

# LESSON 1 SCOPE AND NATURE OF FOOD PRESERVATION

## Definition of food preservation

Food preservation can be defined as the use of different methods to make food last longer. Food preservation methods aim to prevent food spoilage caused by the growth of microorganisms as well as the breakdown of foods by enzymes (described in the next lesson).

The origins of food preservation go back thousands of years. Traditional methods of food preservation were born from a need to store supplies at times when they were plentiful to be consumed at times when they were in short supply. While today we rely on a wealth of food preservation methods to enable foods to be transported across the world and to be available throughout the year.



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## History of food preservation

The history of food preservation could be a course in itself, so here we will only mention a few key developments. Food preservation methods can be traced back to prehistoric times when people used snow to preserve animals killed in a hunt and stored foods in caves to provide a cool area for longer term storage. Other early methods of food preservation included drying foods, and digging pits and covering root vegetables.

As civilisations developed people began to ferment grapes in pouches made from animal skins in order to produce wine. The history of wine and beer production dates back to around 4000BC and 6000BC respectively. With time alcoholic drinks became increasingly important as the alcohol in these drinks also destroyed bacteria in the water used to produce them. This was important as drinking water would have become increasingly polluted as people began to live closer to each other. Smoking foods is another ancient method of preserving foods where foods are dried by wood smoke over an extended period of time.

Other evidence of early food preservation methods showed that civilisations began to place foods in clay containers to prevent them from spoiling, while evidence suggests that the Ancient Egyptians preserved cereals and dried grains and stored them in sealed silos.

Moving on to the Roman era, excavations in Pompeii have shown that the Romans were also proficient food preservers adept at preserving

fruit in jars of honey and also at salting foods to preserve them by drawing out moisture. Salt itself became a very sought after commodity to the Romans and we believe that its value was so high that Roman soldiers received 'salarium' (salt) as part payment (this is where the word salary comes from meaning a term of payment).

Although traditional methods of food preservation have been practiced for thousands of years, until the 19th century food preservation was limited to traditional methods such as sun drying, salting, pickling, freezing and smoking foods. Most advances in food preservation have been seen in the last 2 centuries.



*The mid 1800s saw the invention of refrigerators although they were not seen in most households until much later.*

### Suggested Tasks: ▼

*Throughout this course you will be provided with suggested tasks and reading to aid with your understanding. These will appear in the right hand column. Remember: these tasks are optional. The more you complete, the more you will learn, but in order to complete the course in 20 hours you will need to manage your time well. We suggest you spend about 10 minutes on each task you attempt, and no more than 20 minutes.*

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#### Suggested Tasks

Conduct an internet search. Try to find the records of the oldest evidence of food preservation.

Search using phrases such as "oldest evidence of food preservation", "earliest examples of preserving food" or "the oldest method of food preservation".

Were you able to source any evidence not documented here? Are you surprised by your findings?

In the 19th century two great advances in food preservation were made. The first advance was the invention of canned foods. This discovery was initiated by the French emperor Napoleon Bonaparte who offered a prize to anyone who developed a new way of preserving foods which would allow food to remain edible for long enough to reach his armies in distant parts

of the world. The prize was won by a confectioner called Nicholas Appert who discovered that foods did not spoil if they were heated at high temperatures inside sealed glass jars. It was later discovered that this process worked as well using tin canisters which were less likely to damage in transport and storage, thus leading to the modern day tin can.



*Canning food was discovered in the 19th Century as a way to preserve food which allowed it to remain edible for long enough until reaching armies in distant parts of the world.*

It was, however, much later that scientists discovered why canning is such a good way of preserving foods - discovering that the heat used in the canning process kills the micro-organisms which cause foods to decay.

Another great food preservation advance of the 19th century was development of pasteurisation. Pasteurisation is named after the French Chemist Louis Pasteur who demonstrated that heating wine at a temperature between 50-60°C (122-140°F) killed the spoilage organisms within the wine which helped in its preservation.

The mid 1800s also saw the invention of refrigerators although they were not seen in most households until much later (around 1913 onwards). Before refrigerators became commonplace most people kept food cold in ice or snow, or in ice boxes or cold rooms.

Jumping forward to the modern era, today's methods of food preservation include a wide variety of techniques such as deep freezing, freeze drying (where foods are frozen rapidly in a vacuum), food irradiation (where foods are exposed to low levels of radiation), the pasteurisation of milk and use of chemical additives as preservatives.

## Why do we preserve foods?

There are many reasons why we may choose to preserve food. Following are some of the main reasons:

### Extend shelf life

Effective food preservation delays the deterioration of food by changing the raw ingredients of foods into more stable forms that can be stored for longer periods of time. Although today we have access to fruit and vegetables all year round as well as an extensive variety of foods in supermarkets, preserving foods is a great way of extending the shelf life of foods bought from a supermarket as well as extending the shelf life of foods that you have grown/produced yourself. As an example, raw meat should be kept at room temperature for a maximum of two hours (as beyond this it is subject to microbial contamination) or in a refrigerator for 3-5 days. If the same meat is stored in a jar and processed in a pressure canner, it can last for several years. In regard to home grown/produced products, if excess produce is turned into jams, jellies, chutneys, sauces, pickles, and bottled fruit, it will last through the winter months when less fresh produce becomes available.

### Convenience

Food preservation allows foods to be available anywhere and at any time of the year. Preserving foods also allows foods to be available when you need them, preventing the need for last minute dashes to a local supermarket. Foods may also be prepared in a more convenient ready-to-use form.



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### To retain nutrients

Eating a balanced diet provides us with all the vitamins and minerals we require as well as the right amount of the macronutrients - carbohydrate, fat and protein. While foods may be a plentiful source of nutrients, in many instances the nutrients in a food begin to decline as soon as it has been produced. In respect of fruit and vegetables, the nutritional value begins to decline as soon as a particular fruit and vegetable has been picked, so the less time taken to eat them, the more nutrients will be retained.