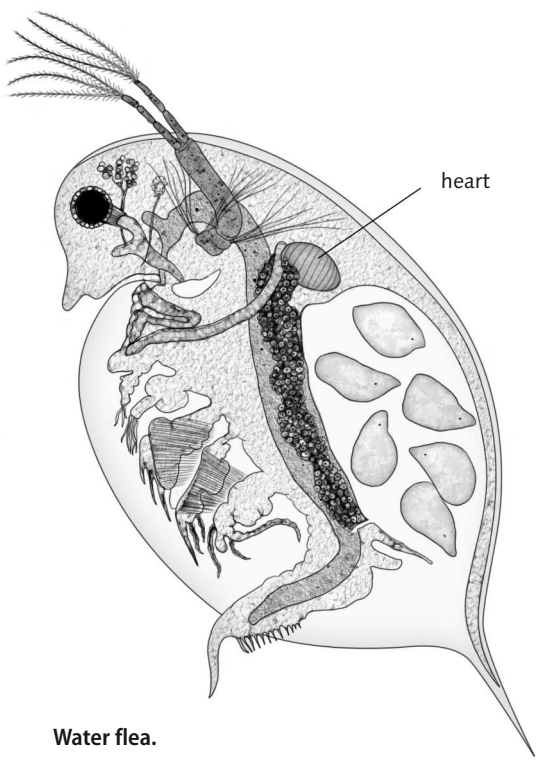
10. The effect of hormones (I)

You can study the effect of hormones easily by looking at some animals, for example the *daphnia* or water flea, which is a planktonic crustacean of the order Cladocera.

Materials

- Petri dishes or similar containers.
- Cotton wool.
- Microscope.
- Stopwatch.
- Pipette.
- Adrenaline (0.1%) bought from a pharmacy.
- *Daphnias* bought from an aquarium shop.



Water flea.

Procedure

1. Put a ball of cotton in the middle of a Petri dish.
2. Choose a big *daphnia* and put it on top of the cotton wool using a pipette.
3. Immediately afterwards, pour water from the pot which contained the *daphnias* on top of the cotton wool ball, covering it completely.
4. Look at the *daphnia* through the microscope. Find its heart, which should be beating.
5. Using a stopwatch, count the number of times its heart beats in 15 seconds. Repeat the measurement three times and then take an average.
6. Add to the water 4 to 5 drops of adrenaline solution.
7. Repeat steps 4 and 5.

10. The effect of hormones (II)

Activities

1 Where is the heart of the *daphnia*?

2 How many heart beats per minute did you count when there was only water in the Petri dish? And how many once you'd added the adrenaline?

3 Why should you repeat the measurement three times?

4 What can you deduce from this experiment?

10. The effect of hormones

Answers

1. On the back of the *daphnia,* which is easily visible in these animals as they are transparent.
2. When there is no adrenaline present, the heart beats at a rate of around 150 to 200 beats per minute, depending on the temperature (the warmer it is, the higher the frequency of the heart beats).
3. As in any scientific experiment, data should be obtained several times and the average taken to establish the final value. This reduces the likelihood of 'experimental error'.
4. The obvious conclusion is that adrenaline stimulates the action of the heart. This is also in accordance with the aspect of this hormone's action that we have studied.