

Endocrine Basics

☞ Endocrine glands/organs aren't physically connected

Functions

☞ Controls growth, metabolism, sexual activity, mental functions & emotions

Hormones

☞ Causes an action

☞ Endocrine gland → bloodstream → target organ/gland

☞ Acts as a lock & key on specific organs

Glands

Endocrine Glands

☞ Ductless

☞ Hormones directly into bloodstream

Exocrine Glands

☞ Has ducts connecting to another structure

☞ Hormones directly between structures

Thyroid Gland

☞ Makes T₃ & T₄ hormones

T₃ & T₄ (Thyronine) Hormones

☞ Controls metabolism

☞ Influences growth, liver, brain & heart function

☞ Makes O₂ more available in mitochondria → ATP increase

Calcitonin

☞ Reduces Ca⁺ levels in blood

Parathyroid Gland

☞ Regulates Ca⁺ levels in blood

Calcium Roles

☞ Strengthens bones

☞ Muscle contractions (Ca⁺ in & out)

☞ Neural communication

Parathyroid Hormone

☞ Increases Ca⁺ levels in blood

Pancreas

Functions

Endocrine: Regulates glucose levels
Exocrine: Digestive related

GABI Of The Islet Of Langerhan

☞ Glucagon Alpha Beta Insulin

Glucagon

☞ Increases glucose levels

Insulin

☞ Decreases glucose levels

Glucose-Increasing Methods

☞ Glycogen release

☞ **Gluconeogenesis:** Muscle turned into sugar

Hypothalamus

☞ Control centre for homeostasis & pituitary gland

☞ Releases 2 hormone types for negative feedback

Releasing Hormones

☞ For low hormone levels

☞ Stimulates hormone release

Release-Inhibiting Hormones

☞ For high hormone levels

☞ Stops hormone release

Negative Feedback

Hormone Levels...

Too High

1. Releasing hormones (hypothalamus)
2. Stimulating hormones (pituitary gland)
3. Hormones made

Too Low

1. Release-inhibiting hormones (hypothalamus)
2. Inhibiting hormones (pituitary gland)
3. Hormone production stopped

Pineal Gland

☞ Controls sleep-wake cycle

☞ Releases melatonin

Melatonin

☞ Induces sleepiness

Calcitonin Vs Parathyroid Hormone

Calcitonin

☞ Stimulates Ca⁺ excretion from intestines

☞ Stimulates Ca⁺ storage in bones

☞ Stimulates Ca⁺ excretion from blood to urine via kidneys

Parathyroid Hormone

☞ Stimulates Ca⁺ absorption from intestines

☞ Stimulates Ca⁺ removal from bones into blood

☞ Stimulates Ca⁺ reabsorption in kidneys

Gonads

- ☞ Hormone-secreting organs/glands of reproductive system
- ☞ Includes testes & ovaries
- ☞ Releases sex hormones

Posterior (Back) Pituitary Gland

Antidiuretic Hormone (ADH)

- ☞ Stimulates water reabsorption in kidneys
- ☞ Results in less water urinated

Oxytocin

- ☞ Causes uterine contractions and breast milk release
- ☞ Stimulates love & attachment

Anterior (Front) Pituitary Gland

Prolactin

- ☞ Stimulates breast milk production

Adrenocorticotropic Hormone (ACTH)

- ☞ Stimulates adrenal cortex to release cortisol

Gonadotropins (FSH, LH)

- ☞ Stimulates sperm & ova production

Thyroid Stimulating Hormone (TSH)

- ☞ Stimulates thyroid glands to release thyroid hormones

Growth Hormone

- ☞ Stimulates muscle, bone & skin growth

Adrenal Gland

Cortisol

- ☞ Deals with chronic stress

Aldosterone

- ☞ Stimulates salt reabsorption
- ☞ Increases Na⁺ levels in blood

Adrenal Gland (cont)

Sex Hormones (Oestrogen, Testosterone)

- ☞ Stimulates secondary sex characteristics
- ☞ Overridden by gonadotropins

Blood Glucose Measurement

Clinical Indications

- ☞ Diabetes screening
- ☞ Checking blood glucose levels (BGL)
- ☞ Assessing treatment effectiveness in clients with diabetes

Normal BGL Range

- ☞ 3.5-8 mmol/L

Hyperglycaemia

- ☞ Abnormally high BGL

- ☞ BGL above 8 mmol/L

- ☞ Treatment: Insulin

Hypoglycaemia

- ☞ Abnormally low BGL

- ☞ BGL below 3.5 mmol/L

- ☞ Treatment: Sugar (fluid or gel)