**
 - ▶ Plays a central role in **wound healing, skin rejuvenation, hair growth, and even DNA repair.**
- ▶ Delivers bioavailable copper to damaged tissues while modulating gene expression—makes it a powerful tool in **anti-aging and regenerative medicine.**
- ▶ Great for after a microneedling session!



GHK-cu Benefits

- ▶ GHK-Cu enhances **collagen synthesis, elastin production**, and **wound healing**, making it highly effective in:
 - Reducing fine lines and wrinkles
 - Increasing skin thickness and firmness
 - Improving skin tone and elasticity
 - Healing wounds and minimizing scarring
- TIP: If using topical GHK-cu, do not apply topical vitamin c at the same time: it oxidizes the vitamin c and destabilizes the GHK-cu.

Injectable GHK-cu Dosing

Subcutaneous

- **Dosage per session:**
 - **2mg** GHK-Cu per EVENING if trying to heal wounds, ligaments or burns.
- **Frequency:**
 - **Nightly**
- **Too much GHK-cu dumps zinc**

Hair Restoration Dosing

Dose:

- 2–5 mg GHK-Cu per session

Frequency:

- Weekly or biweekly for 6–12 weeks

Combination:

- Often paired with microneedling, PRP

I microneedle my scalp once a week with topical GHK-cu



Oral Dosing

- ▶ **Oral GHK-Cu (Experimental / Less Common)**
- **Dosing:**
 - ▶ Typically **1–5 mg daily**
- **Bioavailability:**
 - ▶ Less studied; injectable and topical routes preferred



Melanotan I

- ▶ **Synthetic analog of alpha-MSH.**
- ▶ Induces tanning and protects skin
- ▶ Reference: Hadley et al., Ann NY Acad Sci (1999)



Melatontan 1 Benefits

- ▶ **1. Sunless Tanning (Without UV Exposure)**
 - Stimulates **melanin synthesis** in skin cells (melanocytes)
 - Results in a **natural-looking tan** even with minimal sun exposure
 - May improve skin tone in lighter-skinned individuals
- **MELANOTAN 2:** also increases erections and sexual arousal

Other Skin Peptides

- ▶ CJC-1295
- ▶ Ipamorelin
 - ▶ Improves skin quality
 - ▶ Firmness
 - ▶ Hydration
 - ▶ Texture
 - ▶ at a cellular level



Healing Peptides

BPC-157

- ▶ **Body Protection Compound.**
- ▶ Promotes tendon, ligament, muscle and gut healing
- ▶ Reference: Sikiric et al., Curr Pharm Des (2011)



BPC-157 Benefits

- **Wound Healing:**
- BPC-157 may accelerate tissue regeneration and promote faster wound healing by enhancing blood vessel formation.
- **Joint and Muscle Recovery:**
- It could reduce muscle soreness, improve training volume, and aid in the recovery of tendons, ligaments, and muscles.
- **Gut Health:**
- BPC-157 may support the gut lining, potentially aiding in the healing of ulcers and other gastrointestinal issues.

BPC-157 Benefits

- **Anti-inflammatory Effects:**
 - It may reduce inflammation markers, potentially benefiting conditions like arthritis and muscle strains.
- **Neuroprotection:**
 - BPC-157 may aid in nerve regeneration and reduce neuronal damage, potentially benefiting neurological conditions.
- **Cardiovascular Benefits:**
 - By promoting blood vessel formation, BPC-157 could support heart and vascular health.

BPC-157 Dosing

Oral doses generally range from 100 to 500 mcg, taken 1-2 times daily for injury recovery, inflammation management, and general healing.

Oral is ideal for gut healing.



BPC-157 Dosing

- ▶ Injection dosing is typically based on body weight, ranging from 150-375 micrograms (mcg) twice daily.
- ▶ Important to cycle, with a 6-12 week usage period followed by a 4-8 week break between cycles.

KPV

Naturally occurring anti-inflammatory tripeptide derived from melanocyte-stimulating hormone (MSH) that reduces systemic inflammation, repairs the gut lining, and acts as an antimicrobial agent.



Key Health Benefits of KPV Peptide

- i. Intestinal Health and Gut Healing: KPV directly repairs the intestinal barrier, making it effective for treating inflammatory bowel disease (IBD), ulcerative colitis, Crohn's disease, and "leaky gut".
- ii. Potent Anti-Inflammatory Action: It targets inflammatory pathways (reducing cytokines like IL-6, TNF-and MCP-1) to reduce overall systemic inflammation and autoimmune responses.
- iii. Skin Condition Management: Topically, KPV acts as a powerful anti-inflammatory, reducing redness, irritation, and swelling associated with eczema, psoriasis, rosacea, and acne.
- iv. Antimicrobial and Anti-aging: KPV possesses antimicrobial properties that help rebalance the gut microbiota and combat harmful pathogens. Its antioxidant effects help combat cellular damage.
- v. Accelerated Wound Healing: It promotes the regeneration of tissues, making it useful for skin injuries and post-surgical recovery.

KPV Oral Dosing

- ▶ 250mg daily KPV
 - ▶ For 8 weeks with a one month break

BPC-157 and KPV

- ▶ Bpc handles tissue repair and angiogenesis
- ▶ Kpv the inflammatory environment
- ▶ Fix inflammation and repair the environment
 - ▶ BEAWARE Kpv is an anti-inflammatory suppressant.
 - ▶ Long-term suppression of inflammatory pathways isn't always benign.
 - ▶ Your immune system uses inflammation for a reason.
 - ▶ It fights infections, it kills damaged cells and it cervails for cancer. So chronically suppressing with kpv could theoretically impair those functions overtime.
- ▶ Make sure to take breaks

Thymosin Alpha 1

- ▶ **Immunomodulatory peptide.**
- ▶ Enhances T-cell function
- ▶ Used in chronic infections and cancer
- ▶ Reference: Garaci et al., Ann NY Acad Sci (2007)



Key Benefits of Thymosin Alpha 1

- a. Immune System Modulation: acts as a "biological response modifier," boosting weak immunity while calming overactive immune responses (autoimmunity).
- b. Enhanced Viral/Infection Defense: It increases T-cell function and NK cell cytotoxicity, strengthening the response to viruses (cold, flu, COVID-19), persistent pathogens, and chronic infections like Epstein-Barr (EBV) and Lyme disease
- c. Anti-Tumor/Cancer Support: It promotes immunosurveillance (helping the body recognize cancer cells) and boosts T-cell activity to counteract the immunosuppressive effects of chemotherapy.

Key Benefits of Thymosin Alpha 1

- a. Chronic Inflammation Reduction: regulates cytokine production—increasing beneficial cytokines while suppressing harmful pro-inflammatory markers
- b. Respiratory Illness Management: It has shown efficacy in treating acute respiratory distress syndrome (ARDS) restoring depleted T-cells.
- c. Improved Immune Aging (Immunosenescence): Helps rejuvenate immune competence in older adults who experience frequent infections.

Thymosin Alpha 1 dosing

- ▶ 300 mcg daily for Week 1
- ▶ Week 2 increase to 500mcg once a day for 8 weeks rotating injection sites.
 - ▶ Taking a break after 8 weeks
 - ▶ Can repeat the cycle after a one month break

TB-500

(Thymosin Beta-4) is a synthetic peptide known for accelerating healing, reducing inflammation, and promoting tissue regeneration.



Key Benefits of TB-500

- i. Accelerated Injury Healing: Speeds recovery from muscle tears, tendonitis, and ligament injuries by promoting cell migration and tissue repair.
- ii. Reduced Inflammation and Pain: Lowers inflammation at injury sites and reduces chronic pain/stiffness.
- iii. Increased Tissue Regeneration: Promotes angiogenesis (growth of new blood vessels) and collagen deposition, aiding the regeneration of tissues, including potential benefits for cartilage.
- iv. Improved Flexibility and Mobility: Reduces scar tissue formation, which improves joint range of motion and overall flexibility.
- v. Systemic Recovery Support: Unlike localized treatments, TB-500 is known for its ability to work systemically, promoting healing throughout the body.
- vi. Improved Hair Growth: While primarily used for injuries, some studies suggest its involvement in hair follicle regeneration

Oral Dosing TB-500

- ▶ 0.5mg every other day on week one
 - ▶ 1mg every other day for weeks 2-6
 - ▶ 2mg once a month for maintenance

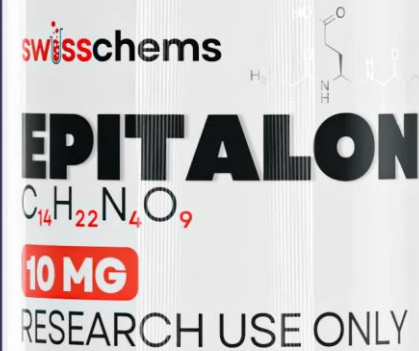
Injectable Dose TB-500

- ▶ 2mg TB-500 every other day for 6 weeks
 - ▶ then 2mg once a month for maintenance



Longevity/Anti Aging

- ▶ **Telomerase-activating peptide.**
- ▶ Improves longevity markers
- ▶ Reference: Khavinson et al., Neuro Endocrinol Lett (2003)



Epitalon Benefits

- ▶ Epitalon has been shown to activate an enzyme called telomerase, which protects and repairs telomeres.
 - ▶ More active telomerase means that cells age slower and remain functional longer.
 - ▶ The net result is that overall aging appears to be slowed down. Research in rodents indicates that Epitalon may extend life by as much as 27% via this mechanism.

Pinealon

Supports brain health,
enhance cognitive
function, and slow aging by
repairing neural cells and
regulating the pineal gland.



Pinealon

- ▶ Neuroprotection
- ▶ Improved sleep quality
- ▶ Memory support
- ▶ Increasing cerebral blood flow and oxygenation

Key Pinealon Peptide Benefits

Cognitive Enhancement: Supports memory, focus, and mental clarity.

Neuroprotection: Protects against oxidative stress and damage, aiding in brain repair.

Sleep Regulation: Regulates the circadian rhythm and supports melatonin production, helping to improve sleep quality.

Anti-Aging and Longevity: Slows cellular aging of the central nervous system by influencing gene expression.
Brain Injury Repair: Used for repairing damage from strokes, trauma, or cognitive decline

Dosing

- ▶ Epitalon and Pinealon ideally are performed together.
 - ▶ 10 Day Cycle
 - ▶ 10mg epitalon nightly on empty stomach
 - ▶ 300mcg Pinealon on an empty stomach
 - ▶ Repeat the cycle every 6 months

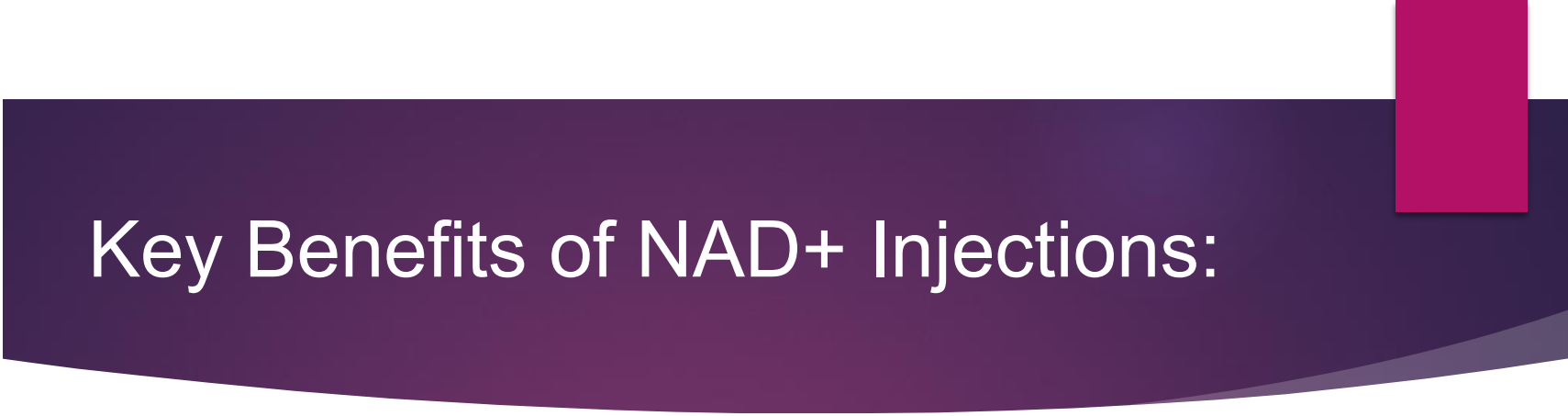
NAD
(not a peptide
but often
linked)

Key Benefits of NAD⁺ Injections:

Enhanced Energy & Metabolism: By optimizing mitochondrial function, NAD⁺ helps improve energy metabolism, increase stamina, and reduce feelings of chronic fatigue.

Improved Brain Health & Cognition: NAD⁺ supports brain function by protecting neurons, reducing neuroinflammation, and improving mental clarity, focus, and memory.

Anti-Aging & Cellular Repair: NAD⁺ activates sirtuins, which regulate cell survival and repair DNA damage, potentially slowing aspects of the aging process.



Key Benefits of NAD+ Injections:

Addiction Recovery Support: Studies and clinical experience suggest that NAD+ therapy can help decrease withdrawal symptoms and minimize cravings for substances such as alcohol and opioids.

Reduced Inflammation & Pain: By activating anti-inflammatory pathways, NAD+ injections can alleviate pain and reduce chronic inflammation.

Improved Mood and Mental Health: Some studies indicate that boosting NAD+ levels can improve emotional health and reduce symptoms of depression and stress.

Improved Sleep Patterns: NAD+ has been shown to support better sleep quality by regulating circadian rhythms.

TMG when using NAD

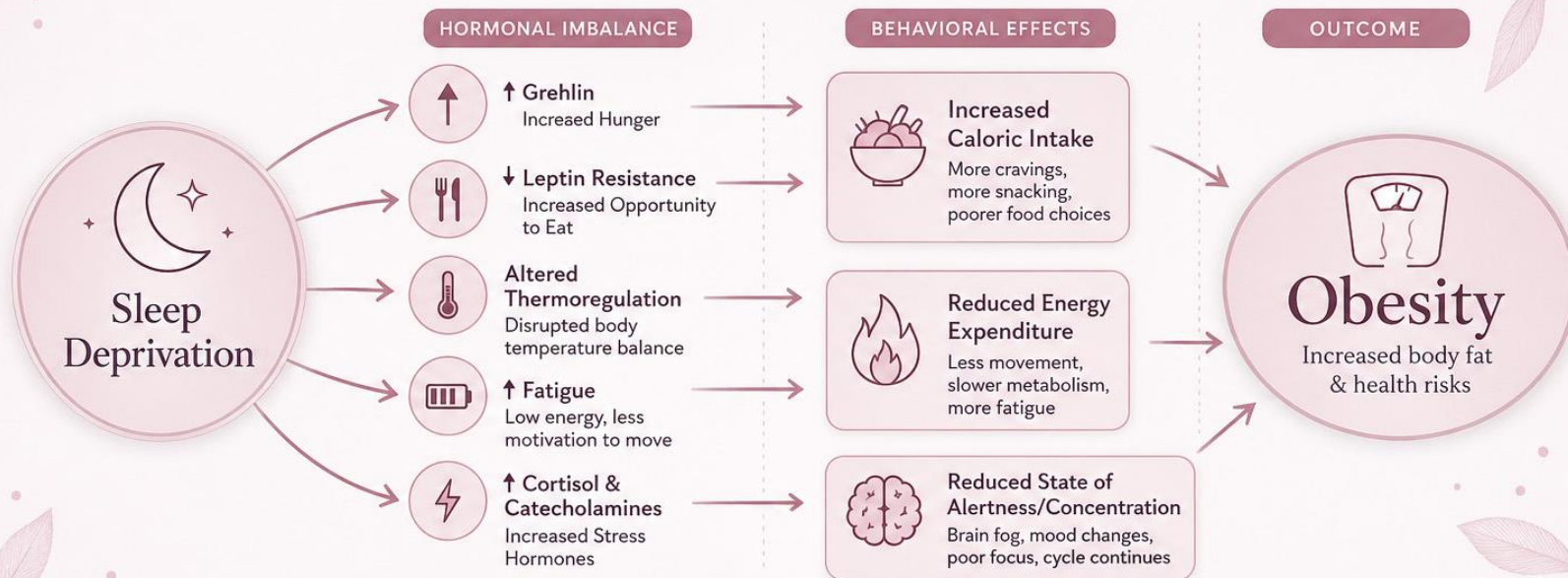
- ▶ **TMG (Trimethylglycine) helps when taking NAD+ boosters (like NMN or NR) by replenishing methyl groups, which are depleted during the metabolism of excess nicotinamide. It acts as a methyl donor to maintain healthy methylation pathways, supporting DNA repair and preventing the buildup of homocysteine, thus acting as "insurance" against methyl group depletion.**
- ▶ <https://mariamindbodyhealth.com/tmg/>



Fat Loss Peptides

Sleep & Weight Loss

POOR SLEEP → HORMONAL CHAOS → WEIGHT GAIN



WHY IT MATTERS



7-9 HOURS OF QUALITY SLEEP

Supports hormones, metabolism, and mood



BETTER SLEEP = BETTER CHOICES

More energy, better food choices, less stress



SLEEP IS A FAT LOSS TOOL

Just as important as diet and exercise



PRIORITIZE REST, TRANSFORM YOUR HEALTH

Small changes in sleep lead to big results

KetoMaria.com

5-Amino-1MQ

- ▶ **NNMT inhibitor peptide.**
- ▶ Enhances energy metabolism, reduces fat mass
- ▶ Reference: Ulanovskaya et al., Nat Chem Biol (2013)



5 Amino-1MQ

- ▶ NNMT is a very important component in metabolism and energy and is predominantly active in fat tissue.
- ▶ By blocking NNMT, 5-amino-1MQ stimulates an increase in nicotinamide adenine dinucleotide (NAD⁺), a cofactor that is central to cellular metabolism, thereby increasing metabolic rate and activating a gene called sirtuin-1 (SIRT1).

5 Amino-1MQ

- ▶ SIRT1 is also known as the "longevity gene" because of its role in reducing the risk of diabetes, obesity, metabolic syndrome, atherosclerosis and other forms of cardiovascular disease, kidney disease, liver disease, neurodegeneration, and cancer.
- ▶ Research in mice given 5-amino-1MQ showed a 7% reduction in body mass over 10 days without any changes in food intake, compared to controls.

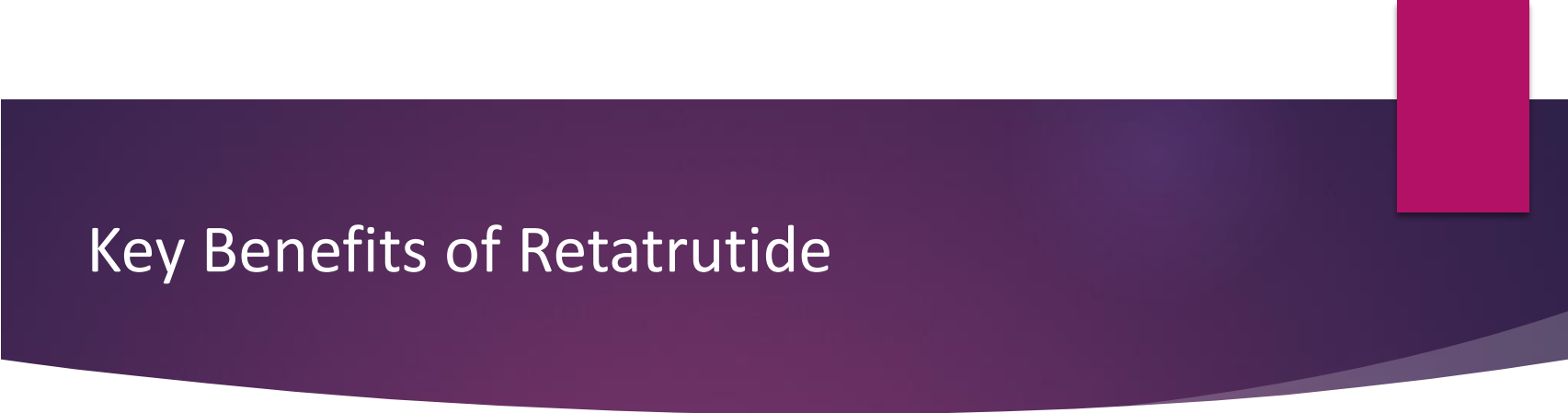
5 Amino DOSAGE

- ▶ 150mg for one week on and one week off.
 - ▶ Body gets used to this compound and will become less effective.

GLP-3

3RD GENERATION GLP





Key Benefits of Retatrutide

Triple-Action Mechanism: Unlike semaglutide (GLP-1) or tirzepatide (GLP-1/GIP), retatrutide targets three receptors—GLP-1, GIP, and glucagon—which work synergistically to enhance weight loss, boost metabolism, and improve fat oxidation.

Improved Glycemic Control: The medication significantly lowers HbA1c levels, showing better performance in controlling blood sugar for Type 2 diabetes patients compared to current treatments like dulaglutide.

LOWERS OTHER ADDICTIONS

Key Benefits of Retatrutide

Cardiovascular and Metabolic Health: Studies indicate improvements in blood pressure, reduction in waist circumference, and better cholesterol profiles, which collectively reduce cardiovascular risks.

Potential Liver and Kidney Benefits: Early research suggests potential reduction in liver fat and improvements in markers of kidney damage (e.g., a 31.5% reduction in urinary albumin in some trials), offering hope for treating obesity-related complications.

Appetite Regulation: By acting on brain receptors, it reduces hunger and increases feelings of fullness, helping individuals manage caloric intake.

Low carb recommended for GLP-3

- ▶ Reta increases glucagon, promoting fat burning, which can be complemented by a low-carb diet that keeps insulin levels low.
- ▶ Insulin and glucagon work in opposition to manage energy, with their ratio determining if the body stores or burns fuel.
- ▶ Low insulin allows glucagon to promote fat breakdown (lipolysis) for energy.
- ▶ High insulin generally prevents muscle breakdown rather than causing it, while glucagon primarily triggers liver glucose release.

HRT

- ▶ Studies found that women on BHRT lost 35% more weight on GLP-2 and GLP-3

GLP-3 Warning

YOU MUST INCREASE PROTEIN INTAKE TO A MINIMUM OF 1 gram of protein per pound of body weight to combat muscle loss and if this is difficult, add in 5 capsules of Accelerated Aminos with your first meal:

<https://mariamindbodyhealth.com/accelerated-health-products/>

Because of the glucagon activity and increased metabolic rate, you risk more muscle loss if you do not increase protein and strength train.

STRENGTH TRAINING OR STRETCHING is also imperative to combat muscle loss as you lose fat!

GLP-3 Warning

- ▶ Anhedonia (inability to feel pleasure or emotional flattening) is a reported side effect of GLP-1 receptor agonists (like semaglutide) and emerging triple-agonists (like retatrutide)
 - ▶ termed "Ozempic personality."
 - ▶ It is characterized by reduced pleasure, motivation, and "food noise,"
 - ▶ Loss of joy in hobbies, and lack of appetite or interest in food, alcohol, or social interaction. profound emotional numbness.

ADD A HIGH QUALITY MULTI

- ▶ Clinical research finds the benefits of Essential Multi supplementation
 - ▶ Supports cognitive function and mood
 - ▶ Provides antioxidants to help support oxidative stress
 - ▶ Supports vibrant, healthy skin
 - ▶ Supports energy production and vitality
 - ▶ Supports healthy immune function
 - ▶ Supports healthy gastrointestinal function
- ▶ Click HERE to find:
<https://mariamindbodyhealth.com/multivitamin/>



Low Energy on GLPs

- ▶ YOU MUST ADD ELECTROLYTES!
 - ▶ You will need more than usual!
 - ▶ FREE SAMPLE: <https://mariamindbodyhealth.com/lmnt-electrolytes-2/>
- ▶ Is your liver healthy?
- ▶ Are your hormones balanced?
- ▶ Are you sleeping at least 8 hours?

GLP-3 dosing

- ▶ Start slowly! This can be very powerful
 - ▶ The goal isn't to smash appetite
 - ▶ Lower it a little while changing dietary habits
 - ▶ The glucagon action will help with fat loss
- ▶ Start with 1mg once a week
 - ▶ Inject at the same time of the day
 - ▶ Some people find doing it after a meal helps with side effects
 - ▶ Rotating injection sites so receptor sites stay strong

SLU-PP-332

EXERCISE MIMETIC, NOT ACTUALLY A
PEPTIDE, BUT A SMALL MOLECULE



Key Benefits of SLU-PP-332

- i. Enhanced Metabolism & Weight Loss: It increases energy expenditure and boosts metabolism, causing obese mice to lose weight without reducing food intake.
- ii. Increased Endurance & Muscle Function: By increasing fatty acid oxidation in skeletal muscle, it enhances endurance and mimics aerobic exercise.
- iii. Improved Mitochondrial Function: The compound boosts mitochondrial respiration and biogenesis, increasing cellular energy production.
- iv. Metabolic Health & Disease Prevention: It may protect against metabolic syndrome, type 2 diabetes, and potentially liver/kidney diseases.
- v. Muscle Preservation: It shows promise in combating age-related muscle loss

SLU-PP-332 oral dosing

- ▶ 100mg 5 days a week 1
- ▶ Week 2-8: 200mg 5 days a week
- ▶ Taking a 1 month break after 8 weeks of SLU-PP-332



Other Fat Loss Peptides

Other Fat Loss Peptides

▶ **MOTs-c**

- ▶ A mitochondrial-derived peptide that may enhance insulin sensitivity and metabolic flexibility.

▶ **Ipamorelin & CJC-1295**

- ▶ These stimulate growth hormone production, which can aid in fat reduction and improved muscle tone as well as improved sleep.



Other Favorites

Thymogen

- ▶ Thymogen (L-glutamyl-L-tryptophan) is a synthetic dipeptide that boosts immune function by stimulating T-cell maturation and differentiation. It acts as an immunoregulator, enhancing resistance to infections, reducing inflammation, and accelerating tissue repair. It is often used to support immune system resilience and manage chronic infections.
- ▶ 300mcg daily for 7 days, increasing to 500mcg daily week 2-8. Then taking a break for 2 months.

Semax

- ▶ **Nootropic and neuroprotective peptide.**
- ▶ Improves memory, focus, and neuroplasticity
- ▶ Semax is a synthetic peptide known for its nootropic, neuroprotective, and neurogenic properties, often used to enhance cognitive function, focus, and memory while reducing anxiety and mental fatigue. It works by upregulating Brain-Derived Neurotrophic Factor (BDNF) and modulating neurotransmitters like dopamine and serotonin.
- ▶ 300mcg for 15 days, followed by a 10 day break

Selank

- ▶ Selank is a synthetic peptide known for its potent anti-anxiety (anxiolytic) and nootropic effects, often described as inducing a calm, focused state without sedation. It mimics natural human tuftsin, modulating GABA, serotonin, and dopamine to improve mood, reduce stress-related inflammation, and enhance cognitive function.
- ▶ **250mcg daily for 15 days, followed by a 10 day break**
 - ▶ The dose can be split twice a day to find relief for anxiety.

Kisspeptin: Fertility Peptide

- ▶ Kisspeptin is a peptide that regulates reproductive hormones, offering benefits such as enhanced fertility (ovulation induction and sperm production), increased libido, and improved sexual brain function. It stimulates the HPG axis to naturally boost FSH, LH, and testosterone, aiding in libido improvement and hormone balance during perimenopause or TRT.
- ▶ 100mg daily for week one, increase to 200 mcg once daily for weeks 2 through 12 of Kisspeptin.

hCG: Fertility and Libido

- ▶ HCG peptide therapy, often used alongside Testosterone Replacement Therapy (TRT), offers significant benefits by mimicking luteinizing hormone (LH). Key advantages include maintaining testicular size and function, preserving fertility, boosting natural testosterone production, enhancing libido, and supporting potential fat loss.
 - ▶ 250mg three times a week

Gonadorelin: Fertility Peptide

- ▶ Gonadorelin is a synthetic peptide that mimics gonadotropin-releasing hormone (GnRH), stimulating the pituitary gland to release luteinizing hormone (LH) and follicle-stimulating hormone (FSH). It is primarily used to treat infertility, manage hormone imbalances, and test pituitary function. Benefits include enhanced testosterone production, fertility support, and potential cancer inhibition.
- ▶ 50mg three times for week one, increase to 100mg three times a week for 8 weeks

Oxytocin

- ▶ Oxytocin is a peptide hormone that promotes social bonding, trust, and emotional stability while reducing stress, anxiety, and cortisol levels. It acts as a "feel-good" molecule, enhancing romantic/parental attachment, improving sleep quality, easing pain, and aiding in tissue repair. It is often used to treat Female Sexual Dysfunction (FSD) and support cardiovascular health.
- ▶ 100mcg daily week one, 200mcg daily for week 2, 300mcg daily for week 3, 400mcg daily for week 4 and on

PT-141

- ▶ PT-141 (Bremelanotide) is a synthetic peptide used to treat sexual dysfunction by acting directly on the central nervous system to increase desire and arousal. It is FDA-approved for hypoactive sexual desire disorder (HSDD) in women and used off-label for erectile dysfunction (ED) in men.
- ▶ Key benefits include improved libido, increased sexual satisfaction, and effectiveness for those unresponsive to PDE5 inhibitors (e.g., Viagra).
- ▶ 2mg before sexual activity of PT-141

Prostamax - bioregulator

- ▶ Prostamax is a synthetic Khavinson bioregulator peptide designed to support prostate health, reduce inflammation, and alleviate symptoms of benign prostatic hyperplasia (BPH) and chronic prostatitis. It promotes cellular repair, improves urinary flow, and helps regulate hormone balance, contributing to improved male vitality and reduced, less frequent urination.
- ▶ 500mcg daily for one week, increasing to 1mg daily of Prostamax.



Cardiogen - bioregulator

- ▶ Cardiogen is a short peptide bioregulator (Ala-Glu-Asp-Arg) designed to support cardiovascular health by enhancing protein synthesis in heart cells, improving metabolic function, and reducing oxidative stress.
- ▶ It primarily aids in cardiac tissue repair, promotes cardiomyocyte proliferation, and decreases fibroblast-driven fibrosis, offering potential therapeutic benefits for heart failure, hypertension, and rehabilitation.
- ▶ **10–20mg administered subcutaneously every 3 to 7 days of** Cardiogen for 3 weeks, with a 3 week break in between cycles.



Injecting Peptides

YOU WILL NEED:

- ▶ Insulin syringes (insulin was the first peptide):
<https://mariamindbodyhealth.com/insulin-syringes-for-peptides/>
- ▶ Alcohol Wipes:
<https://mariamindbodyhealth.com/alcohol-wipes/>
- ▶ Bac Water: sterile water with 0.9% benzyl alcohol.
 - ▶ The benzyl alcohol prevents bacteria growth and allows a vial to be re-entered several times. You can find it here:
<https://mariamindbodyhealth.com/peptides/>

PEPTIDE TIPS

- ▶ Keep un-reconstituted peptides in the freezer to help preserve them. Once reconstituted, keep them in the refrigerator.
- ▶ Make sure to clean the top of the vials with alcohol wipes and make sure your skin is cleaned with alcohol wipes before injecting.

DOSING CHART

PEPTIDEBASICS.COM

K E T O
— Adapted —
MARIA MIND BODY HEALTH

1ML OF WATER	100MCG	250MCG	300MCG	400MCG	500MCG	600MCG	700MCG	800MCG
2MG VIAL	5 UNITS	12.5 UNITS	15 UNITS	20 UNITS	25 UNITS	30 UNITS	35 UNITS	40 UNITS

2ML OF WATER	250MCG	300MCG	500MCG	750MCG	1MG	1.5MG	2MG	2.5MG
5MG VIAL	10 UNITS	12 UNITS	20 UNITS	30 UNITS	40 UNITS	60 UNITS	80 UNITS	100 UNITS

3ML OF WATER	300MCG	400MCG	500MCG	800MCG	1MG	2MG	2.5MG	3MG
10MG VIAL	9 UNITS	12 UNITS	15 UNITS	24 UNITS	30 UNITS	60 UNITS	75 UNITS	90 UNITS

3ML OF WATER	500MCG	1MG	1.5MG	2MG	2.5MG	3MG	4MG	5MG
15MG VIAL	10 UNITS	20 UNITS	30 UNITS	40 UNITS	50 UNITS	60 UNITS	80 UNITS	100 UNITS

Calculating Peptide Doses

► Online Peptide Calculator:

<https://cellgenetic.com/peptide-calculator/>

PEPTIDE (MG)	BAC (ML)	DOSE PER 10 UNITS (MCG) <i>100 units = 1 ml</i>
5 mg	1 ml	500 mcg
5 mg	2 ml	250 mcg
5 mg	5 ml	100 mcg
10 mg	1 ml	1000 mcg
10 mg	2 ml	500 mcg
10 mg	5 ml	200 mcg
10 mg	10 ml	100 mcg
20 mg	2 ml	1000 mcg
20 mg	5 ml	400 mcg
50 mg	5 ml	1000 mcg

Peptides are FRAGILE!

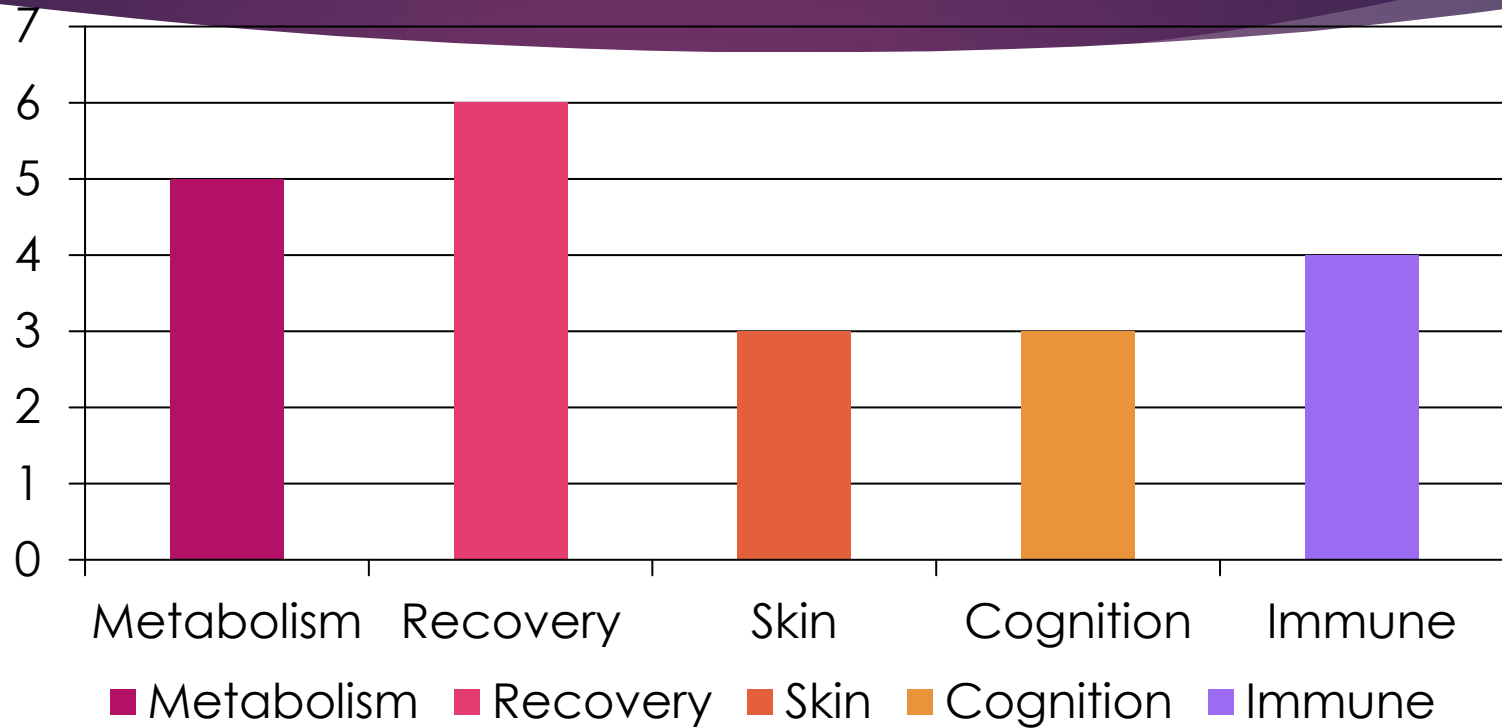
- ▶ Slowly insert the Bac Water
- ▶ Do not shake to dissolve the powder

Where to find peptides

- ▶ These are the peptides I use:
 - ▶ <https://mariamindbodyhealth.com/peptides/>
 - ▶ They are 3rd party tested
 - ▶ They have their COA: A document confirming that a product (like CBD, food, or pharmaceuticals) meets specific standards after laboratory testing.
 - ▶ Based in the USA

Therapeutic Focus of Peptides

Peptides with Primary Impact



The Peptide Cheat Sheet								
Peptide	Purpose	Amount in Vial	Amount of BAC Water to Reconstitute for Whole Vial	Recommended Dosage	Units on 1ml Insulin Syringe for One Dose	Timing	Frequency	Duration
Ipamorelin	Fat loss	10 mg	3 ml	300 mcg	9	AM/PM	5 days on, 2 days off	8 weeks on, 8 weeks off
Tesamorelin	Fat loss	5 mg	2 ml	1 mg	40	AM/PM	5 days on, 2 days off	8 weeks on, 8 weeks off
AOD-9604	Fat loss	5 mg	2 ml	300 mcg	11	AM	5 days on, 2 days off	8 weeks on, 8 weeks off
Semaglutide	Fat loss	3 mg	2 ml	250 mcg	17	AM	Once per week	8 weeks on, 8 weeks off
Tirzepatide	Fat loss	10 mg	1 ml	2.5 mg	25	AM	Once per week	8 weeks on, 8 weeks off
MOTS-C	Fat loss	5 mg	2 ml	2 mg	80	AM	Every 3rd day	2 weeks
Ipamorelin/CJC-1295 No DAC	Fat loss	12 mg	3 ml	300 mcg	7.5	AM/PM	5 days on, 2 days off	8 weeks on, 8 weeks off
CJC-1295 no DAC	Longevity	10 mg	3 ml	200 mcg	6	PM	5 days on, 2 days off	8 weeks on, 8 weeks off
Epitalon	Longevity	100 mg	3 ml	10 mg	30	AM	3 days per week	3 weeks straight, once per year
Thyamin	Longevity	100 mg	3 ml	5 mg	15	AM	20 days straight	Once every 6 months
Melanotan 1	Cognitive Enhancement	10 mg	3 ml	250 mcg	7.5	AM	2 days per week	8 weeks on, 8 weeks off
Thymosin-Alpha 1	Immunity	10 mg	3 ml	1.5 mg	45	AM	2 days per week	8 weeks on, 8 weeks off
LL-37	Immunity	5 mg	2 ml	125 mcg	5	AM	Every day	50 days straight, 4 weeks off
BPC-157	Healing	10 mg	3 ml	250 mcg	7.5	AM/PM	Every day	8 weeks on, 8 weeks off
TB-500	Healing	10 mg	3 ml	2 mg	60	AM	Every other day	8 weeks on, 8 weeks off

TODAY ONLY! SALE

- ▶ Save \$20 on my Peptide Assessment!
- ▶ Use code PEPCLASS



**PEPTIDE
ASSESSMENT**

-  PERSONALIZED INSIGHTS
-  TARGETED RECOMMENDATIONS
-  OPTIMIZE PERFORMANCE
-  SUPPORT LONGEVITY

The graphic features a woman with dark hair, wearing a white tank top, looking thoughtfully to the side with her hands clasped. The background is a soft, out-of-focus indoor setting. A vertical magenta bar is visible on the right edge of the image.

Conclusion

- ▶ **Peptides offer targeted and effective approaches to optimize health across multiple systems.**
- ▶ Support regenerative medicine and longevity
- ▶ Research continues to expand therapeutic uses

References

- ▶ **Key scientific publications supporting peptide benefits.**
- ▶ Lee et al., Cell Metab. 2015
- ▶ Teichman et al., JCEM. 2006
- ▶ Falutz et al., NEJM. 2010
- ▶ Garaci et al., NY Acad Sci. 2007
- ▶ Khavinson et al., Neuro Endocrinol Lett. 2003