Edexcel Biology IGCSE

2.33B: Energy Content of Food
Practical notes

Energy content of food

Aim
Investigate the energy content in a food sample.

Equipment
- Boiling tube
- Water
- Needle
- Food sample (each should be the same mass)
- Bunsen burner
- Electronic balance
- Thermometer
- Measuring cylinder

Method
1. Add 25 cm^3 of water to a boiling tube, measured using a measuring cylinder.
2. Measure the initial temperature of the water and record it.
3. Weigh the food sample (to check the mass) and skewer it on the needle.
4. Light a Bunsen burner away from the boiling tube and light the food sample in the flame.
5. Place the burning food sample under the boiling tube. If it goes out, relight it and place it back under the boiling tube until it will not relight.
6. Record the final temperature of the water.
7. Calculate the energy content of the food using the formula:

   energy (J) = mass of water (g) x temperature change (°C) x 4.2 (J °C^{-1} g^{-1})

   [where 4.2 is the specific heat capacity of the water]

Sources of error
- Heat loss to surroundings and incomplete combustion of the food sample are not accounted for.
- Mistakes in measuring the volume of water.
- Angle of tilted boiling tube not consistent.

Potential Hazards
- Tie long hair back and wear goggles
- Be careful when using needle
- The heated water may become a hazard