

Growth Hormone

Ipamorelin

Gland Stimulated: Pituitary Gland

Injection

Ipamorelin is one of the latest and greatest peptides in the growth factor family. Deemed one of the safest GHRP's, Ipamorelin is a selective growth hormone (GH) Secretagogue and Ghrelin receptor agonist. This peptide generates similar increases in growth hormone secretion, but without the appetite stimulation and increase in cortisol, acetylcholine, prolactin, and aldosterone seen with other peptides in its class.

Benefits of Ipamorelin:

- Decreased body fat
- Increased collagen production
- Increased lean muscle mass
- Improved sleep
- Increased cellular repair and Regeneration
- Increased IGF-1
- Increases bone mineral content
- Counteracts glucocorticoid catabolic effects
- Less appetite stimulation than GHRP-6
- Less release of cortisol, prolactin, and aldosterone

Ipamorelin has been shown to be highly potent and has also demonstrated good safety and tolerability in human clinical studies. Research has shown that Ipamorelin is growth hormone specific, which means that the pituitary hormones (such as cortisol are unaffected).

Ipamorelin may be one of the best alternatives available to [HGH therapy](#).

As an added perk, it does not promote increased production of the enzyme ghrelin, which stimulates hunger. This means that it will not make you hungry, due to Ipamorelin's ability to control points of gastric, appetite, and growth motility. Another very significant positive difference is that Ipamorelin does not display a capacity to significantly boost levels of cortisol, which can affect the body in unwanted ways. Patients on other types of secretagogue therapies have reported jitters, cold sweats or nervousness because therapy's overall impact on cortisol levels.

CJC-1295

Gland Stimulated: Pituitary

Injection

CJC-1295 is a synthetic GHRH (growth hormone releasing hormone) analogue made up of 30 amino acids. It has been found to be highly effective with regards to the increase of growth hormone secretion and IGF-1 without negatively affecting the pulsatility of GH secretion. CJC-1295 is often combined with Ipamorelin due to its enhanced specificity as a GHRH. This peptide generates similar increases in growth hormone secretion, but without the appetite stimulation and increase in cortisol, acetylcholine, prolactin, and aldosterone seen with other peptides in its class. This peptide has been found to be very well-tolerated and perfect when combined with Ipamorelin.

Gland Stimulated: Pituitary

Benefits of CJC-1295:

- CJC-1295 increases growth hormone secretion and IGF-1 Levels with no increase in prolactin
- Increase Body Weight and Length through increased protein synthesis
- Increased Muscle Growth
- Increase Fat Loss
- Increased Cellular Repair and Regeneration
- Promotes slow wave deep sleep which is responsible for the highest level of muscle growth and memory retention and rejuvenation

Two types of CJC 1295:

GHRH (growth hormone releasing hormone) is produced in the hypothalamus. Its pulsatile release from the hypothalamus triggers a pulsatile release of GH from the pituitary gland. GHRH has a very short half-life of only a few minutes (half-life = the time required to remove half of the substance from the blood. The shorter the half-life, the more rapidly the substance is removed from the body, and the less its effect on the body).

The first 29 amino acids of GHRH is the active segment. They are available as a manufactured peptide called Sermorelin. Sermorelin was further modified to increase its half-life to 30 minutes. This is called CJC 1295. CJC-1295 was further modified by adding DAC (Drug Affinity Complex) to it. DAC binds to a blood protein called albumin, which increases its half-life to 8 days. It is called CJC 1295 + DAC. CJC 1295 can also be compounded in a non-DAC form which mimics a more normal physiologic GH spike each night.

The longer half-life from the DAC binding to albumin means injections are only required once or twice per week. However, the long half-life and relatively constant blood level provide a constant stimulus for GH release from the pituitary through the GHRH receptor, which is not

physiological. This can decrease the GH pulse amplitude which will result in decreased GH tissue stimulation.

Safety:

It is also thought safest when using a long-acting CJC molecule, to have 'hormone holidays' of three months each three to six months, to allow the pituitary to 'recover'. During the holidays, Sermorelin is used instead of CJC 1295 + DAC. The 'hormone holidays' may also minimize the risk of GH resistance developing. This resistance, or insensitivity, may occur via antibodies forming that bind to and inactivate GH, or by a decreased number of GH receptors on tissues (down-regulation). These are theoretical concerns as no long-term studies have been undertaken to clarify the issues.

Side effects of CJC-1295 may include injection site reactions (irritation, erythema, induration, pain, itching), headache, diarrhea, vasodilation (flushing, warmth, transient hypotension), nausea, abdominal pain.

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MK-677

MK-677 (also known as ibutamoren), promotes the secretion of the growth hormone (GH) and increases insulin-like growth factor 1 (IGF-1). Ibutamoren increases growth hormone levels by mimicking the action of the hormone ghrelin and binding to one of the ghrelin receptors (GHSR) in the brain. Activated GHSR stimulates growth hormone release from the brain. Clinical studies describe only the effects ibutamoren has on appetite and as expected, like ghrelin, ibutamoren increases it. GHSR is found in brain regions that control appetite, pleasure, mood, biological rhythms, memory, and cognition.

Therefore, we can expect that ibutamoren may also affect these functions. It increases growth hormone levels with little or no increase in other hormones, such as cortisol. Cortisol suppresses the immune system, reduces wound healing, and impairs learning and memory, and it's usually not good to have this hormone elevated.

Benefits of MK-677:

Helps Build Muscles: Ibutamoren is frequently used as an anabolic substance, to increase lean body mass. It is orally active and can be taken once a day. MK-677 stimulates Growth Hormone and IGF-1 which each factor in significantly to maintaining lean body mass. Growth Hormone is believed by many to stimulate an increase in muscle size and strength and the ability of MK-677 to increase Growth Hormone production make it a popular choice.

One study that studied 60-year-olds indicated that injections to stimulate Growth Hormones led to increased strength in thigh muscles. When it comes to MK-677 stimulating muscle growth, its results will vary by person depending on their exercise regimen and if they have any health conditions.

In another study of 24 obese men, a two-month treatment with ibutamoren increased lean mass, and transiently increased basal metabolic rate (BMR)

Reduces Muscle Wasting: MK-677 has shown in recent studies to alleviate muscle wasting that can be caused by a decline in protein within an individual's diet. In one study a group of healthy young adults were tested to determine if MK-677 could reverse protein catabolism and the results proved to be quite positive. As a result, MK-677 is theorized to be possibly being an effective treatment for individuals who suffer from catabolic conditions.

Increases Bone Density: Several studies have indicated that long-term use of MK-677 can have tremendous results to increase bone mineral density. This finding can benefit several populations including obese individuals, older adults, and women with menopause. These distinct populations can have detrimental health problems due to low bone mineral density and MK-677 has proven to be an effective treatment for many of them.

In 24 healthy obese male volunteers, ibutamoren increased bone turnover.

In 187 elderly adults (65 years or older), ibutamoren increased bone building, as measured by osteocalcin, a marker of bone turnover in multiple studies.

In one study with 292 post-menopausal women, ibutamoren increased bone mineral density, which helps increase bone strength and prevent osteoporosis.

The groups of people who serve to benefit by MK-677's ability to increase bone density must research the possibility of any long-term side effects since increases in bone density typically take more than a year's use.

Improves Sleep: Since Growth Hormone is known to help improve sleep quality, it is commonly thought that Ibutamoren Mesylate can assist with sleep quality since it stimulates production in Growth Hormone.

A study showed that in both younger and elderly subjects, ibutamoren improved sleep quality and REM (rapid eye movement) sleep duration.

Apart from scientific studies, there have been many reports of subjective improvements in sleep quality.

Combats Aging and May Increase Longevity: As seen with other hormones in the body, Growth Hormone naturally begins a steady decline once a certain age is hit. Individuals who are aging can benefit from taking MK 677 since Growth Hormone and IGF-1 will be increased in the body among its consumption. Aging individuals who take MK 677 can improve their overall hormone profiles as they give their declining GH levels (Growth Hormone levels) a boost.

In a study with 65 elderly men and women, daily ibutamoren increased GH and IGF-1 levels to those of healthy young adults without serious adverse effects.

In another study with 24 obese males, ibutamoren rejuvenated the growth hormone profile.

May Have Nootropic Effects: Since MK-677 shares a lot of similar qualities to Ghrelin and binds to its receptors, it is believed that MK 677 can have the same effects on the brain that Ghrelin has.

However, there are no studies that confirm whether or not MK 677 has direct nootropic effects on the brain. Scientists do have hope though that a couple of noticeable indirect methods may explain how MK 677 can be of assistance to cognitive function. Looking back at the previous section, one method that shows promise is Ibutamoren's ability to improve sleep quality by increasing REM sleep. Obtaining the proper amount of sleep each night is extremely important when trying to achieve adequate cognitive function. MK-677 can improve cognitive function by assisting individuals with the ability to get a good night's rest. The ability of MK-677 to stimulate IGF-1 production can also indirectly improve cognitive function based on IGF-1's role in cognitive function. One study indicated that IGF-1 positively affected participants' ability to perform well on cognitive tests. We know that sleep is essential for good cognitive function.

Beneficial in Treating Growth Hormone Deficiency: Ibutamoren can increase growth hormone, IGF-1, and IGFBP-3 levels in children with growth hormone deficiency. Furthermore, these effects are achieved without changing the concentrations of prolactin, glucose, triiodothyronine (T3), thyroxine (T4), thyrotropin, cortisol or insulin.

In severely GH-deficient men, ibutamoren increased IGF-1 and growth hormone, with no significant changes in cortisol, PRL, and thyroid hormone levels. However, insulin and glucose were increased.

Side effects:

Overall, MK 677 has not produced very many side effects for its users to be concerned about, but certain populations may have certain side effects to look out for. Individuals who are vulnerable to insulin sensitivity or who have Diabetes may be at risk when taking MK-677. Symptoms associated with these conditions could possibly be exacerbated by the use of MK 677. As with any other compound, correct dosing and usage of MK-677 is the key. In studies that looked at how MK-677 increases muscle mass, the dosage was key. Side effects of MK-677 are usually the result of a handful of two things: improper dosage and extended use.

Reported side effects of MK-677 are typically the result of unnaturally high levels of growth hormone in the body from taking too much too often which are:

- Increased appetite
- Lethargy
- Joint pain if you have previous medical conditions or elevated hormone levels
- Insulin resistance
- Possible increase in prolactin levels, which can be controlled

But when dosed properly, the side effects of MK-677 are minimal to none compared to the results you get from taking it properly. The results from using MK-677 are evident in just a couple of days and with proper dosing and stacking, include:

Conclusion:

It has shown to provide numerous health benefits for individuals with certain conditions. Those with low bone density, have trouble sleeping at night, and with catabolic conditions can all benefit greatly from the use of MK 677. The ability of the MK 677 secretagogue to effectively secrete Growth Hormone and IGF-1 proves to be a useful tool for many different populations. MK 677 has shown through numerous studies to benefit the elderly, those with obesity, have problems sleeping, have low bone density, and others. For these populations, MK 677 can be used as a helpful tool to combat issues that can be caused in large part due to a lack of Growth Hormone and IGF-1.

Tesamorelin

Gland Stimulated: Pituitary Gland

Injection

Tesamorelin is a growth hormone-releasing hormone (GHRH) analog that has been shown to increase growth hormone and IGF-1 levels. **Tesamorelin is currently the most effective GH releasing hormone on the market.** It is an injectable peptide that generates greater natural production of HGH (Human Growth Hormone). It binds and stimulates human GHRH receptors with similar potency as our own natural GHRH. It has not been shown to significantly affect other pituitary hormones in the body.

Gland Stimulated: Pituitary Gland

Benefits of Tesamorelin:

- Increases natural productions of HGH (human growth hormone)
- Increases IGF-1 (Insulin Growth Factor – 1) without altering glucose parameters
- Reduced triglycerides
- Reduced Visceral Adipose Tissue (VAT)
- Reduced Carotid Intima Media Size (cIMT)
- Improved cognition in adults over the age of 60.

Tesamorelin Research:

Clinical trials have shown that tesamorelin significantly reduces abdominal fat with fewer side effects than human growth hormone itself, although abdominal fat may return after the Tesamorelin is discontinued (depending upon the individual). Tesamorelin has been shown to reduce lipodystrophy in HIV-infected individuals as well as similarly reducing abdominal fat in NON-HIV-Infected individuals.

According to one clinical study, 10.9 percent of patients who were given Tesamorelin experienced reductions in deep belly fat. These patients suffered from HIV. Reductions in trunk fat, waist size, and waist-to-hip ratios were recorded during the study. However, limbs and abdominal SC fat levels remained the same. During treatment, insulin-like growth factor 1 was boosted. However, glucose parameters were not altered. This drug didn't trigger negative side effects in most patients. However, results were temporary, as patients who were switched to a placebo lost their improvements. The study lasted six months in total. Overall, visceral fat levels decreased by eighteen percent.

Sermorelin

Sermorelin was first developed in the 1970's. It is a peptide which contains a total of 29 amino acids whose primary function is to encourage the pituitary gland to naturally produce more [Human Growth Hormone](#) (HGH). Sermorelin is often combined with other peptides like GHRP-2 and GHRP-6 which are growth hormone releasing peptides (also known as growth-releasing factor). This combination, when administered via daily injections, will encourage your pituitary gland to secrete HGH at a much higher rate.

Sermorelin and HGH

In order to fully understand how Sermorelin works, it is important to understand how [HGH works](#) and what the HGH benefits are. HGH is secreted by our pituitary glands every night while we sleep. The primary function of HGH is to help control the reproduction and growth of our cells and organs. As we age, our body's natural human growth hormone output decreases after peaking in our mid 20's. By the time we are in our 40's, our HGH levels diminish by 40% of what it was at age 20 and as we continue to age, those HGH levels continue to decrease dramatically. In order to regain those youthful HGH levels, your pituitary glands need to be stimulated to begin production of HGH again. This can be done with Sermorelin. Sermorelin alone or combined with GHRP-2 and GHRP-6 is a safe and effective way to stimulate and increase your body's human growth hormone (HGH) production.

Sermorelin Therapy

Sermorelin therapy consists of daily injections of Sermorelin which stimulates the pituitary gland to produce increased natural secretion of human growth hormone or HGH.

The approved medical use for this prescription drug is to increase growth hormone levels in children who have growth hormone deficiency. The medical use of Sermorelin in adults with low levels of the human growth hormone is an unlabeled medical use of the drug to obtain the treatment benefits described on this page. Although not specifically approved for increasing growth hormone levels in adults, prescribing Sermorelin for adults who have growth hormone deficiency is legally permissible and within the discretion of the treating physician. Since Sermorelin acetate is approved as safe for use in children to increase their production of growth hormone, it is considered safe for use in increasing the natural production of growth hormone in adults deficient in growth hormone.

Benefits of Sermorelin

For a list of the benefits that come from healthy HGH levels, take a look at our [HGH Benefits](#) page. Common aging related issues such as low energy levels, low sex drive, poor stamina, increased fat levels, lack of skin elasticity, and poor mental function can be improved by Sermorelin and youthful HGH levels.