

GCSE Biology A (Gateway)

J247/03 B1-B3 and B7 Higher (Higher Tier)

Question Set 15

1 Yeast cells can respire anaerobically.

(a) Complete the word equation for **anaerobic** respiration in yeast.

glucose \longrightarrow **ethanol** + **carbon dioxide**

[1]

(b) Write down **two** ways in which anaerobic respiration in yeast cells is different from anaerobic respiration in human muscle cells.

[2]

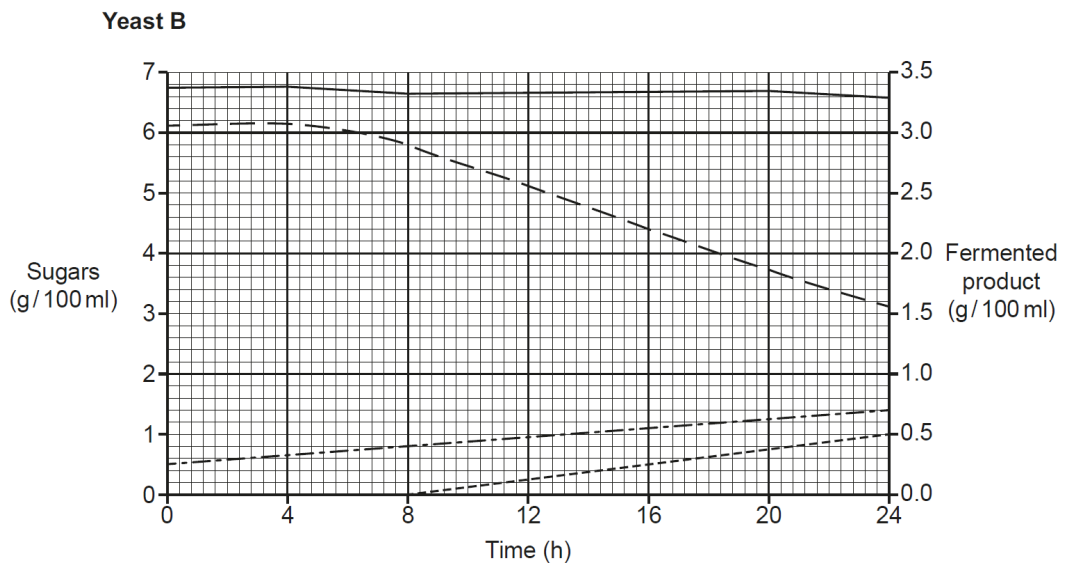
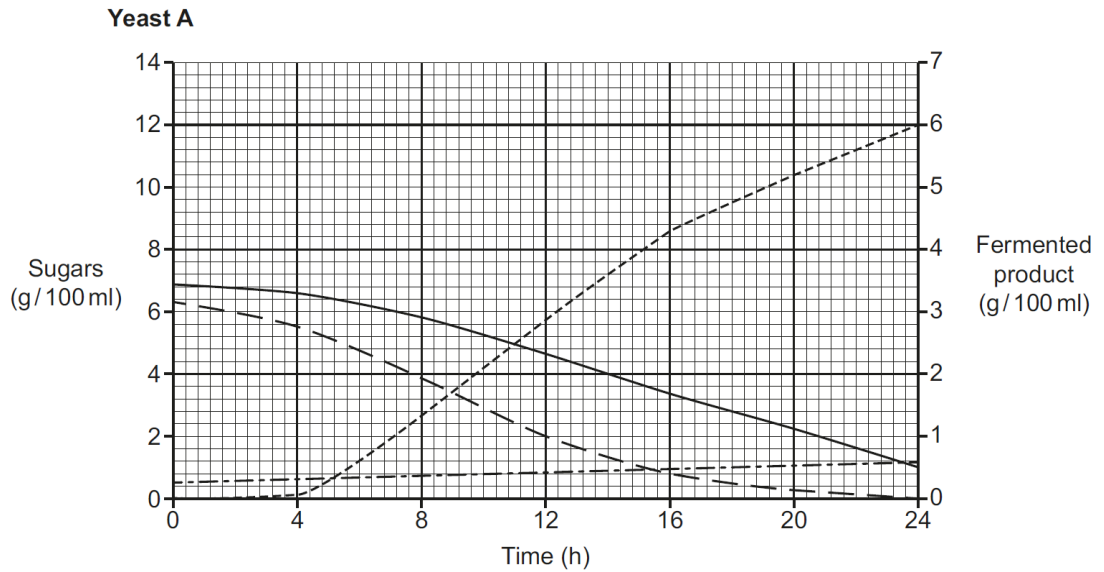
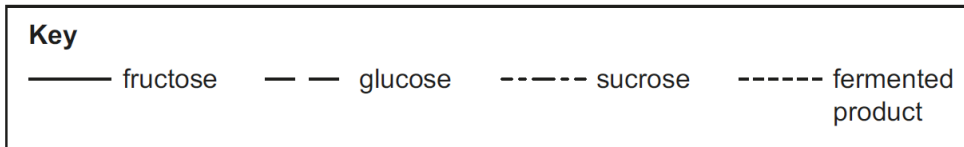
1. **Ethanol is produced in yeast cells but not in human muscle cells (produces lactic acid).**
2. **Carbon dioxide is produced in yeast cells but not in human muscle cells.**

(c) Date fruits contain three different sugars, fructose, glucose and sucrose.

Different strains of yeast can ferment different sugars to produce a fermented product.

Scientists investigate how two different strains of yeast, **A** and **B**, ferment sugars inside datefruits.

Look at their results.



(i) Which sugar is **not** fermented by either strain of yeast?

Tick (✓) **one** box.

- Fructose
- Glucose
- Sucrose

- (ii) After 24 hours, how many times higher is the fermented product yield of yeast **A** compared to yeast **B**?

$$6 \div 0.5 = 12 \therefore 12 \text{ times higher}$$

[2]

- (iii) Which sugar would increase fermentation the **most** if added to either yeast **A** or yeast **B**?

Tick (✓) **one** box.

Fructose	<input type="checkbox"/>
Glucose	<input checked="" type="checkbox"/>
Sucrose	<input type="checkbox"/>

[1]

- (iv) Fermented dates are used to supply both fructose and fermented product.

Explain why it would be best to use yeast **B** to ferment dates to supply both

fructose and fermented product.

[2]

Fructose is only fermented to a small extent by yeast B, reducing from 6.75 to 6.6 g/100ml, whereas it is fermented almost completely in 24 hours by yeast A. To supply both fructose and fermented product, yeast B is thus most appropriate. Although less fermented product is produced by yeast B (0.5 in comparison to 6 g/100ml), it would break down the other sugars in dates without completely fermenting the fructose.

Total Marks for Question Set 15: 9

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