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THE PITUITARY GLAND

The pituitary is a pea-sized gland that is housed within a bony structure (sella turcica) at the base of the brain. The sella turcica protects the pituitary but allows very little room for expansion. The pituitary controls the function of most other endocrine glands and is therefore sometimes called the master gland. The pituitary is controlled in large part by the hypothalamus, a region of the brain that lies just above the pituitary. By detecting the levels of hormones produced by glands under the pituitary's control (target glands), the hypothalamus or the pituitary can determine how much stimulation the target glands need.

**The pituitary has two distinct parts**:

A. the anterior and

B. the posterior lobe.

 Each of the two lobes of the pituitary gland contains different types of cells and produces different types of hormones. The posterior lobe produces two hormones, vasopressin and oxytocin.

**Hormones produced by the pituitary gland**

1. Adrenocorticotrophic hormone (ACTH)

2. Thyroid-stimulating hormone (TSH)

3. Luteinizing hormone (LH)

4. Follicle-stimulating hormone (FSH)

5. Prolactin (PRL)

6. Growth hormone (GH)

7. Melanocyte-stimulating hormone (MSH)

1. **Anterior lobe hormones**

The anterior lobe of the pituitary produces and releases (secretes) six main hormones:

**1.Growth hormone**, which regulates growth and physical development and has important effects on body shape by stimulating muscle formation and reducing fat tissue

**2. Thyroid**-stimulating hormone, which stimulates the thyroid gland to produce thyroid hormones

**3. Adrenocorticotropic** hormone (ACTH), also called corticotrophin, which stimulates the adrenal glands to produce cortisol and other hormones

**4. Follicle**-stimulating hormone and luteinizing hormone (the gonadotropins), which stimulate the testes to produce sperm, the ovaries to produce eggs, and the sex organs to produce sex hormones (testosterone and estrogen)

**5. Prolactin**, which stimulates the mammary glands of the breasts to produce milk

**6. The anterior** lobe also produces several other hormones, including one that causes the skin to darken (beta-melanocyte–stimulating hormone) and ones that inhibit pain sensations (enkephalins and endorphins) and help control the immune system (endorphins).

**B. Posterior lobe hormones**

The posterior lobe of the pituitary produces only two hormones:

1. Vasopressin

2. Oxytocin

**1. Vasopressin** (also called antidiuretic hormone) regulates the amount of water excreted by the kidneys and is very important in maintaining water balance in the body.

**2. Oxytocin** causes the uterus to contract during childbirth and immediately after delivery to prevent excessive bleeding. Oxytocin also stimulates contractions of the milk ducts in the breast, which move milk to the nipple in lactating women. Oxytocin has some additional roles in both men and women.

**Pituitary gland malfunction**

The pituitary gland can malfunction in several ways, usually as a result of developing a noncancerous tumor. The tumor may overproduce one or more pituitary hormones, or the tumor may press on the normal pituitary cells, causing underproduction of one or more pituitary hormones. The tumor may also cause enlargement of the pituitary gland, with or without disturbing hormone production. Sometimes there is overproduction of one hormone by a pituitary tumor and underproduction of another at the same time due to pressure.

 Sometimes excess cerebrospinal fluid can fill the space around the pituitary gland and compress it (resulting in empty sella syndrome). The pressure may cause the pituitary to overproduce or under produce hormones.

**Disorders that result from overproduction of pituitary hormones include**

* Acromegaly or gigantism: Growth hormone
* Cushing disease: Adrenocorticotropic hormone ( ACTH),
* Galactorrhea (the secretion of breast milk by men or by women when not pregnant): Prolactin
* Erectile dysfunction: Prolactin

**Disorders that result from underproduction of pituitary hormones include**

* Central diabetes insipidus: Vasopressin
* Hypopituitarism: Multiple hormones