The Functionality of GnRH and Biological Research

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GnRH, also known as Gonadotrophin-releasing hormone, is a trophic peptide hormone responsible for the discharge of follicle-stimulating hormone (also known as FSH) and luteinizing hormone (also known as LH) from the anterior pituitary. Because of its connection to luteinizing hormone, it is sometimes known as Luteinizing-hormone-releasing hormone (LHRH) or luliberin.

Functionality of GnRH

GnRH is produced within the hypothalamus, which is the portion of the brain primarily responsible for the linking an animal test subject’s nervous system with its endocrine system through the pituitary gland. Its primary function is to regulate the secretion of hormones that are linked to the development, growth, pubertal maturation, and reproductive processes found within an animal test subject’s body. It is produced by neurons and secreted in a pulsatile fashion into the cardiovascular system. The frequency and the amplitude of these pulses determine the secretions of follicle stimulating hormone and luteinizing hormone from the pituitary gland, with lower frequencies triggering the former secretion and higher frequencies triggering the latter secretion.

Scientific research on animal test subjects has determined that GnRH assists in inhibiting the rapid degradation of the hormones that are associated with the peptide. These studies also yielded greater and longer surges of the hormone’s release amongst the subjects during the follicular stage. The surges were also marked with a larger pulse frequency. This, in turn, enables for a more regulated and predictable secretion of hormones related to the presence of GnRH.

GnRH and Biological Research

Scientific study based on animal test subjects relating to the use of GnRH has focused on theories in how its use may someday be instrumental in the use of several conditions. Some of these conditions include:

• *The treatment of hormonally sensitive cancers:* Scientific study based on animal test subjects has determined that GnRH may theoretically play a key role in the controlling or staving off various cancers that are associated with hormonal sensitivity. These types of cancers include breast cancer and prostate cancer.

• *The treatment for precocious puberty:* Scientific study based on animal test subjects has led to the theory that GnRH’s regulatory properties in relating to the secretion of hormones can cause a delay in the onset of puberty amongst subjects who may experience this particular kind of growth spurt too soon.

• *Improved management of female disorders dependent on the production of estrogen:* Scientific study based on animal test subjects has determined that GnRH and its regulatory properties can play a substantial role in managing conditions that are caused because of irregularities relating to the production of estrogen. These
conditions include endometriosis, uterine fibroids, adenomyosis, and menorrhagia.

- **Treatment of severe cases of congenital adrenal hyperplasia:** This type of treatment can relate to several autosomal recessive diseases that result from the mutation of genes for enzymes mediating the biochemical steps of production of cortisol from cholesterol by the adrenal glands.

Scientific research conducted on animal test subjects has also determined that the introduction to GnRH has led to the temporary suppression of fertility in male dogs. It has also led to the induction of ovulation in mares.

**The Side Effects of GnRH**

Scientific research based on animal test subjects has yielded several theories relating to potential negative side effects that may be connected to the peptide. These theoretical negative side effects include:

- **Hypoestrogenism** – Because of the link that GnRH has with the secretion of FSH and LH hormones, it is theorized through research on animal test subjects that a lapse in its regulatory properties may lead to issues related to a lack of estrogen in the system. These conditions may include headaches, hot flashes, and osteoporosis. It should be noted that in these cases, it is theorized that estrogen could be given back via an "add-back regimen" to combat the adverse effects.

- **Increased risk of cardio trauma** – Scientific research conducted on animal test subject has led to the theory that the usage of GnRH in conjunction with fighting specific types of hormonally sensitive cancers could increase the risk of heart problems by as much as 30%.

**For Scientific Use Only**

While there have been plenty of information generated in relation to GnRH’s operations, mechanics, theoretical benefits, and theoretical negative side effects, it should be noted that any and all research and findings related to the peptide is still solely derived from scientific study based on animal test subjects. Because it is is still in the research phase, any research or usage done with the peptide should solely be contained to the restrictions of a strictly controlled environment such as a medical research facility or a laboratory.