

GCE A Level Biology B (Advancing biology)

H422/01 Fundamentals of biology

Question Set 12

1. (a) (i) This question is about the development of medicines.

What are the features of a chronic disease?

[1]

(a) (ii) Over half of commonly-used drugs are similar or identical to chemicals found in plants.

Name **one** such drug **and** state its medical use.

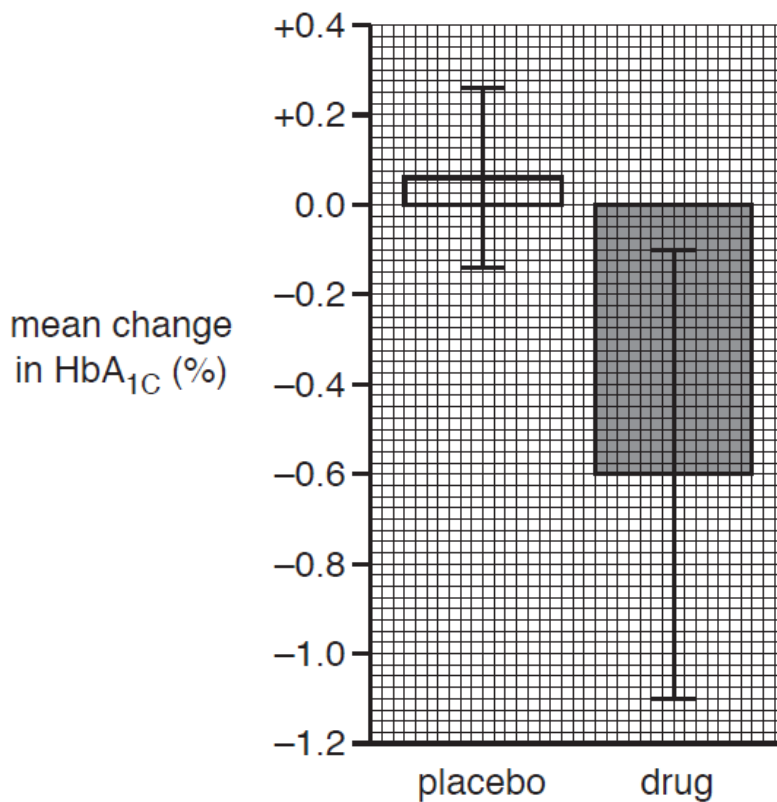
[1]

- (b) (i) Drugs must be evaluated for safety and effectiveness in clinical trials before they are licensed for the treatment of specific diseases.

A clinical trial was conducted to investigate the effect of a drug on blood glucose levels in patients with type 2 diabetes. Blood glucose levels can be monitored by measuring glycosylated (or glycated) haemoglobin ($\text{HbA}_{1\text{C}}$).

- Sixty patients with untreated type 2 diabetes were recruited.
- $\text{HbA}_{1\text{C}}$ levels were measured before the trial began.
- The patients were divided into two groups.
- One group received daily drug treatment and the other group received a daily placebo.
- After three months, $\text{HbA}_{1\text{C}}$ levels were measured and changes from pre-trial measurements were calculated.

Fig. 35 shows the results of the trial. The boxes show the mean change in $\text{HbA}_{1\text{C}}$ levels after three months and the error bars represent standard deviations.



State the **phase** of the clinical trial in which the data in Fig. 35 were obtained.

[1]

- (b) (ii) Describe what a placebo is **and** explain why it was used.

[2]

- (b) (iii) Compare the results shown in Fig. 35 for the group receiving the placebo with the group receiving the drug.

[3]

- (b) (iv) Suggest **two** reasons why this trial does **not** support the use of the drug in the treatment of type 2 diabetes.

[2]

Total Marks for Question Set 12: 10

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