

## The ..... of food

### 1. Why does food go bad?

Food contains proteins, fats, carbohydrates and vitamins which are vital to life. It should be fresh when we eat it. If it is bad, it can make us ill. There are two main agents which turn food bad-fungi (such as yeast and various moulds), and bacteria. These are micro-organisms which cannot make their own food and which live and grow on our food. Moulds, for example, are often seen on old bread. Yeast can spoil fresh food but it also has some very useful properties. For hundreds of years it has been used by man in the use of bread and wine. It acts as a catalyst in the process of fermentation.

In order to grow and multiply, all these micro-organisms need food, water, warmth and, in some cases, air. The methods used to preserve our food are intended to make conditions dry and very cold, unsuitable for the growth and multiplication of micro-organisms.

The great distances which often separate the producer of food from the consumer in the 21st century make effective food preservation vital. But in most preservation processes, many important vitamins are wholly or partially destroyed. One of the tasks of food technologists today is to find ways of preserving without losing these vital substances.

### 2. How is food dried ?

In hot countries, food is dried simply by the heat of the sun. The moisture level in most fruits can be reduced to between 5% and 15%, which is slow enough to inhibit the growth of micro-organisms. Some other foods are subjected to a process known as dehydration. In this process, a current of hot, dry air is passed over the food to absorb as much moisture as possible. Tea and coffee are often dried in this way.

### 3. What happens to foods when they are canned or bottled?

High temperatures kill micro-organisms in food and most micro-organisms need air. That is why food is vacuum-sealed in cans and bottles and then heated up to a temperature of 100°C (acidic foods) or 120°C (non-acidic foods) for about 10 minutes. The food will then keep for a long time provided that the can or bottle remains airtight.

### 4. How else can food be preserved?

There are several other ways of preserving food. One of them, freezing as well as two very old methods, salting and smoking, are still used today.

A concentration of 5% or more of salt in food inhibits the growth of most micro-organisms. Smoking causes partial dehydration. Certain acids and chemicals are useful preservers as they stop the actions of enzymes produced by micro-organisms. Vinegar, for instance, is used to preserve onions and other vegetables. One of the newest methods is radiation. It is especially effective because it kills not only micro-organisms, but also their spores, thus stopping their reproduction.

## QUESTIONS ON THE TEXT

A. Answer these questions

1. What have yeast and mould in common?
2. What word is missing in the title?
3. What is the principle behind all food preservation?
4. What have the processes of canning and bottling in common?
5. What effect does smoking have on food?

B. Make questions for these answers

1. Both are vital to life and health.
2. No, it is useful as well as harmful.
3. They are both very old methods of preserving food.
4. Both substances are used to preserve food.

## I. WORDS

**WORD STUDY** : find in the article words that correspond to each definition

1. .... : Closed completely.
2. .... : Chemical substances which are needed in small amounts for growth and health. Shortage in them can cause illness. The main groups of these are often called by letters of the alphabet.
3. .... : An acidic liquid. It is used to preserve some vegetables.
4. .... : A person who uses, or eats, a product.
5. .... : Simple non-flowering plants that cannot make their own food.
6. .... : The breaking down of a chemical substance with the help of a catalyst such as yeast.
7. .... : Very complex chemical substances in living cells. We must eat food containing them in order to replace cells in our own bodies.
8. .... : Cell produced by fungi or other micro-organisms to reproduce the organism. A single of these often consists of several cells.
9. .... : Not complete.
10. .... : Chemical compounds found in both animals and vegetables (e.g. sugar and starch).
11. .... : Closed so that no air can get in or out.
12. .... : Take in, usually moisture or liquid.
13. .... : Space which has been emptied from air or gas.
14. .... : Slow down or hold back.

## II. SENTENCES

### A- Scientific facts: the use of **if**

✓ *Look at this example*

Water/ evaporate/ boil → **water evaporates *if* it is boiled**

Now make sentences in exactly the same way

- a) Gas/ liquify/ compress →
- b) Water/ solidify/ freeze →
- c) Metals/ expand/ heat →

### B- Essential and non essential **WHICH** in scientific writing

✓ *Look at these two sentences*

- 1) The micro-organisms which spoil food cannot grow at sub-zero temperature.
- 2) Refrigerators have stars on them to show the minimum temperature which they can reach.

**WHICH+VERB= WHICH cannot be omitted. It is ESSENTIAL to the meaning**  
**WHICH+NOUN or PRONOUN = WHICH can be omitted. It is NON ESSENTIAL to the meaning**

Sentence 1 cannot be shortened; sentence 2 can be shortened to:

- Refrigerators have stars on them to show the minimum temperature they can reach.

Say whether these sentences are like 1 or 2 and shorten those which are like 2

- a) The catalysts which help digestion are called digestive enzymes.  
→
- b) A thermostat is an instrument which controls temperature.  
→
- c) A freezer is a type of refrigerator which we use for long storage.  
→
- d) Beef is the meat which keeps longest when frozen.  
→

### C- Substitution of **WHICH** with **ING-FORM**

✓ *Look at this example*

- Most of our food consists of animal and plant cells **containing** a high proportion of water.

*This could also be written with a **WHICH** relative clause*

- Most of our food consists of animal and plant cells **which contain** a high proportion of water.

Rewrite these sentences using the **WHICH** relative clauses

- a) Ships carrying meat and butter from New Zealand have refrigerated holds.  
→
- b) Students arriving late missed the start of the experiment.  
→

Now rewrite these sentences using **-ing** to replace relative clauses

- a) Vegetables which contain a very high percentage of water do not freeze well.  
→
- b) Most freezers manufacturers produce booklets which list safe storage periods for frozen food.  
→