**The function of hypothalamic hormones**

The hypothalamus is in the central part of the brain below the thalamus. It has a vital role in the human body. One of its main roles is to maintain homeostasis (for example body temperature, hunger, thirst, sleep etc). The hypothalamus also controls hormone production.
Below the hypothalamus, we can find the hypophysis (pituitary gland), to which it is connected by a stalk. The hypothalamus-hypophysis system acts as a link between the nervous and the endocrine system to form the neuroendocrine system.
We differentiate two sets of nerve cells in the hypothalamus. The first one produces several inhibiting and releasing hormones, which are later carried to the anterior lobe of the hypophysis, via a network of blood vessels. The other set sends the hormones it produced down to the posterior lobe, through the pituitary stalk.

The hypophysis is also called the “master gland”, since it controls the hormone production of other endocrine glands. It has two lobes. The anterior lobe is built up of glandular tissue that secretes hormones and has a rich blood supply. The posterior lobe consists of nerve tissue and it does not produce hormones. It only stores hormones which were produced in the large neurosecretory cells of the hypothalamus, transported down their axons.

Neurosecretory cells of the hypothalamus secrete various releasing and inhibiting factors that are carried by blood through the stalk to the anterior lobe. (Some examples for releasing and inhibiting factors: growth hormone ↔ somatostatin, prolactin ↔ dopamine). Inhibiting factors are sent to the pituitary when too much of a hormone builds up in the bloodstream. If the amount of a hormone drops lower than a certain level in the blood, the hypothalamus sends more releasing factors to the hypophysis. The basis of this type of regulation is negative feedback, that keeps hormones in the blood on the required levels.
The *growth hormone,* produced in the anterior lobe*,* promotes the growth of the skeleton and muscles. It stimulates the breakdown of lipids for energy release, controls protein synthesis and increases glucose level in blood. Its hypersecretion in childhood results in gigantism, on the other hand, its hyposecretion causes hypophyseal dwarfism.
The anterior lobe also produces many tropic hormones that control other glands. *Thyrotropic hormone* stimulates the production of thyroxin by the thyroid gland. Thyroxin regulates metabolism, energy levels, and developmental growth. *Corticotropin* stimulates the adrenal cortex that produces corticoids. (eg. mineralocorticoids, glucocorticoids and sex hormones) The *gonadotropic hormone* stimulates the activities of both male and female gonads. (eg. follicle-stimulating hormone, luteinizing hormone). *Prolactin* is a hormone that controls milk secretion after giving birth.

There are two hormones, stores in the posterior lobe of the hypophysis. *Vasopressin* stimulates water reabsorption in the kidney tubules, so it reduces the quantity of water lost from the kidneys in the form of urine. Its hyposecretion causes the continuous elimination of urine that results in dehydration. *Oxytocin* stimulates smooth muscle contraction in the uterus, so it’s important in child delivery in pregnant women. It also stimulates milk secretion and its elimination by mammary glands. It also has a role in moderating body temperature and regulating sleep cycles.

<https://www.medicalnewstoday.com/articles/312628.php>

<https://www.yourhormones.info/glands/hypothalamus/>

<https://users.itk.ppke.hu/neurobiologia/2019-2020_SEMESTER_1/LECTURES/1.%20LECTUREE%20PDFs/Neurob_14.pdf>

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