The role of the pancreas

What looks like a tadpole, weighs about the same as a small apple and is about 15cm long... you guessed it, your pancreas!

Located behind the stomach, this relatively small organ, has a big job to do.

If you have diabetes, you may be aware that it has an important role in the development of this condition.

Let's take a closer look at its main functions to make sense of it all...

**Fast Facts**

- The pancreas on average weighs 100 g.
- The pancreas makes up to 2 litres of fluids each day that contain enzymes which break down nutrients in food (such as proteins and fats), and hormones such as insulin.
- The islets of Langerhans are tiny clusters of several different cells in the pancreas. Each "islet" contains 3,000 to 4,000 cells.
- There are approximately one million islets of Langerhans distributed throughout the pancreas of a healthy adult. They make up only 1% to 2% of the entire organ.
- Within each islet are several types of cells, which work together to regulate blood glucose. One cell type is the beta cell. The beta-cells make up about 70% of the islets with the alpha-cells making up 20% and the delta-cells making up 5% (the rest is connective tissue, nerve fibres and capillaries).
- Each islet is only about 0.2 mm wide!
- Type 1 diabetes occurs when the beta cells no longer make enough insulin because they have been attacked by the body's immune system.
- Type 2 diabetes occurs when the body becomes resistant to insulin usually due to a combination of genetic and lifestyle factors. The pancreas loses the ability to appropriately produce and release insulin over time.
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Beta cells

The beta cells store and release the hormone insulin whenever there is a rise in blood glucose levels from food or another hormone response (from exercise, stress, excitement, illness etc.).

Insulin will bring blood glucose levels down by helping to transport glucose from the blood stream into the cells in muscles and tissues to be used as energy. Beta cells can usually respond quickly to spikes in blood glucose levels at any time of the day by releasing some stored insulin while making more at the same time!

Alpha cells

The alpha cells release the hormone glucagon when blood glucose levels drop below the usual range (e.g. between meals and during exercise).

This hormone allows stored glucose (called glycogen) in the liver to be broken back down into glucose, which is then released into the blood stream. When alpha cells are doing their job, the beta cells switch off.
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**Delta cell**

The delta cells produce the hormone somatostin, which is responsible for blocking the action of other hormones such as insulin and glucagon.

**Your body always needs a certain amount of glucose in the blood stream – not too much or too little.**

Normally the alpha and beta cells in the islets of Langerhans talk frequently through out the day to keep blood glucose levels between the ranges of 4-8mmol/L at all times.

Unfortunately when diabetes occurs, this nice balancing act is disrupted, leading to high blood glucose levels.

**Read the original article**

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