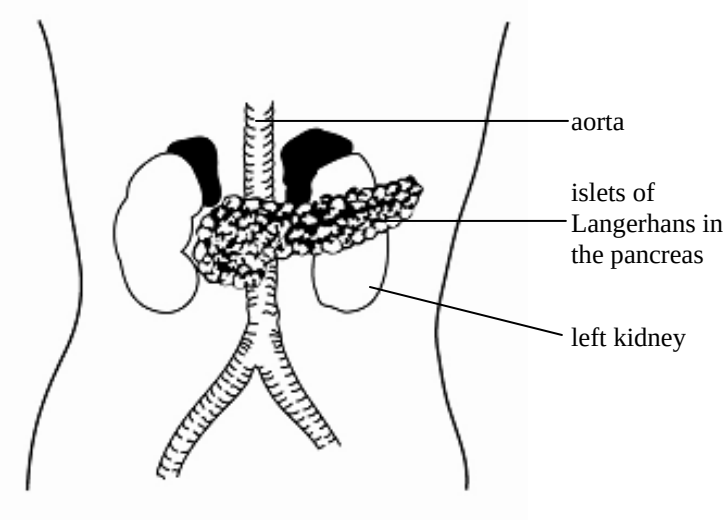
CHAPTER 2: BODY COORDINATION

Pancreatic Disorders

1. **Diabetes mellitus**
   - This is a common condition caused by the islets of Langerhans in the pancreas not producing sufficient of the hormone called insulin.
   - Insulin deficiency causes glucose from the digestion of carbohydrates to accumulate in the bloodstream. Insulin is required for the absorption of glucose into the body cells to be oxidized to supply energy.
   - The excess glucose eventually becomes too much for the kidneys to reabsorb and so the extra glucose is excreted in the urine.
   - Excretion of glucose in the urine is accompanied by the excretion of a large quantity of water.
   - This is to ensure that the amount of sugar in the bloodstream does not rise too high. As a result, diabetics always feel thirsty so that the lost water can be replaced.



Islets of Langerhans produce insulin

2. **Diabetes insipidus**
   - This type of diabetes is caused by the posterior lobe of the pituitary gland not functioning well.
   - The patient loses a lot of water through the urine, but the urine does not contain sugar. The loss of water causes the patient to feel very thirsty.
   - Diabetes insipidus is due to a lack of an antidiuretic hormone (hormone which prevents excessive urination) secreted by the hypothalamus and stored in the posterior lobe of the pituitary gland.

3. **Ketones and acidosis**
   - Since a diabetic has insufficient glucose in the body cells to be oxidized to supply energy, the body starts to oxidise its proteins and fats.
   - The diabetic always feels hungry and eats a lot, yet he loses weight.
   - The oxidation of fats is usually incomplete and ketones, which are highly toxic, in the blood gives the breath and urine a 'sweet' smell of acetone.
   - This condition is called acidosis, and if it is severe the patient falls into a diabetic coma and death may result.
   - Patients who suffer from diabetes for many years will suffer from atherosclerosis, heart disease and kidney impairment.