Muscle Building

CJC 1295

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.

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 it's 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.

IGF-1

The Insulin-like Growth Factor is one of the endocrine hormones that is produced in the liver. The release of this hormone increases in the presence of Human Growth Hormone. Numerous cells throughout the muscles of the human body are equipped with cell receptors that have a high affinity for Insulin-like Growth Factor. This makes this hormone one of the best growth hormones and a facilitator of general cell growth which it does by targeting different specific tissues and in more autocrine cell communication processes, it facilitates cell division.

Some Benefits of the Insulin-like Growth Factor 1 and some of the reasons why it has substantial advantages include:

- It facilitates protein synthesis in the body.
- It regulates the storage of fat and channels it to be used for the production of energy. This results in a noticeable fat loss.
- Promotes positive effects on metabolism; increasing lean body mass and decreases fat
- It increases the regenerative properties of the body's nerve tissues.
- Upregulates anti-oxidant benefit and ligament strength
- It boosts hyperplasia in muscle cells, which leads to fuller muscle tissues.
- Optimal IGF-1 and growth hormone levels are crucial to bone development during childhood and throughout adult life.

Why Should You Use IGF-1?

In simple terms, the weight gain that you will experience from the use of IGF-1 is not due to water weight. All your weight gain will be caused by actual muscle growth which is a long-term effect. Compared to steroids which are overly known for putting on water weight and often leading to adverse side effects, you will not get 10lbs from Insulin-like Growth Factors, but you will acquire solid muscle gain after every one or two weeks which will be composed of actual heavy muscle.

The most important feature of IGF-1 is its ability to cause hyperplasia in the human body. The body of a person who is on steroids goes through hypertrophy, this means that they will only be increasing the size of the existing cells in their muscles. On the other hand, IGF-1 leads to hyperplasia which purports the growth and development of new cells in the muscles. Generally, you will accomplish much more in terms of muscle density and size at a normal genetic level.

Variants of IGF-1

There are two groups of IGF variants. These are IGF-1 LR3 and DES IGF-1 (which can also be presented as IGF-1 DES). The half-life of IGF-1 is very short, and because of this, it is quickly destroyed by the body. This is the main reason why IGF-1 was modified to produce an amino acid analog IGF-1 LR3 which has a longer half-life. The other variant of IGF-1, DES IGF-1 is a truncated version of IGF-1 which is up to ten times more potent than IGF-1. Both of these IGF-1 variants are similar to IGF-1 but they have different modes of action. This feature allows them to function together in different and specific ways.

IGF-1 LR3

The half-life of IGF-1 LR3 is about 20 – 30 hours. It is more potent than the regular base IGF-1. Because it can be sustained in the body for more than a day, it efficiently binds to cell receptors in the muscle cells and activates cell communication which subsequently improves the growth rate of muscles all day long.

IGF-1 LR3 inhibits the movement of glucose into the body cells which facilitates fat burning and the use of fat in the body for the production of energy. Its long life of close to a day has made it a preferred variant by a majority of patients and physicians because site injections are never necessary. IGF-1 LR3 cycles the whole body and binds to the receptors on muscle cells then acts for about a day, so a daily administration of this dosage is strongly supported.

IGF-1 DES

DES IGF-1 is a shorter version of the base IGF-1 chain. This variant of IGF-1 is five times more potent than the regular base IGF-1. It has a half-life of about twenty to thirty minutes which indicates that it is a very delicate chain. The administration of DES IGF-1 should only be done exactly where you want to experience muscle growth. DES IGF-1 has a higher ability to stimulate hyperplasia in the muscles than IGF-1 LR3. In conclusion, this variant works best when used for site injections and not overall muscle growth.

In addition to these functions, DES IGF-1 is known to bind to receptors, in cells, that have been deformed by lactic acid. Lactic acid is produced in elevated amounts during training and vigorous activities. This characteristic of DES IGF-1 allows it to attach to mutated receptors which signal tissue growth even during training activities. DES can be used more frequently and for a longer time than IGF-1 LR3.

IGF-1 Vs HGH

When we check on facts, the growth hormone is actually a precursor to the IGF-1, but why choose IGF-1 over the Growth Hormones? Growth Hormones do not cause direct muscle growth but instead, they facilitate the growth of muscles by signaling the release of the IGF-1. Human Growth Hormone can prove to be very difficult to qualify for. In order to have it be prescribed to you by a physician, you have to be diagnosed with Adult Growth Hormone Deficiency Syndrome. You must take and fail a Growth Hormone Stimulation Test which then indicates that your body is not producing growth hormone in response to a stimulus. This makes IGF-1 and its variants a much more viable solution for an athlete, someone losing to drop body fat or even those looking to get back into shape.

Side Effects of IGF-1

It should be well noted that the continuous administration of IGF-1 in high doses has been confirmed to cause hypoglycemia, but in this case, it is not as severe as that caused by insulin. It is also stipulated but highly debated that IGF-1 can increase the size of a tumor in cancer patients. Even though this factor might be true in patients with existing cancer cases, everyone should be aware that IGF-1 does not cause cancer. In fact, the human body requires IGF-1 to regulate heart functions, brain cell stimulation and to improve the functioning of the nervous system.

People with low IGF-1 levels generally have a lower protein count and a smaller lean body mass. This can be very unhealthy. You should also know that whenever you have a headache, you don't need a whole bottle of painkillers. Equally, whenever you are on this medication, you should make sure that you administer it in the correct way so that you can avoid some ignorant mistakes and adverse side effects.

MGF

Mechano Growth Factor, or MGF, is a peptide derived from a different sequence of insulin-like growth factor-1 (IGF-1), which plays a large role in childhood development and continues to have anabolic effects throughout adulthood. MGF (Mechano Growth Factor) is released in response to muscles being stretched and exercised. This is particularly abundant when a muscle has been exposed to high-intensity weight training.

MGF has the ability to encourage repair and growth of wasted tissue through the activation of muscle stem cells, thereby increasing the synthesis of proteins necessary for tissue growth. This peptide is ideal for anyone suffering from muscle loss, either due to old age or a particular condition.

Benefits of MGF:

- Activates muscle satellite stem cells
- Triggers fusion of 'satellite' stems cells to the muscle fibers.
- Satellite cells provide additional nuclei required for repair
- Essential for recovery, repair, and growth of new cells

How MGF works:

IGF-I is spliced towards MGF which initiates hypertrophy and repair of local muscle damage. MGF is expressed by mechanically overloaded muscle and is involved in tissue repair and adaptation. It is expressed as a pulse following muscle damage and is involved in the activation of muscle satellite (stem) cells. These donate nuclei to the muscle fibers that are required for repair and for the hypertrophy process, which may have similar regulatory mechanisms (Goldspink, G., 2005 p22). MGF is essential for repair and therefore growth of new cells, similar to IGF-1. If MGF is not PEGylated, the half-life is several minutes, therefore, PEGylated MGF must be considered during the compounding process to ensure an appropriate half-life, thereby increasing the duration of action.

SARMs LGD 4033

SARMs were discovered in the late 1990's.They may have an application in treatments of various diseases, including muscle wasting, cancer cachexia, breast cancer, osteoporosis, andropause and sarcopenia. The androgen receptor (AR) is a member of the steroid hormone receptor family that plays important roles in the physiology and pathology of various tissues. AR ligands, which include circulating testosterone and dihydrotestosterone bind to activate the AR to cause cellular signaling.

SARMs provide the benefits of traditional anabolic/androgenic steroids such as testosterone (including increased muscle mass, fat loss, and bone density) while having a lower tendency to produce the unwanted side effects of steroids (aromatization / increased DHT). By acting/stimulating on the androgen receptor, SARMs can provide a similar therapeutic outcome to androgen therapy without any increase in androgen levels. SARMs have the potential to take the place of the androgens, and therefore exert many of the same positive effects on muscle tissue as anabolic steroids like testosterone.

Benefits of SARMs:

- Provides benefits of anabolic/androgenic steroids such as testosterone
- Increased fat loss
- Increased lean muscle mass
- Increased bone density
- Fewer side effects compared to steroids, including prostate and cardiovascular outcomes
- Not liver toxic like other oral steroids
- Anabolic effect noted to be similar to testosterone
- Used for rehab of injuries, particularly bone and tendon related injuries

There are two SARMs available for prescription. Our pharmacy is one of the only facilities in the world equipped with an HPLC and mass spectrometer that allows them to complete potency testing in house and verify the authenticity and assay of everything that they make. All of their raw ingredients are accompanied with certificates of analysis. They are all quarantined, tested and must achieve an assay greater than 98% prior to use.

Ligandrol (LGD 4033)

Ligandrol is a SARM discovered by Ligand Pharmaceuticals. It is administered orally and is not liver toxic like most oral steroids are. It binds to the androgen receptor with an extremely high affinity and selectivity, and once it does this it exerts exceptional anabolic effects in muscle and bone. LGD-4033 has an anabolic/androgenic ratio of around 10:1 ratio. For the sake of comparison, the same ratio for pure testosterone is 1:1. That means the anabolic potential is 10 times stronger than testosterone.

In studies Ligandrol has shown a dose-dependent suppression of total testosterone from baseline to 21 days. Ligandrol did not always result in fat loss in the studies, it mainly promoted muscle growth and a dose related increase in lean body mass. From one study the increase in strength

measured by stair climbing speed and power also showed improvement. LGD-4033 displayed an immediate effect on hormones in the body from the time it was taken. The research showed gains in lean muscle mass within the 21 days of the study. Adverse effects were not noted. LGD-4033 displayed a prolonged elimination half- life of 24-36 hours. Upon discontinuation of LGD- 4033 the hormone levels returned to baseline by day 56.

LGD-4033 is mostly used for size and strength gains/bulking. It has an unmatched ability to build muscle mass relative to other SARMs. Milligram for milligram, it even outperforms many of the most potent anabolic androgenic steroids.

Ostarine (MK-2866) (Enobosarm)

Ostarine is the most well-known SARM, and it is also the most research backed. This selective androgen receptor modulator (SARM) has been studied and proven to improve lean body mass and physical function. It also increases tendon strength, ligament health, bone density and encourages collagen turn-over. It is one of the least suppressive and minimally androgenic, making it a prime candidate for therapeutic purposes moving forward, and assisting in muscle retention/growth without the ramifications of severe androgen related side effects.

Studies involving Ostarine have been positive. Merck presented the results of a phase 2 clinical trial evaluating Ostarine (MK-2866) in patients with cancer induced muscle loss (cancer cachexia) at the Endocrine Society Annual Meeting in Washington in 2009. 159 cancer patients were randomized and received placebo, 1mg or 3mg Ostarine daily for 16 weeks. Ostarine treatment led to significant increases in lean body mass (LBM) and improvement in muscle performance measured by stair climbing in patients. Another study showed significant improvement in the ability of healthy, elderly men and women to climb stairs in a phase2A study. Elderly men and women improved climbing stairs in speed and power, accompanied by significant increases in LBM and decreases in fat mass after only 86 days. Enobasarm is the most well characterized clinically and has consistently demonstrated increases in LBM and better physical function across several populations, along with a lower hazard ratio for survival in cancer patients.

Ostarine (MK-2866) is mainly used for cutting (dropping body fat) with muscle and strength preservation but also for re-composition (gaining muscle and losing body fat simultaneously). Muscle preservation is the goal while cutting, not building muscle and strength. Often times when we are at a calorie deficit for weight loss we also lose some muscle mass. Ostarine helps prevent this from happening while at the same time helping prevent water retention. During re-composition, calories should be adequate for weight maintenance, not weight loss.

Differences and side effects between LGD-4033 And Ostarine:

- Ostarine is a SARM that was developed for treating both muscle-wasting and osteoporosis. On the other hand, LGD-4033 was developed to treat muscle mass because of different health related complications.
- Ostarine is minimal suppressive and LGD-4033 is comparatively more suppressive.
- Ostarine has a half-life of 20-24 hours while LGD-4033 has a half-life of 24-26 hours.

- Ostarine use can lead to a slight hike in the levels of estrogen while Ligandrol use can cause a slight reduction in the levels of Sex hormone-binding globulin and testosterone.
- LGD-4033 is more suited for users who have already dabbed into a few cycles of SARMs. Ostarine, on the other hand, is ideal for both beginners as well as experienced users.
- LGD-4033 includes ingredients for the processes of muscle recovery while MK-2866 treats muscle loss as well as osteoporosis.
- MK-2866 is ideal for cutting cycles and LGD-4033 is best suited for bulking cycles.
- Both Ostraine (MK-2866) and Ligandrol (LGD-4033) are remarkable for their own benefits and the final selection between the two entirely depends on the specific requirements of users.