

Hormonal System | Topic Notes

- A **hormone** is a chemical messenger, produced by an endocrine gland, secreted directly into the bloodstream there it travels to a target tissue where it exerts a specific effect.
- An **endocrine** gland is a gland that secretes hormones directly into the bloodstream. (E.g. thyroid)
- An **exocrine** gland is a gland that secretes its product directly into a duct. (E.g. liver) (Testes, ovaries, and the pancreas are all both endocrine and exocrine)
- The **hypothalamus** (part of the brain that controls basic functions such as hunger thirst and body temperature) releases hormones that control the pituitary gland, therefore providing the link between the nervous and endocrine systems.
- The **pituitary gland** releases a range of hormones including:
 - **Thyroid stimulating hormone (TSH)** controls the release of thyroxine from the thyroid gland.
 - **Luteinising hormone (LH)** controls ovulation in females and testosterone production in males.
 - **Follicle-stimulating hormone (FSH)** controls the production of sperm in the testes and eggs in the ovaries.
 - **Growth hormone (GH)** stimulates growth of the body by causing every tissue in the body to increase in size.
 - **Anti-diuretic hormone (ADH)** controls Osmoregulation in the kidneys.
 - **Prolactin** stimulates the formation of milk in the mammary glands.
 - **Oxytocin** stimulates contractions of the uterus during childbirth.
- **TRH** from the **hypothalamus** causes the release of **TSH** from the **pituitary** which controls **Thyroxine** production by the **thyroid gland** which controls the rate of metabolism. Symptoms of **hypothyroidism** (often caused by a lack of iodine) include weight gain, fatigue, hair loss and very slow heart rate. Iodine tablets or thyroxine tablets may be needed. Symptoms of **hyperthyroidism** include exophthalmia (protrusion of the eyeballs), irritability, insomnia, fast heart rate and weight loss. Anti-thyroid drugs or radioactive iodine treatment may be necessary.
- **Parathyroid glands** produce **parathormone** which increases calcium levels.
- **Islets of langerhans** in the pancreas produce **insulin** which stimulates body cells to take in glc.

