

This activity sheet has been developed by scientists at the Medical Research Council Human Reproductive Sciences Unit as part of a wider initiative which aims to support teachers in nurturing their pupils' interest in science. The overall aim of the initiative is to contribute to the creation of a generation of young people comfortable with science as an integral part of everyday life and open to the opportunities science offers as a career.

Chemicals in your body: soap powder eats egg experiment

Objective

To illustrate how enzymes work in our body using bio washing powder as a model

Context in real-life

Food is made of molecules that are too big to be used by the body. To digest the food, the body makes chemicals called enzymes which help to break the large molecules up so they can dissolve. Biological washing powder contains enzymes that remove stains and dirt. These enzymes are similar to those that live in the stomach.

Link with the curriculum

To describe the function of enzymes in cell reactions

Kit needed

- An egg
- Non-biological washing powder
- Biological washing powder
- Two glass jars (e.g. jam jars or pasta sauce jars)
- Pen and adhesive labels
- Warm water
- Knife
- Tablespoon (16 ml)
- Ruler

Description of experiment

1. Boil an egg for 10 minutes so it is hard-boiled. Let it cool completely and then peel it.
2. Add a tablespoonful of non-biological powder in one jar and a tablespoonful of biological washing powder in the other. Label both jars.
3. Put eight tablespoons of warm water into each jar and then stir vigorously until the powder has completely disappeared.
4. Cut two pieces of egg white and, using a ruler, make them both 1 cm cubes.
5. Add one egg white cube to each jar.
6. Leave the jars somewhere warm (e.g. near a radiator or hot pipe) for two days.

Likely outcomes and what they mean

- After two days take the pieces of egg out of the jars and examine them.
- The egg from the biological powder should now be the smaller of the two.
- If there is not much difference in the size of the egg pieces, they could be left for another two days.
- The enzymes in the "biological" powder have attacked the molecules in the egg and broken them down into smaller molecules which dissolve in water.
- Since the "non-biological" powder does not contain any enzymes, the egg in this powder has stayed the same size since it cannot dissolve in ordinary soapy water.

Opportunities for extension

Try altering the temperature to see effects on enzymes.

This activity sheet is one of several developed by early career scientists at the MRC Human Reproductive Science Unit in Edinburgh. You can download all the activity sheets at www.hrsu.mrc.ac.uk/schools. If you experience problems accessing the website, please email schools@hrsu.mrc.ac.uk.

These protocols are thought to be suitable for S1/S2 pupils but all schools should conduct the necessary risk assessments before performing the experiment.