



Brief note on basic meat preservation techniques

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BACKGROUND

It is important to handle and store meat safely, as animal foods can carry a wide variety of bacteria. Proper storage of meat helps prevent spoilage and maximizes food. Proper storage can also prevent food poisoning caused by harmful bacteria. Temperature is the most important factor affecting bacterial growth. At temperatures below 3°C (38°F), the disease-causing bacteria do not grow well. Therefore, the meat should be stored at low temperature. Refrigeration is the most common method of preserving meat. The normal storage temperature for meat is between 2°C and +2°C. Improper food storage can have serious consequences as storage temperatures approach 40°F and are prone to spoilage. Rapid bacterial growth begins at about 50°F. Meat transferred from the place of purchase or thawed at room temperature promotes the growth of spoilage bacteria.

Myoglobin is an iron-containing protein pigment found in muscle, similar to hemoglobin. It is a protein found in animal muscle cells and is essential for the transfer of oxygen in the blood from the lungs to tissues. It functions as oxygen storage unit and supplies oxygen to skeletal muscle. It does not circulate in the blood, but is fixed to tissue cells and turns purple. Upon contact with oxygen, myoglobin is converted to oxymyoglobin, giving the meat a plain color. Myoglobin acts as a local oxygen reservoir that can provide temporary oxygen in the event of insufficient oxygenation of the blood during periods of intense muscle activity. Meat preservation, also known as hardening, involves adding flavors and spices that preserve the meat. Sausage making is an example of meat preservation and began as a process whose sole purpose was to make the meat last longer and taste better after consumption. Meat can also be cured with the chemical nitrates and nitrites. These add flavor and colour to meat that is not consumed on the day it is harvested from the animal. Pickling is also a very safe storage involves

the treatment of oxygen, water and acids. Soaking food in vinegar effectively fixes all three. Almost all fruits and vegetables can be pickled, and in many cases the addition of vinegar-based salt water will significantly improve the flavor of the pickles.

The maximum crucial physical changes precipitated *via* way of means of freezing are: molecular quantity modifications, discoloration of water for the duration of freezing, mechanical damage, freeze-cracking, moisture migration for the duration of garage, freezer burn, and recrystallization of ice and exudate production. Freezing is one of the best strategies of retaining meat. Chemical adjustments in frozen meat for the duration of garage encompass discoloration and improvement of oxidative rancidity (which end result from oxidation of myoglobin and unsaturated lipids, respectively) and texture hardening because of protein denaturation and aggregation. The freezing system itself does not ruin nutrients. Chilling may be described because the essential operation in making use of bloodless to meat to lessen its temperature quick. This is carried out in a chilled chamber with extensive air draught or movement. Different structures of number one chilling are in use (which includes immersion in iced water, particularly for chicken) however air chilling is the maximum common.

The cold chambers where chilling takes place must have a low air temperature, a high air speed, a high relative humidity and a high refrigerating capacity. Cooling tunnels used for chilling meat are usually of the continuous type. Here again meat is subjected to a two phase process, with conditions similar to the cold chamber. However the temperature can be as low as 5°C for a short time. Beef carcasses can reach an average temperature of about 15°C in a four hour period, while pork and mutton reach the same temperature in two to two and a half hours. The surface temperature drops to 4-5°C. In the second phase, the conditions are less stringent and after 15-16 hours in the secondary cooling chamber the average temperature stabilizes at about 4°C. This

method is used in large slaughterhouses, especially for carcasses of pigs. Beef and mutton have a risk of cold shortening, so it is recommended to cool them slowly. As with refrigeration, there is also weight loss due to evaporation. This can be considered a freezer burn is superficially dry areas that can also occur

with packaged meat if the packaging film is loose and the temperature in the chamber fluctuates. For unwrapped meat, weight loss in the range of 1-4% promotes sensual spoilage. The surface of the meat dries and becomes porous, promoting rancidification and flavor transmission.