**FOOD PRESERVATION**

**Methods for helping you to preserve your food for a long time**

You know that foods like milk, fruits, vegetables, meat and fish get spoiled very easily. When you leave milk on kitchen shelf for a few hours it curdles and starts giving a foul smell. Raw fruits and vegetables also become stale in a day or two. Curdling of milk occurs due to the action of bacteria. Thus, spoilage of milk, bread, meat, etc., occurs due to the action of microorganisms like bacteria and fungi.

Foodstuffs which have a greater water content like fruits, vegetables and milk get spoilt faster than those with less water content like wheat, rice and pulses. Rats, insects, bacteria and fungi, spoil food grains.

A considerable amount of food materials is thus lost in homes and during storage at trading centers like fruit and vegetable markets or fish market. Wastage of food items can be reduced by following certain methods or techniques that prevent the spoilage of food and help in retaining their nutritive value. Such methods or techniques are collectively called food preservation. Let us study some of the methods of food preservation.

**Methods**

**1. Cleaning and storing in closed containers:**

Food grains like rice, wheat and pulses should be cleaned first and then stored in closed containers. Keeping the food grains in closed containers protects them from micro-organisms, rats, cockroaches and other insects.

**2. Sun drying and dehydration:**

Microorganisms require water for their growth. Drying and dehydration mean removal of water from foodstuff. Sun drying involves removal of water by keeping the food articles in the sun. Vegetables like spinach, fenugreek (methi), cauliflower, etc., are sun-dried and stored. Potatoes, bananas, tapioca and cooked rice or dal are sun-dried to wafers or papads and stored for long periods.

**3. Heating:**

Heating kills microorganisms. You boil milk at home to kill bacteria. Boiling water kills all germs and makes it safe for drinking.

**4. Deep freezing:**

Bacteria and fungi cannot grow at low temperatures. Refrigerators are used to keep fruits, vegetables, milk, butter, meat and fish fresh for a longer time. In huge freezers, food can be frozen and kept fresh for months together.

**5. Using salt, sugar and vinegar for preservation:**

Preservation of food by using salt is called salting. Salt can be used in the dry form or in the form of solution. It draws out water from food and prevents growth of microorganisms. Salt is used to preserve tamarind, beans, raw mango, amla, fish and meat. Fruits and vegetables like raw mago, amla, lemon, cauliflower, carrots, etc., can be made into pickles by adding salt, vinegar and oil. These substances prevent the growth of microorganisms.

**6. Chemical preservation:**

Certain chemicals preservatives are added to jams, jellies, juices and squashes to prevent the growth of microorganisms. Sodium benzoate and acetic acid are commonly used as preservatives.

**7. Canning:**

In the canning process, fresh food is cooked quickly and is then put in a tin container and the container is sealed. The sealed container is then heated to kill all the microorganisms present inside.

# Preservation of Food: 8 Methods used to Preserve Food – Explained!

Eight methods used to preserve Food are as follows: 1. Storing food 2. Drying 3. Freezing 4. Adding preservatives 5. Heating 6. Pasteurisation 7. Canning 8. Vacuum-packing.

Why do we store fruit and vegetables in the refrigerator, and cereals, pulses and spices in jars? Dry things like cereals and pulses do not spoil easily, so we can store them longer without refrigeration. That is why they are called nonperishable (perish: die or be destroyed). Milk, meat, vegetables and fruit, on the other hand, go bad easily. So they are called perishable.

What makes food go bad? Usually, the action of bacteria, fungi or insects. You have learnt that bacteria and fungi produce spores. When these spores settle on food, they grow, multiply and decompose the food. They also release substances which are harmful for our health.

There are many ways of preserving food. Most of these involve steps to create conditions in which it is difficult for harmful organisms (especially microorganisms) to grow. These organisms require a moist environment and a range of temperature close to room temperature. Do the following activity to see how temperature affects the growth of the bacteria used for making yoghurt.

Now that you have a general idea of what makes food go bad and how to prevent spoilage, let us discuss some specific methods used to preserve food.

#### **1. Storing food:**

Keeping food covered is the most basic way of protecting it from insects and other organisms. But this does not protect it from microorganisms. Storing food in airtight containers is better. It shuts out insects and microorganisms in the air, as also moisture. This method, called dry storage, is suitable for nonperishable food.

#### **2. Drying:**

Bacteria and fungi need moisture to grow. So drying, or dehydrating, food is one way of preserving it. Sun-drying is a traditional method of preserving food. Wheat, rice and pulses are cleaned and dried in the sun before storing.

Leafy vegetables, like methi (fenugreek) and mint, are sun-dried so that they can be stored longer. So also are potato wafers (chips), papads, and so on. Modern methods of drying food are not dependent on the sun. Hot air is blown over fruit and vegetables to dry them. Other methods are used to dry milk powder, coffee, soup powders, and so on.

#### **3. Freezing:**

Another way of discouraging the growth of bacteria and fungi is to store food at a low temperature. This method, called cold storage, is suitable for perishable food items. You know that fresh fruit and vegetables, as well as cooked food, can be preserved longer in the refrigerator. Frozen food, like peas, meat and fish, can be stored in deep freezers for weeks. The temperature in freezers is kept below -18°C.

#### **4. Adding preservatives:**

Preservatives, like salt, sugar and vinegar, are often added to food to prevent the growth of microorganisms. For centuries, people have preserved fish and meat by salting. Rubbing salt over fish or meat, or soaking them in a salt solution draws out water from the food.

Fruit and vegetables are often pickled in vinegar, oil, salt, and so on. Oil and vinegar prevent the growth of microorganisms. In jams, the sugar syrup prevents the growth of bacteria. However, if moisture gets into ajar of pickle or jam, fungi may grow. Citric acid is a preservative added to soft drinks. Chemicals, like sodium benzoate and potassium metabisulphite, are added to squashes and fruit juices to prevent the growth of microorganisms.

#### **5. Heating:**

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Drying, freezing or storing food in airtight containers prevents microorganisms from growing, but does not kill them. Heating does. That is why we boil milk.

#### **6. Pasteurisation:**

Louis Pasteur, a French chemist, came up with a technique of heating wine to about 60° C for a short time in order to kill bacteria, and then cooling and storing it. The process is now used to pasteurise milk, which means heating it to about 62° C for 30 minutes, cooling it quickly, and storing it in sterile bottles and packets.

#### **7. Canning:**

Food is first heated to a high temperature to kill bacteria and spores, and then sealed in airtight cans or bottles to prevent reinfection by microorganisms.

#### **8. Vacuum-packing:**

Tea, coffee, chips and other snacks are vacuum-packed, or packed in cartons, cans or packets from which air has been removed. Sometimes they are packed in nitrogen, which serves the same purpose.