Current Research Findings Regarding CJC-1295

CJC1295 is a 30-amino acid peptide. It is tetrasubstitued in its structure; this means that it is a functional group of atoms where four hydrogen atoms have been swapped by another atom or group. Its functionality is marked by its capacity to bioconjugate with the globular protein serum albumin. What this means is, it has the capacity to pair up two biomolecules together in a chemical bond. (Hermanson)

History and Functionality of CJC1295

The peptide CJC1295 was created in Canada by the Montreal-based medical biotechnology company ConjuChem for the purposes of honing in on biotechnology improvements. (Jette, et al) The research that has been conducted has been in conjunction with the peptide's ability to stimulate chemicals in animal test subjects, as well as analyzing and understanding any and all potential health benefits that relate to such matters of stimulation. The primary focus of these types of analyses are built around a desire to find a stabilized extension of the peptide's extremely brief half-life. (Jette, et al)

The studies that are built around the half-life are focused on the active agent that enables CJC-1295 to activate and engage in its functionality. This agent can be located within a peptide chain that is known as GHRH1-29, and it is part of the internal regulating system that is found within the growth hormone axis of animal test subjects. This self-regulation process, which is sometimes referred to as a negative feedback loop, is what in essence controls the amount of growth hormone that is released within an animal test subject for the purposes of maintaining a proper level of homeostasis. This particular negative feedback loop leads the peptide chain to experience a very quick half-life; one that lasts less than seven minutes (CJC1295 Info). The swift nature of the peptide chain's half-life can be traced back to dipeptidyl amino peptidase IV; an enzyme that is referred to in shorthand as DPP-IV. This enzyme is antigenic, meaning that it stimulates the production of an antibody. It manifests itself on the surface of most cell types, and is typically associated with manners of regulating immunity, signal transduction, and apoptosis, otherwise known as programmed cell death. It has an elevated affinity to the amino acids Pro and Ala, and this attraction results in the

creation of the inactive peptide form GHRH3-29. (Jette, et al)

In a nutshell, CJC1295's primary functionality is to quell the effects of DPP-IV and therefore extend the half-life and the bioavailability of GHRH1-29. The peptide accomplishes this through the promotion of bonds which are stable and covalent in nature. In other words, the peptide is able to form selective, steady bonds with circulating albumin. This process prevents the degradation of DPP-IV that would normally occur. (Jette, et al)

Additionally, studies conducted on animal test subjects have determined that CJC1295 can also stimulate the secretion of IGF-1.

CJC1295 is also responsible for the following processes:

- The reduction of asparagines rearrangement or amide hydrolysis to asparatic acid
- The prohibition of methionine oxidation
- The enhancement of bioactivity

Research conducted on animal test subjects has shown that the introduction of CJC1295 has had a profound effect on the half-life of the active agent, as it has been determined that its length can be increased for more than seven days.

The functionality behind CJC1295 has enabled the growth hormone to remain active for a substantially greater period of time within its animal test subjects. By extension, this longer half-life has allowed for enhancements within certain aspects of the animals' endocrine-based functions. Research on animal test subjects has also lead to the theorization of several other potential benefits tied to the peptide. These range from the ability to induce more stabilized instances of deep sleep to a higher rate of immune system efficiency.

CJC1295 and Bioconjugation

The reason why CJC1295 possesses the ability to lengthen the half-life within the active agent has to do with the scientific process known as bioconjugation. This technology, which is relatively new in nature, is defined by its ability to take a reactive group and bond it to a

peptide (Aslam and Dent). This attachment causes a reaction with a nucleophilic unit; a typically partially molecule that is found within the bloodstream of an animal test subject. This reaction in turn causes a more stable bond to occur. This specific peptide has an especially high attraction to albumin, a globular protein that is soluble in water. This affinity prohibits natural degradation, which in turn increases the peptide's half-life (Hermanson). Additionally, clinical research performed on animal test subjects has thus far shown that there have been no signs of DPP-IV degradation present when CJC-1295 was introduced. (Gonzalez, US Peptide Articles)

Current Research Findings Regarding CJC1295

Current research on animal test subjects relating to CJC1295 has focused on finding potential benefits that can result in the extension of the peptide's extremely brief half-life. These levels of research have derived several positive theoretical scenarios which have potential to be beneficial in the future.

Another theoretical benefit of CJC1295 is the peptide's potential use as a conduit for burning fat. Clinical research performed on animal test subjects has determined that the peptide promotes lipolysis, which is the process in which lipid molecules are broken down. This process causes the reduction of adipose tissue, otherwise known as body fat. CJC1295's functionality has been shown to enable the process of lipoysis to work for longer periods of time, thus creating a longer window for adipose tissue to be lessened. (Alley)

Other benefits relating to CJC1295 that have been theorized through research on animal test subjects include:

- Increased bone density – Studies in animal test subjects have concluded that usage of CJC-1295 over a specific period of time can enhance a bone's mineral matter per square centimeter. Thus, bones are made to be stronger and less susceptible to bone-related injuries like fractures and breaks.

- Enhanced immune system – The increase of proteins allows the animal test subjects' ability to ward off sickness to act with a greater sense of efficiency.

- Improved sleep – Research has determined that the peptide has allowed animal

subjects to better maintain a deep sleep.

- A boosting of protein synthesis. In essence, this process describes the process in which an animal test subject's body can generate new proteins, and it is a process that is typically balanced by the loss of cellular proteins. CJC-1295 is theorized to increase the production of this process, which in turn translates to a higher level of proteins that are created.

While studies have derived a host of theoretical benefits in relation to CJC1295, that there have also been several negative side effects that have been theorized. The most common side effects based on research conducted on animal test subjects include:

- Fatigue
- Water retention
- Temporary numbness of the extremities
- Skin irritation
- Headache
- Diarrhea

According to the research, it has been determined that these side effects are considered mild in nature, especially in relation to the theoretical benefits that have come about through various studies.

For Research Only

Even though research based on findings used in conjunction with animal test subjects has generally been to determined to have yielded several theoretical positive benefits and a few minor negative side effects, it should be noted that there still exists variances pertaining to how CJC1295 behaves in specific settings or within different cell groups. As a result, it should be emphasized that further research is still needed in order to fully determine the

effects and capabilities of the peptide. Therefore, it should be noted that any use of the peptide should currently be kept within the confines of a controlled environment, such as a laboratory or medical research facility.

Sources

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