Historical Origins of Food Preservation

Brian A. Nummer, Ph.D.
National Center for Home Food Preservation
May 2002

Introduction

The astonishing fact about food preservation is that it permeated every culture at nearly every moment in time. To survive ancient man had to harness nature. In frozen climates he froze seal meat on the ice. In tropical climates he dried foods in the sun.

Food by its nature begins to spoil the moment it is harvested. Food preservation enabled ancient man to make roots and live in one place and form a community. He no longer had to consume the kill or harvest immediately, but could preserve some for later use. Each culture preserved their local food sources using the same basic methods of food preservation.

Drying

In ancient times the sun and wind would have naturally dried foods. Evidence shows that Middle East and oriental cultures actively dried foods as early as 12,000 B.C. in the hot sun. Later cultures left more evidence and each would have methods and materials to reflect their food supplies—fish, wild game, domestic animals, etc.

Vegetables and fruits were also dried from the earliest times. The Romans were particularly fond of any dried fruit they could make. In the Middle Ages purposely built “still houses” were created to dry fruits, vegetables and herbs in areas that did not have enough strong sunlight for drying. A fire was used to create the heat needed to dry foods and in some cases smoking them as well.

Freezing

Freezing was an obvious preservation method to the appropriate climates. Any geographic area that had freezing temperatures for even part of a year made use of the temperature to preserve foods. Less than freezing temperatures were used to prolong storage times. Cellars, caves and cool streams were put to good use for that purpose.

In America estates had icehouses built to store ice and food on ice. Soon the "icehouse" became an "icebox". In the 1800's mechanical refrigeration was invented and was quickly put to use. Also in the late 1800's Clarence Birdseye discovered that quick freezing at very low temperatures made for better tasting meats and vegetables. After some time he perfected his "quick freeze" process and revolutionized this method of food preservation.

Fermenting

Fermentation was not invented, but rather discovered. No doubt that the first beer was discovered when a few grains of barley were left in the rain. Opportunistic microorganisms fermented the starch-derived sugars into alcohols. So too can be said about fruits fermented into wine, cabbage into Kim chi or sauerkraut, and so on. The skill of ancient peoples to observe, harness, and encourage these
fermentations are admirable. Some anthropologists believe that mankind settled down from nomadic wanderers into farmers to grow barley to make beer in roughly 10,000 BC. Beer was nutritious and the alcohol was divine. It was treated as a gift from the gods.

Fermentation was a valuable food preservation method. It not only could preserve foods, but it also created more nutritious foods and was used to create more palatable foods from less than desirable ingredients. Microorganisms responsible for fermentations can produce vitamins as they ferment. This produces a more nutritious end product from the ingredients.

**Pickling**

Pickling is preserving foods in vinegar (or other acid). Vinegar is produced from starches or sugars fermented first to alcohol and then the alcohol is oxidized by certain bacteria to acetic acid. Wines, beers and ciders are all routinely transformed into vinegars.

Pickling may have originated when food was placed in wine or beer to preserve it, since both have a low pH. Perhaps the wine or beer went sour and the taste of the food in it was appealing. Containers had to be made of stoneware or glass, since the vinegar would dissolve the metal from pots. Never ones to waste anything our ancestors found uses for everything. The left over pickling brine found many uses. The Romans made a concentrated fish pickle sauce called “garum”. It was powerful stuff packing a lot of fish taste in a few drops.

There was a spectacular increase in food preservation in the sixteenth century owing to the arrival in Europe of new foods. Ketchup was an oriental fish brine that traveled the spice route to Europe and eventually to America where someone finally added sugar to it. Spices were added to these pickling sauces to make clever recipes. Soon chutneys, relishes, piccalillis, mustards, and ketchups were commonplace. Worcester sauce was an accident from a forgotten barrel of special relish. It aged for many years in the basement of the Lea and Perrins Chemist shop.

**Curing**

The earliest curing was actually dehydration. Early cultures used salt to help desiccate foods. Salting was common and even culinary by choosing raw salts from different sources (rock salt, sea salt, spiced salt, etc.). In the 1800’s it was discovered that certain sources of salt gave meat a red color instead of the usual unappetizing grey. Consumers overwhelmingly preferred the red colored meat. In this mixture of salts were nitrites (saltpeter). As the microbiology of Clostridium botulinum was elucidated in the 1920’s it was realized that nitrites inhibited this organism.

**Jam and Jelly**

Preservation with the use of honey or sugar was well known to the earliest cultures. Fruits kept in honey were commonplace. In ancient Greece quince was mixed with honey, dried somewhat and packed tightly into jars. The Romans improved on the method by cooking the quince and honey producing a solid texture.

The same fervor of trading with India and the Orient that brought pickled foods to Europe brought sugar cane. In northern climates that do not have enough sunlight to successfully dry fruits housewives learned to make preserves—heating the fruit with sugar.
Canning

Canning is the process in which foods are placed in jars or cans and heated to a temperature that destroys microorganisms and inactivates enzymes. This heating and later cooling forms a vacuum seal. The vacuum seal prevents other microorganisms from recontaminating the food within the jar or can.

Canning is the newest of the food preservations methods being pioneered in the 1790s when a French confectioner, Nicolas Appert, discovered that the application of heat to food in sealed glass bottles preserved the food from deterioration. He theorized “if it works for wine, why not foods?” In about 1806 Appert’s principles were successfully trialed by the French Navy on a wide range of foods including meat, vegetables, fruit and even milk. Based on Appert’s methods Englishman, Peter Durand, used tin cans in 1810.

Appert had found a new and successful method to preserve foods, but he did not fully understand it. It was thought that the exclusion of air was responsible for the preservations. It was not until 1864 when Louis Pasteur discovered the relationship between microorganisms and food spoilage/illness did it become clearer. Just prior to Pasteur’s discovery Raymond Chevalier-Appert patented the pressure retort (canner) in 1851 to can at temperatures higher than 212ºF. However, not until the 1920’s was the significance of this method known in relation to Clostridium botulinum.

Conclusion

Some historians believe that food preservation was not only for sustenance, but also cultural. They point to numerous special occasion preserved foods that have religious or celebratory meanings. In America more and more people live in cities and procure foods commercially. They have been removed from a rural self-sufficient way of life. Yet, for many, a garden is still a welcome site. And, annually there exists a bounty crop of vegetables and fruits. It is this cultural nature of preserved foods that survives today. Interests have shifted from preserve “because we have to”, to “preserve because we like to.”

References and Sources


This material is based upon work supported by the Cooperative State Research, Education, and Extension Service, U.S. Department of Agriculture, under Agreement No. 00-51110-9762.


References to commercials products, services, and information is made with the understanding that no discrimination is intended and no endorsement by the University of Georgia, U.S. Department of Agriculture and supporting organizations is implied. This information is provided for the educational information and convenience of the reader.