

Investigation of the factors that affect the rate of respiration

Introduction

Yeast is a microorganism that carries out respiration. One factor that can affect the rate of respiration is the concentration of glucose. As yeast carries out respiration, bubbles of carbon dioxide are produced.

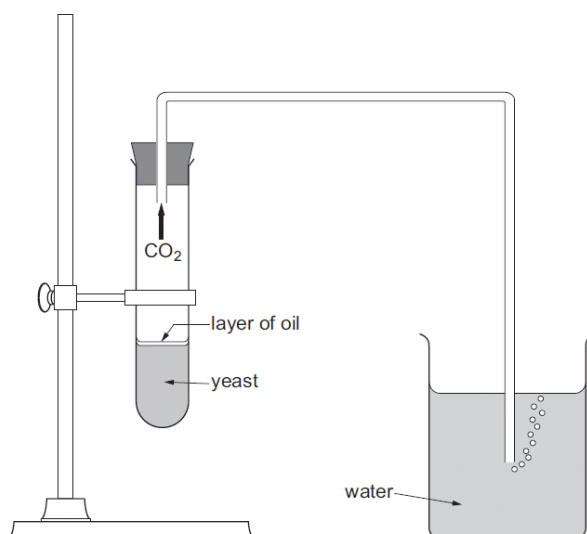
Apparatus

boiling tube
 250 cm³ beaker
 clamp stand, clamp and boss
 10 cm³ measuring cylinder
 bung and glass tubing (as shown in diagram)
 stirring rod
 pipette
 stopwatch

Access to:

electronic balance ± 0.1 g
 vegetable oil or equivalent
 10% yeast suspension
 2, 4, 6, 8, 10% glucose solutions

Diagram of Apparatus



Method

1. Place 10cm^3 of yeast suspension into a boiling tube.
2. Place 10cm^3 of 2% glucose solution into the same boiling tube.
3. Stir the contents gently with a stirring rod.
4. Using a pipette, place a few drops of oil on the top of the liquid so that it forms a thin layer.
5. Place the bung with glass tubing into the boiling tube.
6. Clamp the boiling tube in a clamp stand.
7. Fill a 250cm^3 beaker with water.
8. Arrange the apparatus so that the end of the glass tube is underwater in the beaker as shown in the diagram.
9. Start the stopwatch when the first bubble appears, and then count the bubbles produced for 2 minutes.
10. Repeat steps 1-9 with 4, 6, 8 and 10% glucose solution.

Analysis

1. Plot a graph of concentration of glucose (x- axis) against number of bubbles (y-axis).