

AQA Biology A-level

RP09 - Respiration in Single Celled Organisms

Flashcards

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What is the function of methylene blue in this practical?



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It is a redox dye and acts as an alternate electron acceptor of the electrons transferred during ATP synthesis.

It turns from blue to colourless, indicating the end point.



Outline the procedure to investigate the effect of temperature on the rate of respiration of yeast.



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1. Set up a water bath at 35°C.
2. Add equal volumes of the yeast and glucose solution to three test tubes. Place test tubes in the water bath and leave them to equilibrate for 10 minutes.
3. Add 2 cm³ of methylene blue to the test tubes and start the timer. Shake for 10 seconds and place test tube back in water bath. Record how long it takes for the methylene blue to turn colourless for each test tube.
4. Repeat the experiment using temperatures of 40°C, 50°C, 60°C and 70°C.



How are the results used to calculate the rate of respiration at each temperature?



How are the results used to calculate the rate of respiration at each temperature?

Rate = $1 / \text{time taken for methylene blue to decolourise}$



Why does the yeast solution need to be buffered?



Why does the yeast solution need to be buffered?

To maintain a constant pH so that the enzymes are functioning at their optimum pH.



What is the effect of temperature on the rate of respiration?



What is the effect of temperature on the rate of respiration?

As temperature increases, the rate of respiration increases to an optimum. This is because the rate of enzyme activity increases.

Beyond the optimum, enzyme activity decreases as enzymes denature with high temperature.

