What Is the Pituitary Gland?

Worksheet

The pituitary gland is the body's 'master gland': its anterior lobe makes and releases six hormones under hypothalamic control, while its posterior lobe stores and releases two hormones made by the hypothalamus itself.

Questions

1. Which hormone is released by the posterior pituitary?

A) TSH
B) Oxytocin
C) ACTH
D) Prolactin

2. The anterior pituitary is connected to the hypothalamus by

A) Nerve axons
B) The hypophyseal portal blood vessels
C) The optic nerve
D) The spinal cord

3. Which of these is NOT an anterior pituitary hormone?

A) Growth hormone (GH)
B) Thyroid-stimulating hormone (TSH)
C) Antidiuretic hormone (ADH)
D) Follicle-stimulating hormone (FSH)

4. Tissue-wise, the posterior pituitary is best described as

A) Glandular epithelial tissue
B) Neural tissue (axon terminals)
C) Cartilage
D) Connective tissue only

5. A patient has low blood volume and feels very thirsty. Which pituitary hormone helps retain water, and where is it released from?

6. A child has slow growth and a doctor suspects a growth hormone deficiency. Which pituitary lobe and cell type are likely affected?

7. During breastfeeding, a baby suckling triggers milk release within seconds. Which hormone and pathway explain this quick reflex?

8. Define: What are the two lobes of the pituitary gland?

9. Define: How many hormones does the anterior pituitary make?

10. Define: What does the posterior pituitary release?

Answer Key

1. B) Oxytocin - Oxytocin (and ADH) are made in the hypothalamus and released from the posterior pituitary.

2. B) The hypophyseal portal blood vessels - A portal blood vessel network carries hypothalamic releasing hormones to the anterior lobe.

3. C) Antidiuretic hormone (ADH) - ADH is a posterior pituitary hormone, made by the hypothalamus.

4. B) Neural tissue (axon terminals) - It is made of hypothalamic axon terminals that store and release hormones.

5. Low blood volume is sensed by hypothalamic osmoreceptors Hypothalamus produces ADH (antidiuretic hormone) ADH travels down the axon to the posterior pituitary Posterior pituitary releases ADH into the blood, causing the kidneys to reabsorb water

6. Growth hormone (GH) is made and secreted by the anterior pituitary Somatotroph cells in the anterior lobe produce GH GH release depends on hypothalamic GHRH via the portal system If GHRH signaling or somatotrophs fail, GH output drops and growth slows

7. Suckling stimulates sensory nerves in the nipple The signal reaches the hypothalamus, triggering oxytocin release Oxytocin is stored in posterior pituitary axon terminals Posterior pituitary releases oxytocin instantly into blood, contracting milk ducts (let-down reflex)

8. The anterior pituitary (adenohypophysis) and the posterior pituitary (neurohypophysis).

9. Six: GH, TSH, ACTH, FSH, LH, and prolactin.

10. ADH (vasopressin) and oxytocin - both made by the hypothalamus, not the pituitary itself.