

Investigation 2 Food power

All food contains chemical energy which is stored in its various nutrients. When your body burns food it changes this chemical energy into heat energy. Because all food is made up of different nutrients, some types of food generate more energy than others.

Here's a way to record and compare the amount of energy stored in different types of foods.

YOU WILL NEED A bunsen burner • Different Foods – peanut, bean, cornflake, marshmallow, crisp • Five test tubes • Water • Five thermometers • A blunt tweezers •

- 1 Fill a test tube about $\frac{3}{4}$ full with water.
- 2 Record the temperature of the water.
- 3 Using the tweezers, hold the food over a bunsen flame until it catches fire.
- 4 Place the burning food under the test tube of water and hold it there until the flame goes out.
- 5 Record the water temperature.
- 6 Repeat steps 1 to 5 for each food type.
- 7 Make a table, showing your results, indicating the food type and the temperature of the water before and after the food is burnt.

Consider this

Which food causes the greatest increase in water temperature?

On each food packet you will see details of the amount of energy in joules per 100g. Compare the energy value of each food (according to its package) to the temperature by which the water increased. Can you think of some reasons why this test is unfair?

Look at your lunch today. How many kilojoules of energy did you get from it? A slice of buttered toast contains about 315 kilojoules (315,000 joules) which would give you enough energy to:

- Jog for six minutes
- Cycle for ten minutes
- Walk briskly for 15 minutes
- Sleep for one and a half hours
- Run a car for seven seconds at 80 kilometres per hour (about 50 miles per hour)
- Light a 60-watt light bulb for one and a half hours



Tell Me More!

One of the most important principles of energy is that energy cannot be created or destroyed, only changed from one form to another.

When you set the food alight, its stored chemical energy changed into heat energy, causing the water temperature to increase. The chemical energy in the burning food was not lost, it changed into heat energy.

Scientists measure the energy value of food by burning it and measuring the amount of energy released using a calorimeter.