OCR (B) Biology GCSE

Topic B5.3: How do hormones control responses in the human body?

Flashcards

What is the endocrine system?

What is the endocrine system?

A network of glands that produce and secrete hormones into the bloodstream

What is a hormone?

What is a hormone?

- A cell signalling molecule produced by endocrine glands and released into the blood
- Travels to a target organ and binds to receptors on effectors initiating a response

Compare the endocrine and nervous systems (4)

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Endocrine system	Nervous system
Uses hormones	Uses nerve impulses
Hormones travel in the bloodstream to the target organ	Nerve impulses travel via neurones to the effectors
Slower response	Faster response
Lasts until all hormones have broken down which takes a long amount of time	Lasts until the nerve impulse stops which takes a short amount of time

What is adrenaline? (higher)

What is adrenaline? (higher)

A hormone produced by the adrenal glands that is involved in the ‘fight or flight’ response (where the body prepares to confront danger or flee from it)

Where are the adrenal glands located? (higher)

Where are the adrenal glands located? (higher)

Above the kidneys

Describe how adrenaline increases heart rate (higher)

Describe how adrenaline increases heart rate (higher)

- Adrenaline is secreted by the adrenal glands
- Travels in the blood to the heart
- Binds to specific receptors on cells in the heart
- Causes heart muscle to contract more forcefully and frequently
- Heart rate increases

Describe how adrenaline increases respiration at muscle tissues (higher)

Describe how adrenaline increases respiration at muscle tissues (higher)

- Secreted by the adrenal glands
- Travels in the blood to the liver
- Binds to specific receptors on cells in the liver
- Causes liver to break down glycogen stores, releasing glucose into the bloodstream
- Increased heart rate causes greater blood flow to muscles
- Cells receive more oxygen and glucose for respiration

What is negative feedback? (higher)

What is negative feedback? (higher)

- A corrective mechanism that allows only small shifts from a set point
- It reverses a change in conditions e.g. if the concentration of a hormone increases, negative feedback systems work to reduce the concentration back to normal level

What is thyroxine? (higher)

What is thyroxine? (higher)

A hormone secreted by the thyroid gland that controls metabolic rate

What is metabolic rate? (higher)

What is metabolic rate? (higher)

The rate at which biochemical reactions occur in cells

Where is the thyroid gland located?

(higher)

Where is the thyroid gland located? (higher)

In the neck

What is thyroxine made up of? (higher)

What is thyroxine made up of? (higher)

Iodine and amino acids

Describe how thyroxine is released (higher)

Describe how thyroxine is released (higher)

- TSH is secreted from the pituitary gland
- TSH stimulates the release of thyroxine
- Thyroxine is released by the thyroid gland

What does TSH stand for? (higher)

What does TSH stand for? (higher)

Thyroid-stimulating hormone

Describe how a negative feedback system controls blood thyroxine levels (higher)

Describe how a negative feedback system controls blood thyroxine levels (higher)

- If blood thyroxine levels increase above a set point, TSH secretion is inhibited. Less thyroxine is produced by the thyroid gland. Thyroxine levels return to normal.
- If blood thyroxine levels decrease below a set point, TSH secretion is increased. More thyroxine is produced by the thyroid gland. Thyroxine levels return to normal.