

Methods of food preservation



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Introduction

Food is an organic substance once eaten provides human body with the required energy. Food is mostly organic in that it contains carbon and hydrogen molecules and degenerates over time. Food once exposed to air undergoes reaction which is normally referred to as degeneration. Scientists have observed that, if left unattended, food provides a perfect breeding site for micro-organisms. These micro-organisms which include bacteria and fungi produce poisons as they multiply while feeding on the food. This, if consumed can lead to fatal cases of diarrhoea and food poisoning.

It is due to this degeneration that people have come up with means of food preservation to make sure it last longer. Food preservation involves the delaying of the onset of multiplication of these micro-organisms. Food preservation is a process by which are prevented from getting spoilt for a long period of time. The colour, taste and nutritive value of the food are also preserved. (The National Institute of Open Schooling (NIOS))

People over time have learnt on better ways of keeping their food safe. The historical perspective of food preservation can be traced back to the early human development. When humans were hunters and gatherers, there was no need to preserve any food and early human could gather what they needed for the day. However, with the onset of agricultural production, farmers were faced with a challenge of making sure the harvest lasts until the next and they had to devise a way of preserving food. Early methods of preserving food were by smoking and drying. Later on they discovered salt

and used it for preservation. Over time, the methods have improved to the modern ones including food additives and refrigeration.

A story is told of how humans observed insects and the manner in which they were working during the sunny day and keeping enough stock for the rainy days. This concept has been adopted as the driving force behind food preservation.

There are various reasons why foods are preserved. The basic one is that people will need to keep some food to use when the supply is low. For example, people in Kenya do not have access to certain fruits all through out the year. To avoid a situation when they need that sweet mango and they can not find it anywhere, people opt to either process it into a fruit juice or manufacturers put it in can and use it later. This provides an opportunity where people have access to certain foods through out the year. The case is same in countries where they experience four seasons like US and Europe. Certain crops do not do well in winter hence the need to keep good stock.

Another reason for food preservation is that many people are aware of the need to avoid food wastage. Excess food is stored and used when there is less supply. People buy refrigerators so that they can keep the excess food and eat it later. As we will look later on in this paper, long periods of food in refrigerators can also be dangerous.

To help us understand how food poisoning works, we need to understand the nature of micro-organisms and how they relate to human body.

The human body is a well organized system allowing in beneficial micro-organisms and fighting those not beneficial. It is equipped with several defensive mechanisms including the skin, body fluids and gut enzymes that keep the body free from attacks. The body's defense systems detect micro-organisms and determine if they are pathogenic or virulence. This means they are capable of causing diseases.

Pathogens on the other hand have evolved long enough to devise their adaptation and trickery to dupe the body's defense mechanisms. For example micro organisms overwhelm the body cells by quickly multiplying and infecting the body before it realizes (Forbes et al). They also attack cells involved in defense.

Micro organisms produce poisons to help them establish infections and multiply within the host. For them to do this, they require toxins that in most cases cause disease in absence of pathogens.

Medical dictionary (<http://medical-dictionary.thefreedictionary.com>) defines food poisoning is a general term for health problems arising from eating contaminated food. Food may be contaminated by bacteria, viruses, environmental toxins, or toxins present within the food itself, such as the poisons in some mushrooms or certain seafood. Symptoms of food poisoning usually involve nausea, vomiting and/or diarrhea. Some food-borne toxins can affect the nervous system.

staphylococcus aureus is found on humans and in the environment in dust, air, and sewage. The bacteria is spread primarily by food handlers using poor sanitary practices. Almost any food can be contaminated, but salad

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dressings, milk products, cream pastries, and any food kept at room temperature, rather than hot or cold are likely candidates. (Gladwin & Tratler 2009)

Another cause of food poisoning is Escherichia coli (e. coli)

There are many strains of E. coli, and not all of them are harmful. The strain that causes most severe food poisoning is E. coli O157: H7. Food poisoning by E. coli occurs in three out of every 10, 000 people. Foodborne E. coli is found and transmitted mainly in food derived from cows such as raw milk, raw or rare ground beef and fruit or vegetables that are contaminated.

Symptoms of food poisoning from E. coli are slower to appear than those caused by some of the other foodborne bacteria. E. coli produces toxins in the large intestine rather than higher up in the digestive system. This accounts for the delay in symptoms and the fact that vomiting rarely occurs in E. coli food poisoning. (Gladwin & Tratler 2009)

The situations which provide appropriate conditions for growth of micro-organisms include food having high moisture content, air around the food containing micro organisms, foods kept for a long time at room temperature, skin of fruits and vegetables getting damaged, thus exposing the food to micro organisms and foods with low salt, sugar or acid content. (The National Institute of Open Schooling (NIOS))

Methods of food preservation

Food can be preserved through different ways. As we had seen earlier, methods of preserving food has evolved over time. The essence of food

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preservation is to reduce the number of micro organisms or deactivating their growth. This has to be done by either removing water in the food, deactivating the growth by freezing and killing existence micro organism by raising the temperature e. g cooking and boiling.