# 7.8 Sweating

## Science understanding

Verbal/linguistic Visual/spatial

## Excretion through the skin

Read the information below and then answer the questions.

Your skin, in particular the sweat glands, is part of the excretory system.

Figure 7.8.1 shows a sweat gland. When a sweat gland is working, the cells produce a fluid similar to plasma, the liquid part of blood. It is mostly water but it also contains salts and a very small amount of urea. There are high concentrations of sodium ions ($Na^+$) and chloride ions ($Cl^-$) and a low concentration of potassium ions ($K^+$). The fluid used to produce sweat comes from the spaces between the body cells. It moves into the coiled part of the sweat gland and moves up through the straight duct. As it moves up through the duct, the fluid is changed. The amount it is changed depends on how much sweat is produced.

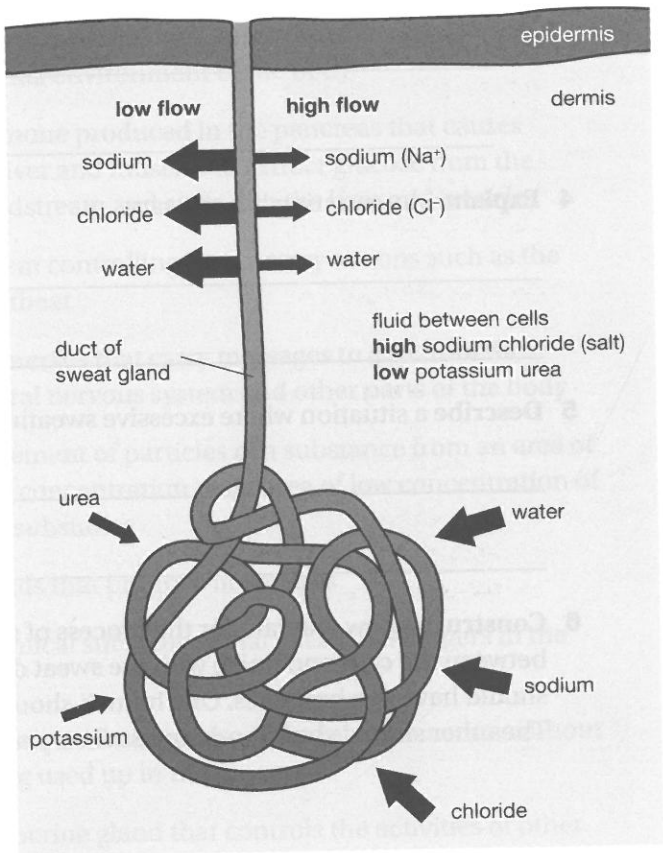


Figure 7.8.1

When you are cool and at rest, you are still sweating at a very low rate. In this situation the fluid moves up through the duct slowly. There is time for water and most of the sodium and chlorine to be reabsorbed (taken back in) before the sweat leaves the body. Potassium and urea are not reabsorbed.

On hot days or after exercise, you sweat a lot. Then the fluid moves quickly through the duct. There is no time for reabsorption of chlorine and sodium. The water is released to help cool your body.

As sweat evaporates from the surface of your skin, excess heat is removed from your body. This helps keep your body at a constant temperature. Only the water evaporates. Sodium, chlorine and potassium remain on the skin. This is why your skin tastes salty when you have been sweating.

Losing large amounts of water and salts from your body can quickly cause dehydration. Without the salts, your body cannot regulate the water content of the blood. It is important to drink plenty of water when you exercise, or are outside in high temperatures.

# 7.8

1 **List** the excretory products that leave the body through the skin.

2 **Explain** where the fluid that forms sweat comes from.

3 (a) **Propose** whether your skin would taste saltier on hot days or cool days.

(b) **Justify** your answer.

4 **Explain** why sweating is necessary.

5 **Describe** a situation where excessive sweating could be harmful.

6 **Construct** a flow diagram for the process of sweat production. Start with the fluid between the cells and finish with the sweat dried on your skin. The flow diagram should have two branches. One branch should show the process when you are cool. The other should show the process when you are very hot.