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Peptide Guide

Unlock Support for
Optimal Health,
Recovery,
Gut Health
& Longevity



GHRELIN RECEPTOR AGONIST



Ipamorelin

Ipamorelin is a synthetic peptide that falls into the category of growth hormone-releasing peptides (GHRPs). It functions primarily as a selective growth hormone secretagogue, which means it stimulates the secretion of growth hormone from the pituitary gland. Unlike other GHRPs, Ipamorelin is noted for its specificity and minimal influence on other hormones, such as cortisol and prolactin, which makes it an attractive option for those seeking the benefits of increased growth hormone without the associated side effects of increased other hormones.

Ipamorelin Definition

Ipamorelin is a pentapeptide, meaning it is composed of five amino acids. It mimics the action of the natural hormone ghrelin in the body, binding to the ghrelin receptor in the brain and stimulating the release of growth hormone. This action promotes various physiological processes associated with growth hormone.

Suggested Dosing Information

400mcg x Twice Daily

INJECT 0.15ML (15 UNITS) SUBCUTANEOUSLY
60 MINUTES AWAY FROM FOOD TWO TIMES
PER DAY

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Benefits of Ipamorelin

1.Increased Growth Hormone Levels: Ipamorelin effectively increases the production and release of growth hormone in the body, which has a variety of positive effects such as enhanced tissue growth and regeneration.

2.Fat Loss and Lean Muscle Gain: By stimulating growth hormone release, Ipamorelin helps to enhance the body's ability to burn fat and build lean muscle mass, making it a popular choice among athletes and bodybuilders for its body composition benefits.

3.Anti-Aging Effects: Higher levels of growth hormone can contribute to improved skin elasticity, reduced wrinkles, and other signs of aging. Growth hormone also promotes the regeneration of cells, which is essential for maintaining youthful tissue function.

4.Improved Recovery and Healing: The increased growth hormone levels promoted by Ipamorelin enhance the body's ability to repair itself, which is beneficial for recovery from injuries and intense physical activities. This can lead to quicker recovery times and improved overall resilience.

5.Better Sleep Quality: Ipamorelin has been shown to improve sleep patterns. Growth hormone itself plays a role in the quality and depth of sleep, which is critical for optimal health and well-being.

6.Enhanced Bone Density: Growth hormone stimulates bone growth and maintenance, which can lead to increased bone density over time. This is particularly beneficial in aging populations who are at risk of osteoporosis.

SOFT TISSUE REPAIR / GUT HEALTH



BPC-157

BPC-157 is a peptide consisting of 15 amino acids. It is a synthetic compound derived from a protein found in stomach acid. Known for its regenerative and healing properties, BPC-157 has gained attention in the scientific community and among health enthusiasts for its potential benefits, particularly in enhancing healing processes and promoting overall health.

BPC-157 Definition

BPC-157, which stands for "Body Protection Compound-157," is derived from a segment of the body protection compound (BPC) that can be found in human gastric juice. It exhibits high stability in human gastric juice and has been researched extensively in animal studies, where it has shown significant regenerative effects.

Suggested Dosing Information

Topical - 0.25mg to 0.5mg daily
Oral - 250mcg to 1mg daily
Injection - 125mcg to 1000mcg daily
Nasal - 125mcg - 250mcg daily

Benefits of BPC-157

1.Enhanced Healing of Various Tissues: BPC-157 is notable for its ability to accelerate the healing of a wide array of tissues, including tendons, muscles, nervous system, and even bones. This makes it particularly useful for athletes and individuals recovering from injuries.

2.Gut Health Improvement: Given its origins in gastric juices, BPC-157 is inherently equipped to help with gastrointestinal issues. It can protect and heal intestinal walls and treat stomach ulcers, showing effectiveness in controlling inflammatory conditions such as IBD (inflammatory bowel disease).

3.Anti-inflammatory Properties: BPC-157 acts as a powerful anti-inflammatory, which is essential for healing and tissue repair. By modulating inflammatory pathways, it can reduce swelling and redness associated with injuries.

4.Pain Reduction: The peptide has been observed to reduce pain in damaged areas, possibly due to its anti-inflammatory effects and its ability to influence neurotransmitter systems and reduce nerve pain.

5.Cardiovascular Health: BPC-157 may help in repairing and protecting vascular tissue, thus improving blood flow and potentially lowering the risk of cardiovascular diseases.

6.Influence on Angiogenesis: The peptide promotes angiogenesis, which is the development of new blood vessels. Enhanced angiogenesis facilitates better blood flow to tissues, which is crucial for healing and recovery.

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TISSUE REPAIR AND REGENERATION



Dihexa

Dihexa is a potent nootropic compound known primarily for its potential in enhancing cognitive functions, particularly in the context of neurodegenerative diseases like Alzheimer's disease. It was developed at Washington State University and is recognized for its ability to significantly enhance cognitive recovery through neural regeneration.

Dihexa Definition

Dihexa is a synthetic oligopeptide, a derivative of angiotensin IV, part of the angiotensin system which is known for regulating blood pressure. Dihexa's mechanism of action is unique as it works by potentiating the effects of hepatocyte growth factor (HGF) and its receptor, c-Met. These are involved in the processes of cell growth, survival, and repair, particularly in the nervous system. Dihexa has been shown to be many times more potent than brain-derived neurotrophic factor (BDNF) in promoting neural growth.

Suggested Dosing Information

Oral - 5mg to 40mg daily Nasal - 1.25mg to 2.5mg daily

Benefits of Dihexa

1. Cognitive Enhancement: Dihexa has shown potential in enhancing memory and learning capabilities, making it a candidate for treating cognitive impairments associated with brain injuries and neurodegenerative diseases.

2. Neuroprotective Effects: It promotes the growth and formation of synapses in the brain, which are essential for efficient neural communication. This synaptic enhancement contributes to better memory formation and retrieval, as well as overall brain health.

3. Antidementia Properties: Dihexa's potential to potentiate hepatocyte growth factor (HGF) and its receptor, c-Met, suggests that it could counteract the synaptic degradation seen in dementia, potentially slowing or reversing cognitive decline.

4. Manage Depression: By improving neural connectivity and potentially enhancing mood-regulating neurotransmitter functions, Dihexa may offer new avenues for managing symptoms of depression.

5. Increases Social Intuition: Improved cognitive processing could enhance the ability to read and respond to social cues, potentially increasing empathy and social intuition.

6. Improves Memory & Creative Thinking: Dihexa facilitates the growth and formation of synapses, crucial for memory retention and creativity, allowing for more innovative thinking and better recall of information.

7. Improve Focus & Learning: With enhanced synaptic connectivity, Dihexa can help sharpen focus and accelerate learning processes, making it easier to acquire new knowledge and skills.

ANTIOXIDANT / RECOVERY



Glutathione

Glutathione is a powerful antioxidant found in every cell of the human body. It is composed of three amino acids: cysteine, glutamate, and glycine, which together form a tripeptide that plays several crucial roles in maintaining cellular health and overall physiological balance.

Glutathione Definition

Glutathione is often referred to as the body's "master antioxidant" because of its essential role in protecting cells from oxidative stress and free radicals, which can damage cell components like DNA, proteins, and lipids. It also participates in various metabolic and biochemical reactions, such as DNA synthesis and repair, protein synthesis, enzyme activation, and regulation of other antioxidants like vitamin C and E.

Suggested Dosing Information

Topical - 1000mcg daily Oral - 125mg to 250mg daily Injection - 100mg daily Nasal - 15mg to 30mg daily Inhale - 100mg as needed

Benefits of Glutathione

1.Antioxidant Protection: Glutathione directly scavenges reactive oxygen species (ROS) and helps to maintain other antioxidants in their active forms. It is vital for preventing cellular damage, aging, and various diseases, including cancer and heart disease.

2.Detoxification: The liver uses glutathione in a number of detoxification processes. It binds to toxins, heavy metals, and by-products of metabolism, making them more water-soluble and easier to excrete.

3.Immune System Support: Glutathione enhances the immune system's function by influencing lymphocytes, particularly increasing the production of T-cells, which are essential for adaptive immunity.

4.Skin Health: Adequate levels of glutathione in the body can contribute to a bright, healthy complexion. It is often used in cosmetic products for its skin-lightening effects because it inhibits the enzyme tyrosinase, which is involved in melanin production.

5.Anti-aging Properties: By reducing oxidative stress and improving detoxification, glutathione helps to slow down the aging process. It may help reduce age-related conditions like Alzheimer's disease, macular degeneration, and arthritis.

6.Increased Energy: Glutathione plays a significant role in the energy production processes of cells. By improving mitochondrial function, it can lead to increased energy and stamina.

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GROWTH HORMONE-RELEASING PEPTIDES



Hexarelin

Hexarelin is a synthetic peptide that belongs to the family of growth hormone-releasing peptides (GHRPs). It is structurally similar to GHRP-6 but has been found to be more potent and stable. Hexarelin primarily functions by stimulating the pituitary gland to release growth hormone (GH), and it does so through specific receptors different from those used by growth hormone-releasing hormone (GHRH).

Hexarelin Definition

Hexarelin is a synthetic hexapeptide with strong growth hormone-releasing properties. It is one of the most potent stimulators of growth hormone secretion within the GHRP family. Its chemical structure allows it to bind to and activate the ghrelin receptor in the brain, which is responsible for the release of growth hormone.

Suggested Dosing Information

Injectable: 1-3mg Daily Oral: 10mg Daily

Benefits of Hexarelin Injections

1.Increased Growth Hormone Levels: The primary benefit of Hexarelin injections is their ability to significantly boost growth hormone levels. Increased GH levels can have various positive effects on the body, such as improved muscle growth and strength, enhanced metabolism, and better overall cellular repair and regeneration.

2.Enhanced Muscle Growth and Strength: By increasing growth hormone levels, Hexarelin can help enhance muscle mass and strength. This makes it particularly appealing for athletes and bodybuilders looking to improve their performance and physique.

3.Improved Fat Metabolism: Hexarelin may assist in reducing body fat through its impact on growth hormone levels. GH is known to enhance lipolysis, the process of breaking down fat cells, which can lead to reduced body fat percentage.

4.Anti-Aging Effects: Growth hormone is often noted for its anti-aging capabilities. Hexarelin's ability to increase GH levels may help improve skin elasticity, reduce wrinkles, and support healthier hair and nails.

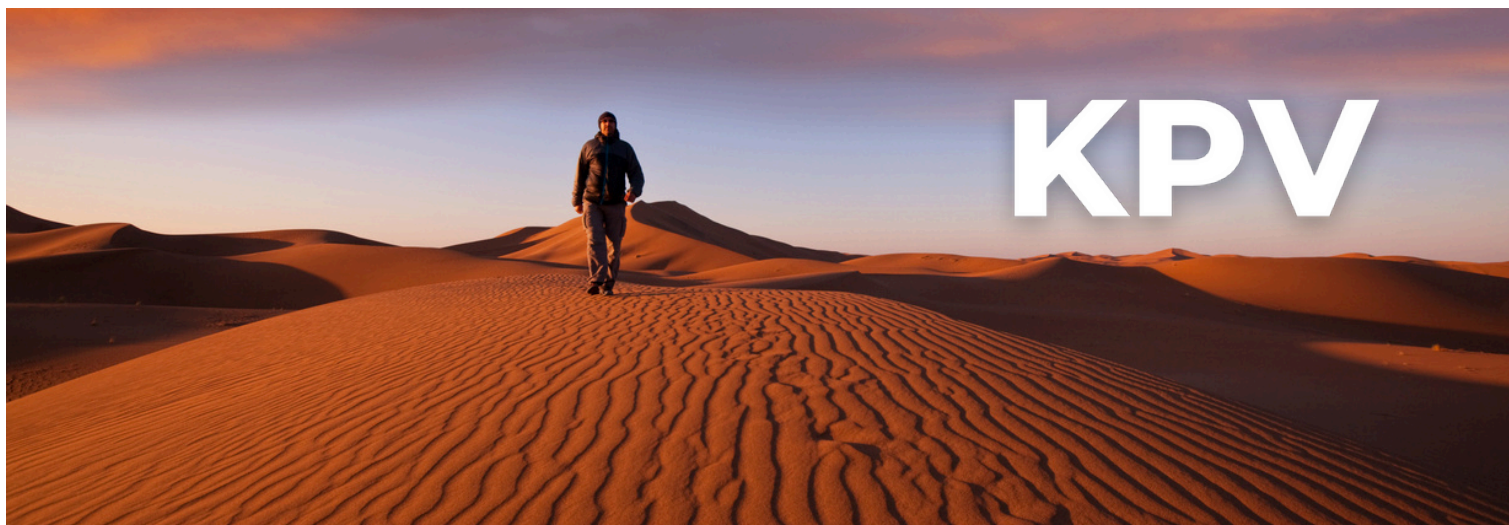
5.Cardioprotective Properties: Some studies suggest that Hexarelin may have cardioprotective effects. It can potentially improve heart function, particularly after cardiac events like heart attacks, by promoting cardiac cell repair and regeneration.

6.Enhanced Recovery and Healing: Due to its impact on growth hormone levels, Hexarelin may accelerate the healing process after injuries or surgeries, particularly in terms of tissue regeneration and recovery time.

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ANTI-INFLAMMATORY / IMMUNO-MODULATING



KPV

KPV is a tripeptide composed of the amino acids lysine, proline, and valine. This peptide is a short fragment derived from the larger peptide alpha-melanocyte-stimulating hormone (α -MSH), and it retains the anti-inflammatory and immune-modulating properties of its parent molecule. Due to its biological activities, KPV has attracted interest for its potential therapeutic uses in various forms including injections, capsules, and topical creams.

KPV Definition

KPV acts primarily as an anti-inflammatory agent with significant effects on modulating the immune system's response. It helps reduce inflammation by influencing the behavior of cytokines and immune cells involved in inflammatory processes. This action makes KPV beneficial in treating conditions characterized by excessive inflammation and immune dysregulation.

Suggested Dosing Information

Topical - 2.5mg per daily Oral - 250mg-1000mg daily Injection - 250mcg - 500mcg SQ daily

Benefits of KPV

Injections

1.Direct and Potent Effects: KPV injections can deliver the peptide directly into the bloodstream, ensuring immediate and potent therapeutic effects.

2.Rapid Response: Injections are useful for rapid relief from acute inflammatory conditions or flare-ups in chronic diseases.

3.Specific Targeting: Injectable KPV can be used for localized treatment, such as in joint inflammation or specific sites of autoimmune activity.

Capsules

1.Convenience: Oral capsules offer a convenient method of delivery, especially for long-term treatment.

2.Systemic Distribution: When formulated for proper absorption, capsules can provide a systemic distribution of KPV, potentially benefiting conditions that affect multiple body systems.

3.Sustained Release: Capsules can be designed to release KPV slowly over time, maintaining a steady level of the peptide in the bloodstream.

Creams

1.Targeted Skin Treatment: Topical application of KPV in the form of creams is ideal for treating skin conditions such as eczema, psoriasis, and other inflammatory dermatoses.

2.Localized Effect with Minimal Systemic Absorption: Creams allow for high local concentrations of KPV without significant systemic effects, reducing the risk of side effects.

3.Ease of Use: KPV creams can be applied directly to the affected areas, making this form user-friendly and non-invasive.

TISSUE REPAIR & REGENERATION



Larazotide

Larazotide is a peptide that plays a role in regulating the tight junctions between cells in the gut. These junctions are crucial for maintaining the barrier function of the intestine, which helps prevent unwanted substances from leaking into the body. Here's a detailed look at what larazotide is and the potential benefits of taking it orally:

Larazotide Definition

Larazotide acetate, also known as AT-1001, is a synthetic octapeptide that is designed to inhibit the breakdown of tight junctions in the gut. It is specifically crafted to prevent the opening of these junctions which can be triggered by gliadin, a component of gluten. The peptide works by antagonizing the effects of zonulin, a protein that regulates the permeability of tight junctions.

Suggested Dosing Information

500mg x Twice Daily

TAKE 1 CAPSULE BY MOUTH TWO TIMES
PER DAY

Benefits of Larazotide Orally

1.Prevention of Gluten-Induced Symptoms: The primary benefit of larazotide is its ability to reduce symptoms associated with gluten ingestion in people with celiac disease. By inhibiting the action of zonulin and thereby maintaining tight junction integrity, larazotide can prevent the inflammatory response triggered by gluten.

2.Reduction in Intestinal Permeability: Larazotide helps maintain the barrier function of the gut, which is essential in preventing the translocation of harmful substances into the bloodstream. This reduction in intestinal permeability can help mitigate systemic inflammatory responses and may benefit other conditions characterized by increased gut permeability.

3.Potential Improvement in Gastrointestinal Health: By stabilizing the gut barrier, larazotide may help reduce symptoms of gastrointestinal discomfort, such as bloating, pain, and irregular bowel movements, particularly in conditions like celiac disease and potentially in other inflammatory bowel diseases.

4.Adjunct to Gluten-Free Diet: For individuals with celiac disease, even minute amounts of gluten can trigger significant health problems. Larazotide could potentially be used as an adjunct therapy to a gluten-free diet, providing an additional layer of protection against accidental gluten exposure.

5.Enhancing Quality of Life: The potential for larazotide to reduce the severity of symptoms associated with gluten exposure could significantly improve the quality of life for individuals with celiac disease, allowing them more dietary flexibility and reducing anxiety around food choices.

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MITOCHONDRIAL



LL-37

LL-37 is a naturally occurring antimicrobial peptide that is part of the human cathelicidin family. It plays a crucial role in the innate immune response by providing the first line of defense against a wide range of infections. LL-37 is known for its broad-spectrum antimicrobial activity and has been studied for its potential therapeutic applications due to its ability to combat bacterial, viral, and fungal infections, as well as its immunomodulatory effects.

LL-37 Definition

LL-37 is a 37-amino acid peptide derived from the C-terminal end of the human cathelicidin protein hCAP18. This peptide is produced in several body tissues, including the skin, respiratory tract, and gastrointestinal tract. It is expressed by various cells such as epithelial cells and neutrophils upon activation by inflammatory mediators or microbial invasion.

Suggested Dosing Information

[150mcg - 300mcg] SQ daily

Benefits of LL-37 Injections

1.Antimicrobial Effects: LL-37 has potent antimicrobial properties against a wide range of pathogens, including bacteria, viruses, and fungi. This makes it a potential candidate for treating infections where conventional antibiotics are ineffective, particularly in the case of antibiotic-resistant strains.

2.Wound Healing: LL-37 not only combats infection but also promotes wound healing. It can enhance the migration and proliferation of cells necessary for wound repair and can modulate the inflammatory response to facilitate the healing process.

3.Immunomodulatory Actions: LL-37 plays a role in modulating the immune response. It can attract immune cells to sites of infection or inflammation and can influence the production of cytokines and chemokines, thereby orchestrating a more effective immune response.

4.Anti-inflammatory Properties: Despite its role in activating certain immune responses, LL-37 also has anti-inflammatory effects, particularly in chronic inflammatory conditions. It can reduce excessive immune activity and protect tissues from damage caused by prolonged inflammation.

5.Potential Anti-Cancer Properties: Recent research has explored the role of LL-37 in cancer, with studies suggesting that it might influence tumor growth and metastasis. However, the exact role of LL-37 in cancer is complex and dualistic, as it can both inhibit and promote tumor development depending on the context and environment.

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MOTs-C analog

MOTS-c analogs are synthetic derivatives or modified versions of the naturally occurring mitochondrial-derived peptide MOTS-c, designed to enhance or replicate its biological activities with possibly improved stability, efficacy, or targeted function. Research on these analogs typically aims to leverage the beneficial properties of the original MOTS-c peptide while overcoming some of the limitations such as rapid degradation in the body or limited bioavailability.

MOTs-C analog Definition

A MOTS-c analog is a molecule that mimics the structure and function of the MOTS-c peptide but has been modified to potentially improve its pharmacological profile. These modifications can include changes in the peptide sequence, the addition of stabilizing groups, or the alteration of amino acids to enhance receptor binding or resist enzymatic breakdown.

Suggested Dosing Information

[10mg] once weekly

Benefits of MOTs-C analog Injections

1.Enhanced Metabolic Regulation: Like the natural MOTS-c peptide, its analogs aim to regulate metabolism, enhancing insulin sensitivity, and modulating glucose levels. This makes them potentially powerful tools for managing metabolic disorders such as diabetes and obesity.

2.Increased Stability and Potency: Modifications in the MOTS-c analogs are designed to increase the peptide's stability in the body, ensuring that it remains active longer and reduces the frequency of administration. Enhanced potency can lead to better clinical outcomes with lower doses.

3.Obesity Management: MOTS-c analogs continue to target metabolic flexibility and fat metabolism, which can help prevent and manage obesity. By optimizing energy utilization, these analogs could promote a healthier metabolic profile in patients.

4.Potential for Improved Exercise Mimetic Effects: These analogs may enhance the exercise-mimetic effects of the natural MOTS-c, potentially offering improved physical performance and muscle function, which is especially beneficial for those who are physically unable to engage in regular exercise.

5.Anti-Aging and Longevity: By mimicking and enhancing the effects of caloric restriction and improving overall metabolic health, MOTS-c analogs might also contribute to longevity and reduce the impact of aging-related diseases.

6.Disease Prevention: Beyond direct metabolic improvements, MOTS-c analogs could have broader implications for health by reducing the risk of diseases linked to metabolic dysfunction, such as cardiovascular diseases and certain types of cancer.

COGNITIVE FUNCTION



Omberacetam

Omberacetam, more commonly known by its brand name Noopept, is a nootropic compound that belongs to the racetam family of cognitive enhancers but is generally considered more potent than other members like piracetam. It was developed in Russia and is used primarily to improve cognitive function and brain health.

Omberacetam Definition

Omberacetam is a synthetic molecule designed to enhance cognitive abilities, protect the brain from damage, and improve overall mental functioning. It is similar in some ways to piracetam in terms of its effects but is noted to be significantly more potent. Omberacetam works by stimulating specific receptors in the brain involved in cognitive processes and has also been shown to increase nerve growth factor (NGF) and brain-derived neurotrophic factor (BDNF), both of which are vital for the growth and survival of neurons.

Suggested Dosing Information

Orally: [25mg - 50mg] daily

Benefits of Omberacetam

1.Cognitive Enhancement: Omberacetam is best known for its ability to enhance memory, learning, and overall cognitive function. It is particularly noted for improving focus, memory consolidation, and recall speed.

2.Neuroprotective Properties: Omberacetam provides protection against oxidative stress and neurotoxicity. It may be beneficial in the management of neurodegenerative conditions, such as Alzheimer's disease, by protecting neurons from damage and enhancing overall brain health.

3.Anxiety and Depression Reduction: Some studies suggest that Omberacetam has mood-enhancing properties, potentially reducing symptoms of anxiety and depression. This effect is attributed to its ability to including modulate various neurotransmitters, serotonin and dopamine.

4.Increased Brain Communication: Omberacetam may improve the efficiency interhemispheric transmission—the communication between the brain's hemispheres. This can lead to more integrated brain function, which is beneficial for problem-solving and creative thinking.

5.Fast-Acting: Unlike some nootropics that need to be taken for an extended period before effects are noticeable, Omberacetam often produces benefits within a relatively short timeframe, sometimes as quickly as within a few doses.

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Retatrutide

Retatrutide, also known by its developmental code LY3437943, is an investigational peptide-based therapeutic that combines the actions of three gastrointestinal hormones: glucagon-like peptide-1 (GLP-1), glucagon, and glucose-dependent insulintropic polypeptide (GIP). It is designed to harness the beneficial effects of these hormones for the treatment of metabolic disorders such as type 2 diabetes and obesity.

Retatrutide Definition

Retatrutide is a novel, multi-agonist peptide drug that simultaneously activates the receptors of GLP-1, glucagon, and GIP. Each of these hormones plays a crucial role in metabolic regulation, affecting glucose levels, appetite, and energy expenditure. By targeting all three receptors, Retatrutide aims to provide a comprehensive approach to managing and potentially improving metabolic health.

Suggested Dosing Information

Week 1-4: .5mg weekly Week 13-16: 4mg weekly Week 5-8: 1mg weekly Week 17-20: 8mg weekly Week 9-12: 2mg weekly Week 21+ 12mg weekly

Benefits of Retatrutide Injections

1. Improved Glycemic Control: As a GLP-1 receptor agonist, Retatrutide can enhance insulin secretion in response to meals, lower glucagon levels, and improve glucose utilization, all of which contribute to better blood sugar control in patients with type 2 diabetes.

2. Weight Loss: The activation of GLP-1 and glucagon receptors by Retatrutide may promote weight loss. GLP-1 reduces appetite and food intake, while glucagon increases energy expenditure. Together, these effects can contribute to significant weight reduction, beneficial for obese patients or those with type 2 diabetes.

3. Reduced Risk of Cardiovascular Events: Like other GLP-1 receptor agonists, Retatrutide may offer cardiovascular benefits, such as reducing blood pressure and improving lipid profiles. These effects can lower the risk of cardiovascular events like heart attacks and strokes, especially important for patients with type 2 diabetes who are at increased risk.

4. Enhanced Energy Metabolism: By activating the glucagon receptor, Retatrutide may enhance energy metabolism, leading to increased fat breakdown and energy utilization, further supporting its use in weight management.

5. Potential for Single Treatment for Multiple Metabolic Disorders: The combined action on multiple hormone receptors makes Retatrutide a potential single therapeutic option for various aspects of metabolic syndrome, including glucose imbalances, excessive weight, and altered lipid metabolism.



SEMAGLUTIDE

Semaglutide

Semaglutide is a medication that belongs to the class of drugs known as glucagon-like peptide-1 (GLP-1) receptor agonists. It is a synthetic peptide that mimics the action of the naturally occurring hormone GLP-1, which is involved in the regulation of glucose metabolism. Semaglutide was developed for the treatment of type 2 diabetes and is also used for weight management in individuals with or without diabetes.

Semaglutide Definition

Semaglutide is a long-acting GLP-1 receptor agonist that stimulates insulin secretion and inhibits glucagon secretion in a glucose-dependent manner. Its chemical structure is similar to the human GLP-1 hormone but has been modified to provide a longer duration of action, allowing for once-weekly dosing.

Suggested Dosing Information

Week 1-4: .5mg weekly Week 5-8: 1mg weekly
Week 9-12: 1.5mg weekly Week 13-16: 2.0mg weekly
Week 17-20: 2.5mg weekly Week 21+ 2.7mg weekly

Benefits of Semaglutide Injections

1.Improved Glycemic Control: Semaglutide effectively lowers blood sugar levels in patients with type 2 diabetes by enhancing the secretion of insulin and suppressing the release of glucagon when glucose levels are high. It also slows gastric emptying, which helps in moderating blood glucose spikes after meals.

2.Weight Loss: Semaglutide has a significant effect on weight reduction, making it a valuable option for managing obesity. It reduces appetite and food intake by acting on receptors in the brain that control hunger and satiety.

3.Cardiovascular Benefits: Clinical trials have shown that Semaglutide can reduce the risk of major adverse cardiovascular events, such as heart attack, stroke, and cardiovascular death, in people with type 2 diabetes at high risk of such events.

4.Convenience of Use: With its once-weekly injection schedule, Semaglutide offers a convenient treatment regimen, improving adherence compared to medications that require daily dosing.

5.Broad Therapeutic Potential: Beyond diabetes and obesity, Semaglutide is being studied for potential effects in other neurodegenerative, metabolic, cardiovascular, and disorders, indicating its broad therapeutic potential.

GHRH RECEPTOR AGONIST



Sermorelin

Sermorelin is a synthetic peptide analogous to growth hormone-releasing hormone (GHRH), a naturally occurring hormone that stimulates the pituitary gland to produce and release growth hormone (GH). It is often used clinically as a diagnostic agent to assess pituitary function and as a treatment option for growth hormone deficiency in children and adults.

Sermorelin Definition

Sermorelin is a truncated form of GHRH, comprising the first 29 of the 44 amino acids of the naturally occurring hormone. This makes it a potent and effective stimulator of growth hormone, closely mimicking the natural release patterns of GH in the body. It is also referred to by its chemical name, GRF 1-29 (Growth Hormone-Releasing Factor 1-29).

Suggested Dosing Information

400mcg x Twice Daily

INJECT 0.15ML (15 UNITS) SUBCUTANEOUSLY
60 MINUTES AWAY FROM FOOD TWO TIMES
PER DAY

Benefits of Sermorelin

1. Stimulates Natural Growth Hormone Production:

Sermorelin works by directly stimulating the pituitary gland to produce more growth hormone. This is a more natural approach compared to direct GH injections, as it encourages the body to regulate and secrete GH as needed.

2. Improves Body Composition: Increased levels of GH can lead to a reduction in body fat and an increase in lean muscle mass. This makes Sermorelin a popular choice not only for individuals with GH deficiency but also for those looking to enhance body composition as part of an anti-aging protocol or health regimen.

3. Anti-Aging Effects: By restoring growth hormone levels to a more youthful state, Sermorelin can help improve skin elasticity, reduce wrinkles, and promote a healthier overall appearance.

4. Enhances Physical Performance and Recovery:

Increased growth hormone levels can improve physical performance, stamina, and recovery times from injuries. This is particularly beneficial for athletes or individuals engaged in regular physical activity.

5. Improves Sleep Patterns: Growth hormone plays a significant role in sleep regulation, particularly in promoting deep, restorative sleep. Sermorelin can help enhance the quality of sleep, which is crucial for overall health and well-being.

6. Bone Health: GH is vital for maintaining and improving bone density. Sermorelin therapy can help prevent osteoporosis and strengthen bone health, particularly important as one ages.

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COGNITIVE ENHANCEMENT



SS-31

SS-31, also known as Elamipretide, is a synthetic peptide with potential therapeutic applications, particularly in the context of diseases related to mitochondrial dysfunction. It is designed to target and penetrate into the inner mitochondrial membrane where it interacts specifically with cardiolipin, a crucial phospholipid that stabilizes mitochondrial structures and functions.

SS-31 Definition

SS-31 is a mitochondria-targeted tetrapeptide that has been engineered to selectively bind to cardiolipin, helping to preserve mitochondrial function under stress conditions. By stabilizing cardiolipin, SS-31 aims to improve mitochondrial efficiency and prevent the excessive production of reactive oxygen species (ROS), which are common contributors to cellular damage in various diseases.

Suggested Dosing Information

[300mcg - 500mcg] 90 minutes away from food
AM/PM daily

Benefits of SS-31 Injections

1. Mitochondrial Protection: SS-31 is primarily known for its ability to protect mitochondria from oxidative stress and dysfunction. This can be particularly beneficial in conditions like ischemic heart disease, kidney disease, and neurodegenerative disorders where mitochondrial integrity is compromised.

2. Cardioprotective Effects: In clinical trials, SS-31 has shown promise in treating heart failure by improving heart function and reducing symptoms. It does so by enhancing mitochondrial ATP production and reducing oxidative stress, thereby improving the energetic efficiency of heart muscle cells.

3. Neuroprotective Properties: SS-31 may protect against neuronal damage and death in neurodegenerative diseases such as Alzheimer's and Parkinson's disease. By preserving mitochondrial function in neurons, it could potentially slow the progression of these conditions.

4. Renal Protection: Studies suggest that SS-31 can also protect against acute kidney injury and chronic kidney disease. It helps maintain mitochondrial function in kidney cells, potentially slowing disease progression and improving renal function.

5. Treatment of Ophthalmologic Conditions: SS-31 has been investigated for its potential to treat age-related macular degeneration and other degenerative eye diseases. It may help protect retinal cells from oxidative stress, which is a major contributor to vision loss in these conditions.

6. Enhancement of Physical Performance: By improving mitochondrial function, SS-31 might enhance physical performance and energy levels, particularly in conditions of mitochondrial disease or in aging populations.

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GHRH RECEPTOR AGONIST



Tesamorelin

Tesamorelin is a synthetic form of growth hormone-releasing hormone (GHRH) that is primarily used to reduce excess abdominal fat in HIV patients who have lipodystrophy—a condition that causes abnormal fat distribution. It is the first peptide of its kind approved by the FDA for this particular use.

Tesamorelin Definition

Tesamorelin is a peptide that stimulates the pituitary gland to release growth hormone. This increased release of growth hormone can affect metabolism and the way the body distributes fat. Tesamorelin is chemically identical to a portion of the human growth hormone-releasing factor, which is naturally produced by the brain and controls growth hormone secretion.

Suggested Dosing Information

500mcg x Twice Daily

INJECT 0.2ML (20 UNITS) SUBCUTANEOUSLY
60 MINUTES AWAY FROM FOOD TWO TIMES
PER DAY

Benefits of Tesamorelin

1.Reduction in Visceral Abdominal Fat: The primary clinical benefit of Tesamorelin is its ability to significantly reduce visceral fat in the abdominal area without affecting subcutaneous fat. This is particularly beneficial for HIV patients experiencing lipodystrophy, as it can help manage the increased risk of cardiovascular disease associated with excess visceral fat.

2.Improved Lipid Profiles: Tesamorelin has been shown to improve lipid levels, decreasing total cholesterol and LDL cholesterol, while potentially increasing HDL cholesterol. This can contribute to a lower risk of cardiovascular diseases.

3.Possible Cognitive Benefits: Some studies suggest that Tesamorelin might improve cognitive function, particularly in older adults or those with cognitive impairment. This is thought to be related to its effects on growth hormone levels, which can influence brain health.

4.Improved Insulin Sensitivity: Although the effects can vary, Tesamorelin has been shown to improve insulin sensitivity in some patients, which is beneficial for glucose metabolism and might help manage diabetes symptoms.

5.Increased Muscle Mass: As a growth hormone-releasing hormone, Tesamorelin can help increase lean muscle mass, which in turn may improve physical strength and mobility.

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ANTI-INFLAMMATORY / IMMUNO-MODULATING



Thymulin

Thymulin is a nonapeptide hormone produced by the thymus gland, which plays a crucial role in the immune system. It is composed of nine amino acids and requires zinc for its biological activity, meaning it is a zinc-dependent peptide. Thymulin is involved in the regulation of T-cells, which are essential for the adaptive immune response.

Thymulin Definition

Thymulin is primarily recognized for its immunomodulatory functions. It is secreted by the epithelial cells in the thymus gland and has been shown to affect several key aspects of immune system operation, including the differentiation and function of T-cells, and it interacts with other immune cells to modulate inflammatory responses.

Suggested Dosing Information

5mg x Daily

INJECT 0.5ML (50 UNITS) SUBCUTANEOUSLY DAILY

Benefits of Thymulin Injections

1. Immune Regulation: Thymulin plays a significant role in regulating the immune system. Its presence helps to maintain and modulate the immune response, ensuring that it remains effective yet not excessively aggressive, which can be particularly beneficial in autoimmune diseases where the immune system attacks the body's own tissues.

2. Anti-inflammatory Effects: Thymulin has anti-inflammatory properties. It can modulate the body's inflammatory response, which is beneficial in treating chronic inflammatory diseases and may help reduce the severity of conditions like arthritis and asthma.

3. Enhancement of T-Cell Function: By promoting the differentiation and function of T-cells, Thymulin injections can enhance cellular immunity. This is particularly important for individuals with weakened immune systems, such as the elderly or those undergoing treatments that suppress immune function like chemotherapy.

4. Potential Role in Allergy and Asthma: Thymulin may help modulate allergic responses and asthma. Its ability to regulate immune responses can potentially reduce the hypersensitivity reactions characteristic of these conditions.

5. Neuroendocrine Regulation: There is evidence suggesting that Thymulin may also play a role in the neuroendocrine system, influencing the interaction between the nervous and endocrine systems and affecting how the body responds to stress.

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TIRZEPATIDE

Tirzepatide

Tirzepatide is a novel medication that represents a significant advance in the treatment of type 2 diabetes and obesity. It is classified as a dual glucose-dependent insulinotropic polypeptide (GIP) and glucagon-like peptide-1 (GLP-1) receptor agonist. This dual action makes tirzepatide unique, as it targets two key hormones involved in glucose and energy metabolism.

Tirzepatide Definition

Tirzepatide is a synthetic peptide that simultaneously activates the GIP and GLP-1 receptors. By engaging these two receptors, it enhances the body's natural ability to regulate blood sugar and body weight. The dual mechanism of action is designed to offer more comprehensive metabolic benefits than the single-hormone strategies used by earlier GLP-1 receptor agonists.

Suggested Dosing Information

Week 1-4: 2.5mg weekly Week 5-8: 5mg weekly Week 9-12: 7.5mg weekly Week 13-16: 10mg weekly Week 17-20: 12.5mg weekly Week 21+ 15mg weekly

Benefits of Tirzepatide Injections

1.Enhanced Glycemic Control: Tirzepatide has shown superior efficacy in lowering blood sugar levels compared to other GLP-1 receptor agonists. It improves insulin secretion in a glucose-dependent manner, reduces glucagon secretion, and delays gastric emptying, all of which contribute to improved glycemic control in patients with type 2 diabetes.

2.Significant Weight Loss: Clinical trials have demonstrated that tirzepatide can lead to substantial weight loss, often surpassing results seen with other diabetes medications. This effect is due to its dual action on GIP and GLP-1 receptors, which not only helps to control blood sugar but also suppresses appetite and increases energy expenditure.

3.Potential Cardiovascular Benefits: While the specific cardiovascular effects are still being studied, the weight loss and improved metabolic control associated with tirzepatide could potentially reduce cardiovascular risk factors in patients with type 2 diabetes.

4.Convenience of Use: Tirzepatide is administered via subcutaneous injection once a week, which can be more convenient for patients compared to medications requiring daily dosing, thereby improving adherence to the treatment regimen.

5.Potential in Treating Obesity in Non-Diabetics: Given its significant impact on weight reduction, tirzepatide is also being explored as a treatment for obesity in individuals without diabetes. This could broaden its application as a therapeutic agent in a wider population struggling with weight management.



What Is Selank?

Selank is a synthetic peptide derived from tuftsin, an immune-modulating tetrapeptide naturally found in the human body. It was developed by the Institute of Molecular Genetics of the Russian Academy of Sciences.

- **Chemical class:** Heptapeptide (Thr-Lys-Pro-Arg-Pro-Gly-Pro)
- **Delivery:** Nasal spray (commonly used due to high absorption via the olfactory)

Core Benefits for Anxiety & Depression

Mechanism

GABA modulation Increased

Serotonin & dopamine

Increased BDNF expression

Reduced pro-inflammatory cytokines

Normalizes HPA axis (cortisol regulation)

Clinical Effect

Anxiolytic effect, calming without sedation

Mood stabilization, antidepressant effect

Neuroplasticity, cognitive resilience

Lowered neuroinflammation tied to depression

Improved stress adaptation

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Mechanisms of Action (Evidence-Based)

1. GABAergic Activity (Anxiolytic Effect)

- Selank **enhances GABA receptor binding**, especially GABA-A receptors.
- GABA is the brain's primary inhibitory neurotransmitter, often **dysregulated in anxiety**.

2. Monoamine Modulation (Mood Support)

- Selank increases serotonin, dopamine, and norepinephrine levels in the brain, especially in the frontal cortex.
- This is key in treating depression and anxiety-related anhedonia.

3. BDNF & Neuroplasticity

- Brain-derived neurotrophic factor (BDNF) is crucial for:
 - Synaptic plasticity
 - Mood regulation
 - Resilience to stress and trauma

Selank **upregulates BDNF expression**, which is often **reduced in major depressive disorder**.

4. HPA Axis Normalization (Stress & Cortisol Regulation)

- Chronic stress dysregulates the hypothalamic-pituitary-adrenal (HPA) axis.
- Selank normalizes cortisol secretion, helping restore proper stress response.

Clinical data (Russia, 2011): Patients with **generalized anxiety disorder (GAD)** treated with Selank showed **significant reductions in cortisol**, anxiety scores, and improvement in sleep and mood after 14–30 days.

5. Anti-Inflammatory Properties (Neuroimmune Modulation)

- Depression is increasingly understood to be tied to neuroinflammation.
- Selank inhibits IL-6, TNF- α , and other pro-inflammatory cytokines in the CNS.

Clinical Uses in Mental Health (Human Studies)

Anxiety Disorders

- Generalized Anxiety Disorder (GAD)
- Social anxiety
- Stress-related insomnia

*Human trials (St. Petersburg Psychiatric Institute) showed Selank reduced anxiety symptoms **as effectively as phenazepam (a benzodiazepine) with no sedation, dependency, or cognitive impairment.***

Depression

- Particularly effective in mild to moderate depression, especially when tied to:
 - Emotional lability
 - Anxious depression
 - Chronic stress

Selank is not a replacement for SSRIs in severe MDD but can be a **powerful adjunct** or stand alone in **milder presentations** or those sensitive to side effects from traditional antidepressants.

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Cognitive & Emotional Resilience

Selank improves:

- Mental clarity
- Emotional regulation
- Decision-making under pressure

Useful in depression with **cognitive slowing, brain fog**, or **emotional reactivity**.

Pros vs. Traditional Medications

Feature	Selank	Benzodiazepines / SSRIs
Onset	Fast (days)	Variable (SSRIs: 2–6 weeks)
Dependency risk	None	Benzos: high
Sedation	None	Benzos: yes
Side effects	Minimal	SSRIs: GI upset, libido changes
Emotional blunting	No	Common with SSRIs

Side Effects & Contraindications

- Very well tolerated
- Occasional nasal irritation or dryness
- No documented dependency or withdrawal
- Not recommended in pregnancy or for individuals with known peptide sensitivity

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Resources Section



Helpful
Resources &
Additional
Therapies



Additional Links & Resources



Joe Miller
Founder of
1st Optimal

Order Peptides & Review Your Goals:

- [Book a Call](#)

? Have a Request for a Peptides Not Listed? Just Ask!

Recommended Products:

- [Unlocking the Power of Peptides](#)
- [Peptide Care Membership](#)

Free Educational Articles:

- [Animal vs. Human-Grade Peptides: Quality & Safety Comparison](#)
- [The Ultimate Guide to Anti-Aging Peptides for Skin](#)
- [Peptides for Gut Health: Benefits, Uses, and How to Start](#)
- [Peptides for Enhanced Recovery: Your Complete Guide](#)

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