AQA Biology GCSE

RP 10: Decay

Practical notes

Decay

Aim

Investigate the effect of temperature on the rate of decay of fresh milk by measuring pH change.

Equipment

- Full fat milk or single cream (not UHT)
- Sodium carbonate solution (0.05 mol/dm^3)
- 5% lipase solution
- 250 cm^3 beakers
- Boiling tubes
- Boiling tube rack
- Marker pen
- Thermometer
- Syringes
- Calibrated pipette
- Stopwatch
- (pH indicator)
- Electrical kettle
- Ice

Method

1. Write down a hypothesis of the effect of temperature on the rate of decay of milk.
2. Carefully, fill half of a beaker with hot water (60℃ or below) from the kettle for a water bath.
3. Use a syringe to transfer 5 cm^3 of lipase solution into a boiling tube and label as 'lipase'.
4. Add 5 drops of Cresol red into another boiling tube and label as 'milk'.
5. Use a calibrated pipette to transfer 5 cm^3 milk into the 'milk' tube.
6. Use another calibrated pipette to transfer 7 cm^3 sodium carbonate solution to the 'milk' tube, which should make a purple solution.
7. Place a thermometer into the 'milk' tube.
8. Place both boiling tubes into the water bath.
9. Allow time for the solutions in the boiling tubes to reach the same temperature as the water bath.
10. Use another pipette to transfer 1 cm^3 of lipase from the 'lipase' tube into the 'milk' tube and start timing immediately.
11. Record the time required for the colour change to yellow in a table such as below.
12. Repeat steps 2-11 at the same temperature twice and take a mean value.
13. Repeat steps 2-11 using a range of different temperatures of water baths (a range from 20℃ - 60℃).
14. Plot a graph of time taken against temperature.[1]

[1] AQA Practical Handbook

Temperature of milk in °C	Time taken for solution to turn yellow, in seconds			
	Trial 1	Trial 2	Trial 3	Mean

Sources of error

The colour change at the end point may be difficult to judge.