UNDERSTANDING YOUR FOOD
the ultimate educational resource

TEACHER NOTES

C2. How do you colour a jelly baby?

Pupils investigate the colours used in jelly babies by extracting the colour and using it to colour lengths of wool.

SAFETY NOTE: CARE IS NEEDED WHEN USING ACID AND HOT EQUIPMENT.

The volumes used are not critical. If you intend the pupils to also carry out investigation C3, it is advisable to use twice the quantity of wool in this investigation, that is, 2 x 50 cm lengths for each colour of jelly baby. *Answers to questions on Pupil activity sheet C2:*

1. A coloured solution is produced.
2. The wool takes up (adsorbs) the colour from the solution. It is interesting to note what colours are left behind in the beaker. (For example, black jelly babies from Tesco make the wool turn a red/brown colour but leave a green colour in the beaker.)
3. The wool and sweets make a very colourful display which seems a suitable way of recording the results.

Their are a number of discussion points such as:

- why are colours necessary in this product?
- which manufacturers use the least number of colours?
- how do you get 6 different colours of jelly babies from only 3 added colours?
- why do different manufacturers use different colours?
- why do some manufacturers use natural rather than artificial colours?
- can you tell the flavour and colour of a jelly baby without seeing it?

As there are waiting times in this experiment, it is advisable to have other activities available to occupy pupils.

Jelly babies: different brands do contain different colours; pupils may like to investigate these differences and discuss why some manufacturers use a minimum of 3 colours (and yet the packet contains 6 different colours) while other manufacturers use many more colours. It is also interesting to find out which manufacturers use natural rather than artificial colours.

KS3
science or technology

Timing - 40 - 60 minutes
As there are waiting times in this experiment, it is advisable to have other activities available to occupy pupils.

Pupil activity sheet C2 accompanies this activity.

Requirements
- *2 diced jelly babies, of the same colour (see footnote)*
- *50 cm^3 or 100 cm^3 beakers*
- *stirring rods*
- *distilled water*
- *small measuring cylinders*
- *2M hydrochloric acid*
- *teat pipettes*
- *watch glasses of a suitable size to act as a lid for the beakers*
- *50 cm lengths of **100% wool**, white or undyed*
- *hot plates for heating (if not enough of these are available, a water bath can be used; technology teachers may also be able to use a hob)*
- *card, sellotape, glue, etc. for making a display of the results*
- *safety goggles*

More able/older groups can go on to the next investigation which analyses the colours using chromatography.

HOW DO YOU COLOUR A JELLY BABY?

pupil activity C2

The manufacturers of jelly babies add colours to these sweets. Different manufacturers add different colours. Can you tell the flavour and colour of a jelly baby if you don't look at it before you eat it? Try this out!

In this investigation you are going to remove the colours from jelly babies and transfer the colours to long pieces of wool.

Read the safety note before you begin.

SAFETY NOTE
DO NOT EAT OR TASTE ANY OF THE SUBSTANCES USED IN THE INVESTIGATION.
BEWARE! YOU WILL BE USING HOT WATER!
YOU WILL BE USING DILUTE ACID. WASH OFF ANY SPLASHES WITH PLENTY OF WATER. TELL YOUR TEACHER WHAT HAS HAPPENED.
REMEMBER TO WEAR GOGGLES

Method

1. Place two red jelly babies in a small beaker. Add 10 cm^3 of distilled water.
2. Heat this and stir with a stirring rod until the jelly babies dissolve. This should only take a couple of minutes.
3. Add 1 cm^3 of dilute acid to the beaker and stir.
4. Add one length (about 50 cm) of pure white wool to the beaker. Cover the beaker with a watch glass.
5. Carry on heating the mixture for about three minutes.
6. Using your stirring rod, remove the wool and place it in an empty beaker. Wash the wool thoroughly using plenty of distilled water. Allow the wool to dry.
7. Repeat this method with the jelly babies of the other colours.

Questions

1. What happened to the water when you dissolved the jelly babies?
2. What happened to the wool when you put it in the jelly baby solution?
3. Make a display of your results.