



International Year of
CHEMISTRY
2011

Full of chemicals?

Preservatives

**What are preservatives?
Why are they added to food?
Where do we get preservatives?**

Preservatives are a type of food additive. Our food is exposed to many things, such as oxygen in the air, changes in temperature and microbes, which can change its taste and make it decay.

Preservatives help our food stay safe to eat by stopping it decaying or going off too quickly. Most preservatives prevent microbes like mould and bacteria growing on the food. Some stop oxygen from reacting with chemicals in the food.

All food manufacturers make use of preservatives to keep food fresh on its way to the supermarket and help it to last longer on the supermarket shelf.

How would you go about preserving foods in your own home?

Find out the answer to this and more fascinating chemistry facts overleaf...

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Preservatives



People have been preserving their food for hundreds of years. One of the earliest ways of preserving food was to dry it in the sun. Microbes need moisture to grow, so making the food drier stops them growing quickly.

Can you think of any foods you eat which have been dried out?

Salt and vinegar have also been used as preservatives for a long time. Sailors used to preserve fish by storing it in salt. Sometimes we call this curing. Storing foods in vinegar is called pickling.

Why do you think salt and vinegar help to preserve foods?

Some preservatives are made by chemists in a lab. Examples of these synthetic preservatives include nitrites, benzoates, EDTA and sulfur dioxide. However, this doesn't mean that they are all bad for us. In the small amounts they are used in food, they probably don't do us any harm, and might even protect us by keeping food fresh and healthy.

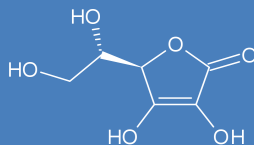
Have a look at the ingredients labels on some foods in your fridge or kitchen cupboard. Can you find any which contain these preservatives?

Environment & sustainability



Food safety is a key priority for Waitrose. For our own brand products we use natural preservatives, flavourings and colourings in preference to synthetic food additives.

Chemical formula



Vitamin C is a preservative which is added to food because it stops oxygen reacting with it. On food ingredient labels, it is often called ascorbic acid. It has the formula:



Use this formula to unlock extra facts at our website:

www.fullofchemicals.org.uk

Whatever next?

The traditional ways of preserving foods, like salting and pickling, change the taste of the food. Chemists doing research into food preserving are trying to find ways of preserving food without adding anything or changing its taste. For example, some foods can be stored in an atmosphere of carbon dioxide or nitrogen. Microbes cannot survive without oxygen, so in these atmospheres, they die. Bags of pre-prepared salad are likely to have been produced in an atmosphere like this.

Do try this at home!

To do this experiment, you will need:

- An apple (any type), cut in two
- One lemon
- A plate or bowl
- A knife to cut the lemon



Put the two pieces of apple on a plate. Cut the lemon in half. Squeeze lemon juice over one slice of apple, and leave the other one with nothing on it.

Leave the pieces of apple for an hour or so. Observe the changes in the two pieces of apple. Does the one with lemon juice change colour more quickly or more slowly than the one without lemon juice?

Going further

You could try this experiment with other fruits instead of apples. Bananas and avocados would be interesting. You could also try other preservatives, like vinegar, or see whether orange or lime juice works.