

WJEC Wales Biology GCSE

SP1.3: Energy Content of Food Practical Notes



Energy Content of Food

Aim

Measure the energy content of food samples.

Equipment

- 25 cm³ measuring cylinder
- Boiling tube
- Stand + clamp
- Mounted needle
- Thermometer
- Bunsen burner
- Heat-proof mat
- Sample of food

Method

1. Use the measuring cylinder to measure 20 cm³ of water and pour into the boiling tube.
2. Clamp the boiling tube at an angle.
3. Record the initial temperature of the water.
4. Weigh the food sample using an electronic balance.
5. Fix it on the mounted needle.
6. Light the sample in a Bunsen flame and immediately hold it under the boiling tube.
7. If the flame goes out, relight the same and hold it under the boiling tube. Combustion is complete when the sample does not light anymore.
8. Record the temperature of the water when the food sample's flame goes out.
9. Repeat the process for the other food samples.
10. Calculate the temperature rise in the water.
11. Calculate the energy value of the food sample using this formula:
mass of water (g) x 4.2 (JK⁻¹g⁻¹) x temperature change (°C) / mass of food sample (g)

Safety precautions

Take care to keep hands away from burning food, any dripping fat and the Bunsen flame.

Equipment can get very hot during use.

Be careful with hot water.

Wear eye protection and tie long hair back.

Make sure lab is well ventilated (fumes) and do not use nuts (allergies).

Controlled variables

- Volume of water
- Angle of tilting of boiling tube

Sources of error

Heat loss to surroundings and incomplete combustion of the food sample.

