

## **AS Level Biology B**

**H022/02** Biology in depth

### **Question Set 8**

- 1 A rapid heart rate reduces the volume of oxygen reaching the cardiac muscle of the heart. This can lead to chest pain known as angina.

Digoxin is a drug that can be used to treat angina by reducing the resting heart rate.

A study into the effect of digoxin on heart rate was carried out on a group of patients being treated for angina.

The resting heart rates of these patients were recorded before starting treatment and then again after eight weeks of treatment with digoxin.

- (a) (i) Explain why it is important to record the resting heart rates of patients before starting treatment with digoxin. [1]
- (ii) State one variable that would need to be taken into account when conducting this study. [1]

Fig. 1 shows the results for one of the patients in this study.

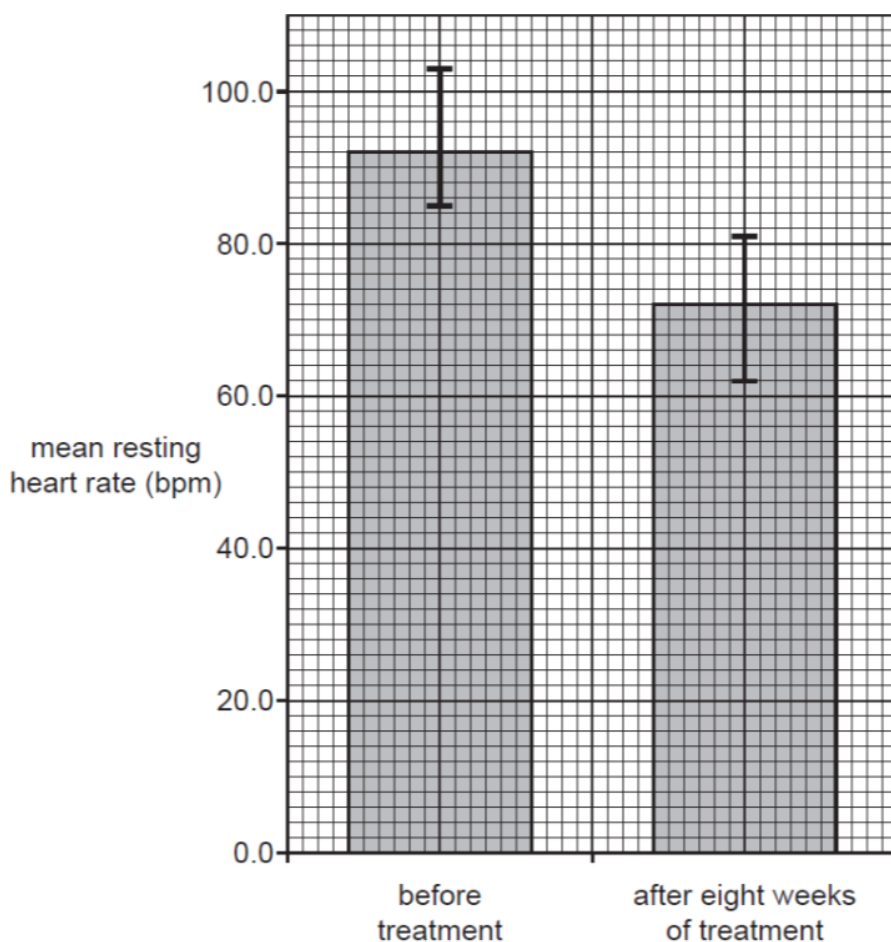


Fig. 1

(iii) Using Fig. 1, state the range in the resting heart rates for this patient before **and** after eight weeks of treatment with digoxin.

Before treatment .....

After eight weeks of treatment .....

[1]

(iv) Calculate the percentage change in the **mean** resting heart rates of this patient.

[2]

(b) Digoxin may reduce resting heart rate by acting on the atrioventricular node (AVN).

(i) What is the role of the AVN in coordinating the heart action?

[2]

(ii) Suggest how the action of digoxin on the AVN could lead to a decrease in resting heart rate and how this could affect cardiac function.

[2]

**Total Marks for Question Set 8: 9**

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