

### 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 T<sub>3</sub> & T<sub>4</sub> hormones

### T<sub>3</sub> & T<sub>4</sub> (Thyronine) Hormones

☞ Controls metabolism

☞ Influences growth, liver, brain & heart function

☞ Makes O<sub>2</sub> more available in mitochondria → ATP increase

### Calcitonin

☞ Reduces Ca<sup>+</sup> levels in blood

### Parathyroid Gland

☞ Regulates Ca<sup>+</sup> levels in blood

### Calcium Roles

☞ Strengthens bones

☞ Muscle contractions (Ca<sup>+</sup> in & out)

☞ Neural communication

### Parathyroid Hormone

☞ Increases Ca<sup>+</sup> 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<sup>+</sup> excretion from intestines

☞ Stimulates Ca<sup>+</sup> storage in bones

☞ Stimulates Ca<sup>+</sup> excretion from blood to urine via kidneys

#### Parathyroid Hormone

☞ Stimulates Ca<sup>+</sup> absorption from intestines

☞ Stimulates Ca<sup>+</sup> removal from bones into blood

☞ Stimulates Ca<sup>+</sup> 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<sup>+</sup> 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)