

FOOD PRODUCTION MANAGEMENT II

OBJECTIVES

At the end of this lesson, students should be able to demonstrate appropriate skills, and show an understanding of the following:

- Meat Cooker
- Mutton and Lamb
- Beef and Veal
- Parks, Bacon, Ham and Gammon
- Game
- Poultry and Chicken

INTRODUCTION

In basic food preparation, meat is generally considered to be the flesh of any animal and includes beef, veal, lamb, and pork along with poultry, fish, and shellfish. Poultry and fish, however, often differ from the red meats in preparation and tests for doneness (rare, medium and well done). The word meat comes from the Old English word mete, which referred to food in general. The narrower sense that refers to meat, which does not include sea food, developed over the past few hundred years and has religious influences.

Meat, especially beef, is prepared in many ways, as steaks in stews, fondue, or as dried meat. It may be ground then formed into patties (as hamburgers or croquettes), loaves, or sausages, or used in loose form (as in "sloppy Joe" or Bolognese sauce). Some meat is cured by smoking, pickling, preserving in salt or brine (see salted meat and curing). Other kinds of meat are marinated and barbecued, or simply boiled, roasted, or fried. Meat is generally eaten cooked, but there are many traditional recipes that call for raw beef, veal or fish. Meat is often spiced or seasoned, as in most sausages. Meat dishes are usually described by their source (animal and part of carcass) and method of preparation.

Meat is a typical base for making sandwiches. Popular varieties of sandwich meat include ham, pork, salami and other sausages, and beef, such as steak, roast beef, corned beef, and pastrami. Meat can also be molded or pressed (common for products that include offal, such as haggis and

scrapple) and canned. All muscle tissue is very high in protein, containing all of the essential amino acids, and in most cases, is a good source of zinc, vitamin B12, selenium, phosphorus, niacin, vitamin B6, iron and riboflavin. However, meat is very high in fat, low in carbohydrates, and contains no fiber. The fat content of meat can vary widely depending on the species and breed of animal, the way in which the animal was raised, including what it was fed, the anatomical part of the body, and the methods of butchering and cooking.

2 MEATS

The different types of meat discussed here are lamb, mutton, beef, veal, pork and game.

In order to cook meat properly, it is important to know the composition and structure of the meat.

1. Meat is composed mainly of muscle fibers, which vary in size. Larger fibers indicate a naturally less tender cut of meat and small fibers indicate a tenderer cut of meat. For example, a chuck steak is less tender than filet mignon.
2. Meat also contains connective tissue. One connective tissue, **collagen**, hydrolyzes to gelatin during cooking. **Elastic**, the other connective tissue, does not become tenderer during cooking.
3. The primary nutrient found in meat is **protein**. Protein is composed of amino acids, which build and maintain all tissues, forms an important part of enzymes, hormones and body fluids, and supplies energy. The body can manufacture some amino acids; others are supplied only by food. Excess protein is converted to fat and stored.
4. Other nutrients found in meat include fat, carbohydrates, vitamins, and minerals. Meats in general are high in cholesterol than fish. In the descending order of cholesterol content, pork or products of pork in all forms are highest followed by beef, sheep / lamb and chicken.

MUTTON AND LAMB

The terms lamb, hogget or mutton are names for the animals or meat of a domestic sheep. The meat of a sheep a year old or younger is generally known as lamb, whereas the meat of an older sheep is either hogget or mutton depending on its age and characteristics. All of these are known generically as sheep meats. A sheep less than one year old is known for its tender meat.

Baby lamb and spring lamb are both milk fed. **Baby lamb** is customarily slaughtered at between 6 and 8 weeks old. **Spring lamb** is usually 3 to 5 months old; **regular lamb** is slaughtered under

a year of age. Lamb between 12 and 24 months is called **yearling**; when over 2 years, it's referred to as **mutton** and has a much stronger flavor and less tender flesh.

Cuts of Lamb / Mutton

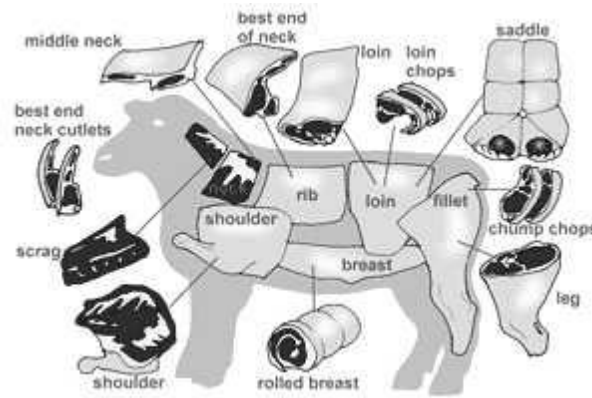


Figure: Cuts of Lamb

Breast This cut is from the rib cage and is one of the cheapest cuts and whilst the price is similar to scrag end, but is much more versatile. It can be roasted on the bone, boned, stuffed and rolled, or when well trimmed, can be used for mince, burgers or skewers (kebabs). Some butchers also sell this cut in strips which are ideal for barbecues.

Flank Unlike other cuts from the loin area, the flank is much tougher and is usually sold as mince meat.

Fore shank Also known as Lamb shanks, this cut is suitable for slow roasting, stewing and braising. It has become very popular in recent years especially when braised when a whole shank with the bone is served per person. It is a very flavorful cut of meat.

Leg This is a prime cut with little fat which is excellent for roasting as a joint. It is often cut into lamb steaks suitable for frying or grilling or into cubes for lean kebabs.

Loin The loin is the tenderest part of the lamb. It is from this area that loin chops come from as well as medallions, noisettes as well as roasting cuts. Suitable for roasting although the joints tend to be small unless you have a whole saddle which is made up of a double loin roast, from both sides of the backbone. Frying and grilling are excellent for the smaller cuts.

Neck This is one of the tougher cuts and is generally sold as Stewing lamb or made into mince (ground) meat. When sold in pieces it is only suitable for very long, slow, moist cooking.

Although tough the flavour is very good so well worth the extra cooking. Best End of neck is traditionally used for Lancashire Hotpot.

Scrag Also known as scrag end or neck end, this is one of the tougher cuts and is therefore one of the cheaper ones. The meat from this area is often more fatty than other cuts and is usually sold chopped or diced for use in stews and casseroles.

Rack A "rack of lamb" is the name given to the whole rib section on either side of the backbone between the shoulder and the loin. A tender and flavoursome cut, it is also expensive and it is suitable for dry heat cooking such as roasting or grilling.

Shoulder Shoulder is often sold as two separate joints, blade and arm (knuckle). The whole shoulder is also sometimes called "square cut" which consists of the arm, blade, and rib bones. Shoulder meat is also often trimmed of fat and sold as cubes for curries, kebabs and casseroles. Shoulder chops are suitable for pan frying, grilling or braising.

17.4 BEEF AND VEAL

Beef is the meat from bovines, especially domestic cattle. Fresh beef has cream-colored fat and bright red meat. The best beef is marbled with fine strands of fat, which bastes the meat as it cooks and makes it tender and juicy.

Veal comes from young calves, and so the meat is tender and lean and the flavor is delicate. The best way to cook veal is with moist heat, either by braising it or cooking it in a liquid. Since the meat is lean, it tends to dry out when cooked with dry heat. When selecting veal, check to make sure that the meat is moist and light pink-gray in color, that the fat is white, and that the bones are engorged with blood. In addition to providing meat, the bones of calves are used to make a stock that forms the base for sauces and soups such as demi-glace. The stomachs are also used to produce rennet, used in the production of cheese.

Terms Used in Beef Industry

Carcass: Whole animal after dressing from the slaughter house.

Side A carcass that has been split down the centre of the spinal column.

Quarter A side that has been sub-divided into two sections as forequarters-hindquarters.

Crop Fore quarters minus the plate, brisket and shin

Baron A complete back (uncut) which is a pair of sirloins undivided.

Offals Product derived from the process of slaughtering other than the carcass, the edible internal organs e.g. liver, heart, sweet bread, head, tongue, tail, brains, kidneys.

Cuts of Beef

Neck This is one of the tougher cuts and is generally sold as Stewing Steak or made into mince (ground) meat. When sold in pieces, it is only suitable for very long, slow, moist cooking.

Blade & This cut is often sold as Braising Steak. A little more

Chuck tender than stewing steak. Use in casseroles, stews and to braise.

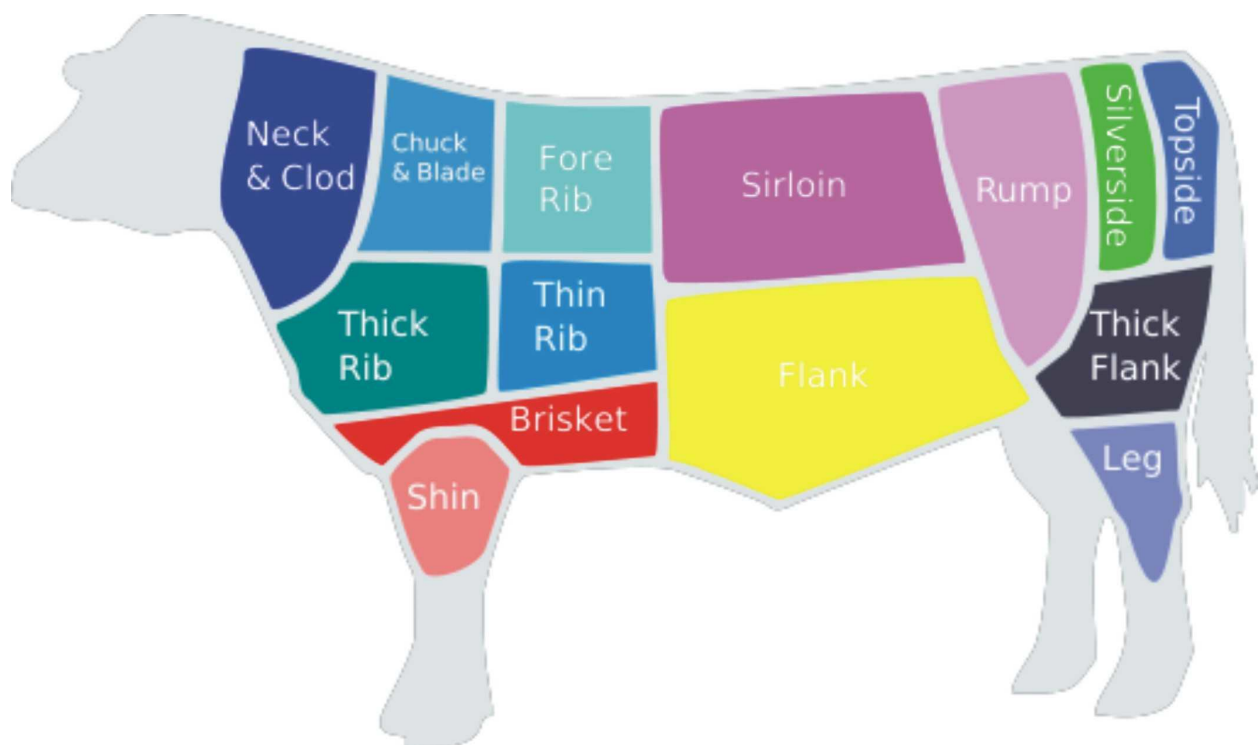
Fore Rib Sometimes sold boned and rolled but is traditionally sold on the bone. Has a higher fat content throughout the flesh and makes a superb roast. It can also be cut into steaks for grilling or frying.

Thick Rib This cut is often sold as Braising Steak. A little more tender than stewing steak. Use in casseroles, stews and to braise.

Thin Rib This is one of the tougher cuts and is generally sold as mince (ground) meat.

Brisket Often sold boned and rolled and sometimes salted. Suitable for slow or pot roasting. Traditionally used for making corned beef.

Figure: Cuts of Beef



Shin This is one of the tougher cuts and is generally sold as Stewing Steak or made into mince (ground) meat. When sold in pieces it is only suitable for very long, slow, moist cooking.

Sirloin Often sold boned and rolled. A prime cut which is suitable for roasting.

Sirloin Steak Comes from the same area as sirloin but cut into steaks such as "T"-bone, Porterhouse and Entrecote. A prime cut which is suitable for grilling, frying, stir fries and barbecuing.

Thin Flank often used for minced or ground meat. It is suitable for cottage pie, Bolognese sauce and burgers. Thin flank is also known as Top Rump. Similar to topside and can be slow roasted as a joint or slow fried or braised in pieces. It is also sold as "flash fry" steaks.

Leg This is one of the tougher cuts and is generally sold as Stewing Steak. It is only suitable for very long, slow, moist cooking.

Silverside Although this was traditionally salted and sold as a boiling joint, this very lean piece of meat is now most often sold unsalted as a joint for roasting. It requires frequent basting through the cooking time.

Topside Very lean and when sold as a joint for roasting, often has a layer of fat tied around it to help baste and keep it moist. It is also suitable cut into steaks for frying or grilling and in stir-fries.

Rump Although a prime cut, it is usually cheaper than fillet or sirloin because it's not quite as tender. Suitable for quick cooking e.g. frying, stir-fries, grilling or barbecuing.

Shank This is one of the tougher cuts and is generally sold as mince (ground) meat.

Steaks

A steak is a slice from a larger piece of meat typically from beef. Most steaks are cut perpendicular to the muscle fibres, improving the perceived tenderness of the meat. A restaurant that specializes in beef steaks is known as a steakhouse. A typical steak dinner consists of a steak, with a starchy side dish, usually baked potatoes, but occasionally another potato dish, rice, pasta, or beans. In France, beef steak is usually served with French fried potatoes also known as "pommes frites", and the combination is known as "steak-fries".

The different types of beef steaks are given below:

1. Chateaubriand steak - Usually served for two, cut from the large head of the tenderloin.
2. Chuck steak - A cut from neck to the ribs.
3. Cube steak - A cut of meat, usually top round, tenderized by a fierce pounding of a mallet.

4. Filet mignon - small choice tenderloin, the most tender cut, less flavorful. Flank steak - From the underside. Not as tender as steaks cut from the rib or loin.
5. Flat iron steak - A cut from the shoulder blade.
6. Hanger steak or (French) onglet - A steak from near the center of the diaphragm. Flavorful, and very tender towards the edges, but sinewy in the middle. Often called the "butcher's tenderloin." Popular steak cuts of North Americans are Porterhouse steak, New York steak, Sirloin steak, T-bone steak, round steak, rump steak, etc. Depending on the extent of cooking, finished product is called rare, medium or well done.

SALAMI AND SAUSAGES

AIMS AND OBJECTIVES

At the end of this lesson, students should be able to demonstrate appropriate skills, and show an understanding of the following:

- Sausages
- Types of sausage
- Salami
- Salami ingredients and manufacturing process
- Varieties of salami

8.1 INTRODUCTION

Sausage is a convenience food available in a great number of varieties and flavors. Sausages are an excellent source of high quality protein, containing all the essential amino acids in appropriate amounts necessary for growth, maintenance and repair of body tissue. Sausage also provides significant amounts of vitamins and minerals.

The word sausage originally comes from the Latin word *salsus*, which means salted or preserved. In the olden days people did not have refrigeration to preserve their meat and so making sausage was a way of overcoming this problem. Sausage making evolved as an effort to economize and preserve meat that could not be consumed fresh at slaughter. In sausage making, quality standards are maintained while using most parts of the animal carcass. Sausage grew in popularity and brought fame and fortune to many sausage makers and to various cities. Basically people living in particular areas developed their own types of sausage and that sausage became

associated with the area. For example Bologna originated in the town of Bologna in Northern Italy, Lyons sausage from Lyons in France and Berliner sausage from Berlin in Germany.

Today more than 250 varieties are sold, and many of these can be traced back to the town and country of origin. The contemporary role of sausage fits conveniently into our modern lifestyles as an elegant appetizer for entertaining as well as the main course in "quick-and-easy" meals. Furthermore, sausages are a relatively safe product to consume because of the added effects of salt, pH, cure, drying and cooking to preserve the product all of which eliminate harmful bacteria. Salami is a cured sausage, fermented and air-dried. Salami may refer specifically to a class of salami (the Italian tradition of cured meats), where an individual sausage or style of sausage (e.g. Genoa) would be referred to with the singular Italian form salami. Alternatively, in general English usage, salami may be singular or plural and refer to a generic style or to various specific regional styles from Italy or elsewhere, such as France or Germany. The name comes from the Latin/Italian root sal-, meaning 'salt'.

Historically, salami has been popular amongst Italian peasants due to being a meat product able to be stored at room temperature for periods of up to a year, supplementing a possibly meager or inconstant supply of fresh meat.

8.2 SAUSAGES

Sausage (pronounced SAW-sidge) is a prepared food product usually made from ground meat, animal fat, salt, and spices, and sometimes other ingredients such as herbs, and generally packed in a casing. Sausage making is a very old food preservation technique.

Traditionally casings have been made of animal intestines, though they are now often synthetic. Some sausages are cooked during processing, and the casing may be removed at that time.

Sausages may be preserved by curing, drying in cool air, or smoking. The distinct flavor of some sausages is due to fermentation by *Lactobacillus* during curing.

There is no consensus if similar products not packed in casings, such as pâté, meatloaf, scrapple and head cheese should be considered sausage. Besides being eaten on its own, sausage is also used as an ingredient in other foods.

8.3 TYPES OF SAUSAGE

Sausages are made from beef, veal, pork, lamb, poultry and wild game, or from any combination of these meats. Sausage making has become a unique blend of old procedures and new scientific, highly-mechanized processes. Traditionally, sausage was formed into a *symmetrical* shape, but it

now can be found in a variety of shapes and sizes to meet consumers' needs. Many sausage products are vacuum packed, freshness dated and 100% edible. Sausages can be classified in a variety of ways, but probably the most useful is by how they are processed. Processing methods give sausages easily recognizable characteristics.

1. Cooked Sausage:

It is made with fresh meats and then fully cooked. The sausage is either eaten immediately after cooking or must be refrigerated and is usually reheated before eating. Examples include Braunschweiger, Veal sausage and Liver sausage.

2. Cooked Smoked Sausage:

Much the same as cooked sausage, but it is cooked and then smoked, or smoke-cooked. It can be eaten hot or cold, but is stored in the refrigerator. Examples include Wieners, Kielbasa and Bologna.

3. Fresh Sausage:

It is made from meats that have not been previously cured. This sausage must be refrigerated and thoroughly cooked before eating. Examples include Boerewors, Italian Pork sausage and Fresh Beef sausage.

4. Fresh Smoked Sausage:

This is fresh sausage that is smoked. After smoking, the sausage can then be refrigerated and cooked thoroughly before eating. Examples include Mettwurst and Roumanian sausage.

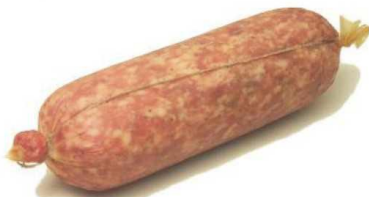
5. Dry Sausage:

It is made from a selection of meats. These are the most complicated of all sausages to make, as the drying process has to be carefully controlled. Once produced this type of sausage can be readily eaten, and will keep for very long periods under refrigeration. Examples include Salami's

and

summer

sausage.



Cotechino



French Andouille



Grutzwurst



Weiner



Italian sausage



Kishke



Merguez



Creole pickled pork



Scrapple

Figure 8.1 Sausages

8.4 SALAMI

Salami is a cured (fermented and air-dried) sausage of Italian tradition. The name comes from the Italian verb *salare*, meaning 'to salt.'

Historically, salami has been popular amongst Italian peasants due to being a meat product able to be stored at room temperature for periods of up to a year, supplementing a possibly meagre or inconstant supply of fresh meat.

8.4.1 Ingredients of Salami

Traditional salami is made from a mixture which may include the following:

- Chopped beef, pork, donkey

- wine (not always)
- salt
- Various herbs and spices.

Other types of salami, such as imported brands from Italy or Spain typically substitute herd meats, such as donkey or ox into the mixture, which is then left to cure separately, leaving a marbled effect. The raw meat mixture is usually allowed to ferment for a day and then the mixture is either stuffed in an edible natural or nonedible artificial casing or hung to cure. The casings are often treated with an edible mold (*Penicillium*) culture as well. The mold is desired as it imparts flavor and prevents spoilage during the curing process.

More modern (but still traditional) mixtures include additional ingredients to assist in the fermentation process. These ingredients aim to take the guesswork out of traditional curing and can be found in many of the finest salami varieties in the world, although some producers eschew the nitrates and nitrites due to health concerns.

8.4.2 Manufacturing Process

Though uncooked, salami are not raw; they have been prepared via curing. The term cottage salami refers to salami cooked or smoked before or after curing. This is done to impart a specific flavor but not to cook the meat. Before curing, cottage salami is still considered raw and is not ready to be eaten. Most kinds of salami made from donkey or ox are considered "cottage" Salami is cured in warm, humid conditions in order to encourage growth of the bacteria involved in the fermentation process. Sugar is added as a food source for the bacteria during the curing process, although it tends not to be added to horse meat due to the latter's naturally high levels of glycogen.

Lactic acid is produced by the bacteria as a waste product, lowering the pH and coagulating and drying the meat. The acid produced by the bacteria makes the meat an inhospitable environment for other, dangerous bacteria and imparts the tangy flavor that separates salami from machine-dried pork. The flavor of salami relies just as much on how this bacterium is cultivated as it does on quality and variety of other ingredients. Originally, the bacteria were introduced into the meat mixture with wine, which contains other types of beneficial bacteria; now, starter cultures are used. The whole process takes about 36 weeks, although some age it more for additional taste and some can cut it down to about 24 weeks for a sweeter taste.

The curing process is determined by the climate of the curing environment and the size and style of casing. After fermentation, the sausage has to be dried. This changes the casings from being water-permeable to being reasonably airtight. A white covering of either mold or flour helps prevent the photo-oxidation of the meat and rancidity in the fat.

Under some conditions the nitrate probably comes from the breakdown of proteins. Salt, acidity, nitrate levels and dryness of the fully-cured salami combine to make the raw meat safe to consume.

VARIETIES OF SALAMI

Varieties of salami include:

1. **Beer wurst, Beer Salami** is a cooked sausage of German origin; beef and pork, chopped and blended; seasoning includes garlic; cooked at high temperatures; smoked. Packaged in slices or in bulk rolls for slicing.
2. **Calabrese Salami** is a dry sausage of Italian origin; usually made from all pork; seasoned with hot peppers.
3. **Cooked Salami** is made from fresh meats, which are cured, stuffed in casings, and then cooked in the smokehouse at high temperatures. May be air dried for a short time; softer texture than dry and semi-dry sausages. Cooked salamis are not dry sausage. They belong to the cooked sausage group and must be refrigerated.
4. **Cotto Salami** is cooked salami; contains whole peppercorns; may be smoked as well as cooked.
5. **Easter Nola** is a dry sausage of Italian origin; coarsely chopped pork; mildly seasoned; spices include black peppers and garlic.
6. **Genoa Salami** is a dry sausage of Italian origin; usually made from all pork but may contain a small portion of beef; moistened with wine or grape juice; seasoned with garlic; a cord is wrapped lengthwise and around the sausage at regular intervals
7. **German Salami** is less highly flavored and more heavily smoked than Italian; contains garlic. **Hungarian Salami** is less highly flavored and more heavily smoked than Italian salami; contains garlic. **Italian Salami** includes many varieties named for towns and localities, e.g., Genoa, Milano, Sicilian; principally cured lean pork, coarsely chopped and some finely chopped lean beef; frequently moistened with red wine or grape juice; usually highly seasoned with garlic and various spices; air dried; chewy texture.

8. **Kosher Salami** is all beef cooked salami. The meat and the processing are under rabbinical supervision. Mustard, coriander and nutmeg added to regular seasonings.

PORK

Pork is the meat from the domestic pig (*Sus scrofa*). It is one of the most commonly consumed meats worldwide. Pork is eaten in various forms, including cooked (as roast pork), cured or smoked (ham, including the Italian Prosciutto) or a combination of these methods (gammon, bacon or Pancetta). It is also a common ingredient of sausages.

Cuts of Pork

Head This can be used to make brawn, stocks and soups. After boiling the ears can be fried or baked and eaten separately, which are crunchy due to cartilage bones. It is considered a delicacy.

Spare Rib This is the shoulder and contains the shoulder blade. It can be boned out and rolled up as a roasting joint, or cured as "collar bacon". Not to be confused with the rack of spare ribs from the front belly. Boston Butt, or Boston-Style Shoulder, cut comes from this area, and may contain the shoulder blade.

Hand / Arm This can be cured on the bone to make a ham, or used in sausages.

Loin This can be cured to give back bacon or Canadianstyle bacon. The loin and belly can be cured together to give a side of bacon. The loin can also be divided up into roasts (blade loin roasts, center loin roasts, and sirloin roasts come from the front, center, or rear of the loin), back ribs (also called baby back ribs, or riblets), pork cutlets, and pork chops. A pork loin crown roast is arranged into a circle, either boneless or with rib bones protruding upward as points in a crown.

Belly The belly, although a fattier meat, can be used for steaks or diced stir-fry meat. Belly pork may be rolled for roasting or cut for streaky bacon.

Legs / Hams Although any cut of pork can be cured, technically speaking only the back leg is entitled to be called a ham. Legs and shoulders, when used fresh, are usually cut bone-in for roasting, or leg steaks can be cut from the bone. Three common cuts of the leg include the rump (upper portion), center, and shank (lower portion).

Trotters Both the front and hind trotters can be cooked and eaten, as can the tail.

Spare ribs are taken from the pig's ribs and the meat surrounding the bones.

BACON, HAM AND GAMMON

Bacon

Bacon is any of certain cuts of meat taken from the sides, belly or back of a pig that may be cured and/or smoked. Meat from other animals may also be cured or otherwise prepared to resemble bacon, such as beef, lamb, chicken, goat or turkey bacon. In continental Europe, it is used primarily in cubes (lardons) as a cooking ingredient valued both as a source of fat and for its flavour.

Typical breakfast menu of North Americans, some Europeans and Austrialians includes orange juice, strips of sizzling bacon streps, scrambled eggs and bread toast.

Ham

Ham is from the hind legs of the pig - there are rapid-cured and slow-cured hams. Various factors influence the flavour and texture of ham including the cut and curing process chosen, whether the meat has been dry-salted or cured in brine (and for how long), whether it has been air-dried or smoked, and the smoking medium (hickory, juniper or oak, for instance). The breed of pig can also affect the flavour.

There are three types of American hams: **city hams**, **country hams** and **fresh hams**. City hams are the most common. They're soaked in brine (or injected with it) and then boiled or lightly smoked.

Many gourmets prefer country hams, which are dry-cured and then smoked and aged for added flavor. Fresh hams aren't cured at all and need to be cooked. Ham is relatively low in fat, but even low-salt hams are high in sodium.

Gammon

Gammon is also from the hind legs, and is sold raw for cooking. Bacon cured using the "Wiltshire Cure" method, boned and cut into 3 Lb. joints. It can be sliced to make gammon steaks, boiled to make ham sandwiches or baked. Historically the word Gammon was used for cured whole sides of pork where the whole hog side including the hams, middle or loins, and the shoulders. In recent times the word Gammon is used mostly for the hams.

17.7 GAME

Game is any animal hunted for food or not normally domesticated (such as venison). The type and range of animals inhabit and hunted for food varies in different parts of the world. This will be influenced by climate, animal diversity, local taste and locally accepted view about what can or cannot be legitimately hunted. Sometimes a distinction is also made between varieties and

species of a particular animal, such as wild or domestic turkey. In Africa, wild animals hunted for their meat are called bush meat.

As it is less fatty than poultry or meat, game is easily digested, with the exception of water fowl, which has oily flesh. Game is useful for building and repairing body tissues and for energy.

17.7.1 Game Varieties

Game varieties could be broadly grouped into two: birds and animals:

Quail Quails have dark meat that's quite tasty. They're very lean, so they are generally barded before roasting or marinated grilling. Quail are commonly eaten complete with the bones, since these are easily chewed and the small size of the bird makes it inconvenient to remove them.

Wild Duck The meat of a duck is mostly on the breast and the legs. The meat of the legs is darker and somewhat fattier than the meat of the breasts, although the breast meat is darker than the breast meat of a chicken or a turkey. Being waterfowl, ducks have a layer of heat-insulating subcutaneous fat between the skin and the meat. Boneless duck breast is also called "magret" and can be grilled like steak, usually leaving the skin and fat on. Internal organs such as heart and kidneys may also be eaten; the liver in particular is often used as a substitute for goose liver in foie gras.

Partridge These small, plump birds are related to pheasants, and very tasty. Varieties include the chukar, redlegged partridge or French partridge, and grey partridge or English partridge.

Pigeon Pigeon meat is dark and very tender. Varieties include the squab, which is a young pigeon that's never flown, the wood pigeon, rock dove, and ring dove.

Venison The term venison applies to deer meat, elk meat, moose meat, caribou meat, and reindeer meat, all of which can be used interchangeably. Venison is very lean, so it's important not to overcook it. The best cuts are from the back strap, or loin area.

Alligator Alligator meat is lean and mild and people say it tastes like a combination of pork, chicken, and rabbit. The best meat comes from the tail.

Antelope Antelope are related to goats, but the meat resembles strongly-flavored venison.

Bear Compared with beef, bear is high in protein and low in fat and calories. Make sure you cook it thoroughly-- it's possible to contract trichinosis from undercooked bear meat.

Bison Buffalo (Bison) meat tastes like beef, but it's a lot leaner. Tougher cuts are cooked very slowly over low heat. Meat is pale coloured and slightly sweetish.

Rabbit Rabbit is low in fat and similar in taste and texture to chicken.

Boar Boar (also known as wild boar) meat is similar to pork, only leaner, redder, and stronger-tasting. It should be cooked thoroughly, it's possible to contract trichinosis from undercooked boar meat.

Grouse This is possibly the most choice of all game birds, with flavorful, dark meat. Varieties include the ptarmigan, capercaillie, and blackcock.

Kangaroo Kangaroo meat is becoming increasingly popular in Australia. It has a very strong, gamy flavor that's a bit like venison. It's very lean, so overcooking should be avoided.

Turtle (also called cooter) Turtle meat is very flavorful though it's somewhat chewy. It often goes into soups.

Processing of Game

Once obtained, game meat must be processed. The method of processing varies by game species and size. Small game and fowl may simply be carried home to be butchered. Large game such as deer is quickly field-dressed by removing the viscera in the field, while very large animals like moose may be partially butchered in the field because of the difficulty of removing them intact from their habitat.

Some believe the meat tastes better and is tenderer if it is hung and aged for a few days before processing; however, this adds to the risk of contamination. Small game can be processed essentially intact; after gutting and skinning or defeathering (by species), small animals are ready for cooking although they may be disjointed first. Large game must be processed by techniques commonly practiced by commercial butchers.

17.7.3 Cooking of Game

Generally game is cooked in the same ways as farmed meat. Because some game meat is leaner than traditional store-bought beef, overcooking is a common mishap which can be avoided if properly prepared. It is sometimes grilled or cooked longer or by slow cooking or moist-heat methods to make it more tender, since some game tends to be tougher than farm-raised meat.

Other methods of tenderizing include marinating as in the dish Hasenpfeffer. Proteolytic enzymes present in unripe fruit may also be used as meat tenderizers. Commercially available and popular tenderizers and papain (from papaya latex) and bromelain from pineapple. Traditionally, game meat used to be hung until "high", i.e. approaching a state of decomposition. The term 'gamey', 'gamy' refers to this usually desirable taste (*haut goût*).

17.8 POULTRY

Poultry is the catch-all term for domesticated birds that are meaty enough to eat. Poultry tends to be lower in saturated fat than other meats, so it's a good choice for health or weight. The fat can be still more lowered by removing the skin and by using light meat from the breast instead of the darker meat from the thighs and legs. Younger birds are more tender than older ones, so they're best for grilling, roasting, and frying. Older, tougher birds do better if they're cooked in stews or soups. Poultry includes the different varieties and sizes of chicken, turkey ducks; geese and guinea fowls.

Chicken Chicken is the meat derived from the chicken. It is the most common type of poultry in the world, and is frequently prepared as food in a large number of ways.

Duck This fatty bird makes a divine roast, but it's hard to cook without setting off the smoke alarm. It helps to pour off the fat while it's roasting. Wild ducks are less fatty than store-bought ducks. A young duck, called a duckling, broiler duckling, roaster duckling, is more tender than an old duck or mature duck. High fat meats like duck generally should be cooked at a higher temperature and for a longer time than low-fat meats.

Goose The meat is dark and fatty, and more like beef than chicken. Young goslings are the priciest, and the tenderest. Wild goose is tougher and has a much stronger flavor than a domesticated goose. High-fat meats like goose should be cooked at a higher temperature and for a longer time than low-fat meats. Frozen goose is a good substitute for fresh.

Guinea fowl This small bird is very lean and tastes like a pheasant. It's very lean, so bard it before roasting, or marinate it before putting it on the grill.

Poussin A poussin is a very young chicken, and it has a very delicate flavor and very little fat. They're available in some gourmet markets.

Cuts of Poultry

Whole Poultry

The chicken with all parts intact, generally including the giblets stuffed in the cavity. Consists of white and dark meat.

Poultry Half

The chicken is split in half lengthwise through the breast and back, leaving fairly equal halves consisting of the same parts. Both halves consist of white and dark meat.

Breast is the entire breast portion of the chicken. It is available bone-in, boneless, skin-on and skinless. It consists of white meat only.

Breast Quarter

Generally includes a little more than one quarter of the meat on the chicken. The cut includes half a breast, a wing, and part of the back.

Breast Halves also referred to as split breast. The breast portion of the chicken that has been split lengthwise, producing two halves. They are available bone-in, boneless, skin-on and skinless. Larger breast halves are sometimes cut in half to provide smaller portion sizes. It consists of white meat only.

Tenderloin

The muscle of the breast, which runs along both sides of the breastbone, located on the upper portion of the breast. It consists of white meat only.

Wing: The wing of the chicken consists of three sections, the wing tip, the wingette (or flat wing tip), and the drummettes.

Drummette: It is the section of the wing that is connected to the body of the bird and contains most of the wings meat. It resembles a very small drumstick.

Wingette: It also referred to as the flat wing tip. It is the middle section of the wing, which does not contain much meat, but is generally moister than the drummette.

Wing Tip: is the third and outer most section of the wing.

Does not contain much meat and is many times discarded. It can be used when making stock to help add flavor to the broth.

Leg Quarters: Generally includes a little less than a quarter of the meat on the chicken. The cut includes a thigh, drumstick, and a part of the back.

Leg: The leg of the chicken consists of two parts, which are the thigh and the drumstick. Consist of dark meat only.

Thigh: The top portion of the leg above the knee joint that is connected to the body of the chicken. It consists of all dark meat.

Drumstick: The bottom portion of the leg below the knee joint. It consists of all dark meat.

Giblets: Consists of the neck, liver, heart, and gizzard (comparable to offal in beef).

CHICKEN

Chicken is a relatively lean and inexpensive meat, so it's a culinary workhorse. Broilers are between 2 1/2 and 5 pounds, and can be broiled, roasted, or fried. They're not good for stewing.

Stewing chickens are tougher and best used, as their name suggests, in stews and soups. For soups, generally young chicks are used rather than fully matured birds. Capons are castrated male chickens that are large (between 5 and 10 pounds) and tender, and have relatively more white meat. They're great for roasting. Freerange chickens are tastier and more humanely raised, but tougher and more expensive.

Classification of Chicken

Chickens are first classified by age and weight. Young chickens are tender and cook quickly; older chickens need slow cooking to make them tender. For best results, it's important to know which type of chicken to buy for cooking.

Broiler-fryers are young chickens weighing from 1 1/2 to 3 1/2 pounds.

Only 7 to 10 weeks old, they yield tender, mildly flavored meat and are best when broiled, fried, or roasted.

Roasters are 4- to 6-pound chickens that are 16 weeks old. As the name implies, they are perfect for roasting and rotisserie cooking.

Capons are young, castrated roosters that weigh from 5 to 7 pounds. These richly flavored birds have a higher fat content and yield more meat than roasters.

Stewing are adult chickens from 1 to 1 1/2 years old. They weigh

Hens from 4 1/2 to 7 pounds and have tough, stringy meat and require prolonged cooking for more than an hour or two to make the meat edible. Stewing hens are excellent for stocks, soups, or stews, since moist-heat preparation tenderizes them and enhances their flavor.

Whole of every type are available with the neck and giblets

Chickens wrapped separately and stuffed inside. Look for livers and giblets packaged separately in the shops for use in stuffings, soups, and specialty dishes.

Cut-up usually broiler-fryers, are disjointed whole chickens

Chicken consists of two breast halves, two thighs, two wings, and two drumsticks. Small broiler-fryers are also available in halves and quarters.

17.9.2 Selection of Chicken

1. Soft fluffy feathers should be all over the body, especially concentrated under the wings.
2. The feathers should be easy to pull out.
3. The skin should be clear and smooth with no bluish tinge spots.
4. The feet should be supple with smooth overlapping scales, and if fresh, moist.

5. Combs and wattle (the skin hanging near the beak) small and well developed. The comb should be bright red.
6. Conformation or the shape of the bird is important, and the bird should be free from deformity.
7. The eyes should be prominent and clear.
8. It should not have a marked unpleasant smell.

Cutts of Chicken

Whole chickens tend to intimidate beginning chefs. Whole chickens do have a lot of pieces, but they are relatively easy to work with. They're cheaper to buy and give freedom to create the meal of interest. There are a few different techniques for cutting a whole chicken. This is a basic method for cutting up and disjointing a whole chicken with the least amount of waste.

1. Remove the legs

Place the chicken breast side up on a solid cutting board. Pull one leg away from the body and cut through the skin between the body and both sides of the thigh. Bend the whole leg firmly away from the body until the ball of the thighbone pops from the hip socket. Cut between the ball and the socket to separate the leg then repeat with the other leg.

2. Divide the legs

Place the chicken leg skin side down on the cutting board. Cut down firmly through the joint between the drumstick and the thigh.

3. Remove the wings

With chicken on its back, remove wing by cutting inside of wing just over joint.

Pull wing away from body and cut from down through the skin and the joint. Repeat with the other wing.

4. Cut Carcass in half

Cut through the cavity of the bird from the tail end and slice through the thin area around the shoulder joint. Cut parallel to the backbone and slice the bones of the rib cage. Repeat on the opposite side of the backbone.

5. Remove the breast

Pull apart the breast and the back. Cut down through the shoulder bones to detach the breast from the back. Cut the back into two pieces by cutting across the backbone where the ribs end.

6. Cut Breast in half

You may leave the breast whole if your recipe requires. To cut it in half, use a strong, steady pressure and c u t downward along the length of the breastbone to separate the breast into two pieces.

Whole Chicken Cut in 10 Pieces

- A. Legs,
- B. Thighs
- C. Wings
- D. Part of back portion.
- E. Tail end of back portion.
- F. Breasts

17.9.4 Cooking of Chicken

Chicken is incredibly versatile and can be cooked in many different ways. Each method of cooking helps bring out the individuality of the pieces and flavors of chicken.

Baking is an oven-based technique that is considered to be among the healthiest methods for cooking chicken.

Poaching is a technique that cooks chicken slowly and gently in a simmering, but not boiling, liquid that covers the food. The poaching liquid may be flavored or seasoned.

Browning chicken is the first step in many recipes for cooking chicken.

Braising is a moist-heat cooking method used to tenderize tough cuts of meat. Chicken is normally browned first and then braised.

Stir-Fry Stir-frying quickly cooks bite-size pieces of chicken over very high heat in a small amount of oil.

Roasting is a technique often performed in the broiler.

Chicken Nutritional Facts

Chicken is high in protein, low in fat and low in cholesterol, making it a good selection for a healthy diet. Our bodies require a certain amount of protein daily and the body does not store protein so we need to replenish it each day. A 3-ounce portion of chicken provides a large amount of our daily requirement for protein. Our bodies also require fat in our diet, which allows us to absorb vitamins that are fat-soluble and energy producing. But, too much fat is not healthy. Chicken is lower in fat than most other meats and over half of the fat is unsaturated fat, the type

that helps lower cholesterol. The white meat is lower in fat than the dark meat of the chicken but the dark meat is higher in iron, an important nutrient for a healthy body.

Safe Storage of Chicken

Fresh, raw chicken can be stored in its original wrap for up to two days in the coldest part of the refrigerator. However, freeze chicken immediately if you do not plan to use it within two days after purchasing. You can freeze most chicken in its original packaging safely for up to two months; if you plan to freeze it longer, consider double wrapping or rewrapping with freezer paper, aluminum foil, or plastic wrap.

Stocking the freezer with boneless, skinless chicken breasts and thighs can be a real timesaver. Divide the chicken into efficient, meal-size portions and package for freezing. These convenient packages defrost and cook quickly and eliminate leftovers.

Airtight packaging is the key to freezing chicken successfully. When freezing whole chickens, remove and rinse giblets (if any) and pat dry with paper towels. Trim away any excess fat from the chicken. Tightly wrap, label, date, and freeze both chicken and giblets in separate freezer strength plastic, paper, or foil wraps.

Thaw frozen chicken, wrapped, in the refrigerator for best results. Thawing times for frozen chicken can vary depending on how thoroughly frozen the chicken is and whether the chicken is whole or cut up.

17.10 LET US SUM UP

Meat is generally considered to be the flesh of any animal and includes beef, veal, lamb, and pork along with poultry, fish, and shellfish. Meats in general are high in cholesterol than fish. In the descending order of cholesterol content, pork or products of pork in all forms are highest followed by beef, sheep / lamb and chicken. The terms lamb, hogget or mutton are names for the animals or meat of a domestic sheep. The meat of a sheep a year old or younger is generally known as lamb, whereas the meat of an older sheep is either hogget or mutton.

Beef is the meat from bovines, especially domestic cattle.

Veal comes from young calves, and so the meat is tender and lean and the flavor is delicate. A steak is a slice from a larger piece of meat typically from beef. Most steaks are cut perpendicular to the muscle fibres, improving the perceived tenderness of the meat. Pork is the meat from the domestic pig (*Sus scrofa*). Pork is eaten in various forms, including cooked (as roast pork), cured

or smoked (ham, including the Italian Prosciutto) or a combination of these methods (gammon, bacon or Pancetta).

Game is any animal hunted for food or not normally domesticated (such as venison).

Poultry is the catch-all term for domesticated birds that are meaty enough to eat. Poultry includes the different varieties and sizes of chicken, turkey ducks; geese and guinea fowls. Chicken is a relatively lean and inexpensive meat, so it's a culinary workhorse. Chickens are first classified by age and weight. Young chickens are tender and cook quickly; older chickens need slow cooking to make them tender.

FISH AND SHELL FISH

INTRODUCTION

Fish and seafood are very much of a food of the nineties, the epitome of modern cooking and eating styles – low in fat, high in protein, rich in minerals and vitamins, quick and easy to prepare and cook, versatile enough to be adapted to suit any occasion. Plus, many fish are cheaper than meat and better value for money.

Fish can be prepared using almost any type of cooking method including baking, steaming, frying, grilling, broiling, or slow cooking. When cooking fish, care must be taken not to overcook the fillet, steak, or whole fish, which results in dry and somewhat tasteless meat. A general rule is to cook a fish 10 minutes for each inch of thickness. The 10 minute rule should not be used for deep frying or microwaving fish. The fish should be cooked until it has reached an internal temperature of at least 145°F.

SEAFOOD

Fish and seafood are valuable in a balanced diet as they contain more natural goodness, weight for weight, than any other type of food. They are high in good quality protein but low in calories. All fish are rich stores of essential vitamins and minerals; fatty fish such as herrings, mackerel, tuna, sardines, and salmon are particularly good sources of vitamins A & D. They are also very easy to digest. Oily fish is rich and a best source of omega 3 fatty acids and a good source of vitamins A and D. White fish such as cod, haddock, plaice and whiting are very low in fat. White fish contain some omega 3, but at much lower levels than oily fish. Fish such as whitebait,

canned sardines, pilchards and salmon - where you also eat the bones - are also good sources of calcium and phosphorous, which help make our bones stronger.

Shellfish contain similar nutrients to white fish and similar amounts of omega 3, though some types of shellfish contain more omega 3 than others. For example, crab and mussels are quite good sources of omega 3, but prawns contain hardly any. Shellfish are good sources of selenium, zinc, iodine and copper.

TYPES OF SEAFOOD

There are three basic categories of seafood: fin fish, shellfish and invertebrates. Each category can be further divided into various sub-categories. Seafood include Fin Fish, Shellfish, Invertebrates, White fish, Oily Fish, Crustaceans, Molluscs.

Fin Fish

Fin fish are cold-blooded vertebrates with gills. Fin fish have skin and scales which cover the body. They move with the help of fins. True fish have an internal skeleton and a backbone. Most fish have a bony skeleton but some fish like sharks have a skeleton made up of pieces of cartilage (hard connective tissue). Fish can be divided into various sub-categories according to habitat, shape and flesh type.

White Fish

Fresh white fish has the following characteristics: firm flesh, clear and shiny eyes, red gills and a clean smell. There are two types of white fish: Round fish and Flat fish.

1. **White Flat fish** - have white flesh and are flat. Turbot, brill and halibut are very large flat fish, but are readily available from suppliers and popular in many fine restaurants. The cuts of flat fish are different to those of round fish. This category includes the following types of fish: plaice, Dover sole, lemon sole, turbot, brill, halibut, etc.

2. **White Round fish** - are round and are relatively common. Like flat fish, their flesh is white but the cuts are different. This category includes the following types of fish: cod, haddock, hake, huss, whiting, monkfish, etc.

Oily Fish

All oily fish are round and the flesh is darker than that of white fish. White fish contain oil, but only in their livers, whereas oily fish have oil throughout their bodies. This category includes the following fish: salmon, trout, mackerel, tuna, herring, sardines, anchovies, etc.

Shell Fish

Shellfish are aquatic invertebrates used as food. The main difference between fish and shellfish is their skeleton. Shellfish have an external skeleton or shell. There are two main categories of shellfish, crustaceans and mollusks.

16.3.2.1 Crustaceans

Crustaceans have multi- jointed shells. The shells of crustaceans do not grow with the fish, they shed each year with a new one forming to suit their new size. Examples of Crustaceans are: Lobsters, Crawfish, Prawns and Crab.

Mollusc

Mollusc shellfish have shells but they are not multi-jointed. Some molluscs are eaten raw, such as oysters, but the remainder need very little in the way of cooking through. Too much cooking will affect their texture and taste. Examples of molluscs are: Mussels, Scallops, Oysters and Whelks.

Invertebrates

Invertebrates are spineless marine animals with no outer shell. They include the squid and octopus family.

16.4 SELECTING FISH

- (i) Fresh fish should be firm to the touch.
- (ii) The eyes should be clear, full and shiny – almost glistening.
- (iii) The gills should be red.
- (iv) It should not, under any circumstances, smell ‘fishy’, but should have a clean, fresh smell.
- (v) When buying crab, tap it gently to make sure it doesn’t contain water.
- (vi) Mussels should not be bought if their shells don’t close when tapped. Discard any broken shells when cleaning.

16.5 PREPARATION OF FISH

The following is one of the procedures commonly used for gutting, filleting, and skinning fish:

1. Gutting:

- a. Lay the fish on it’s back and open it’s gills. The flaps should come out gently. These need to be removed with a pair of scissors.
- b. Remove the fins from the fish, again, with a pair of scissors.

- c. Slice into the body of the fish at the bottom of its belly. Scoop out the middle – rather messy, but necessary! Finally, run under cold water until the water runs clear and the body cavity and outer is clean.

2. Filleting:

- a. Cut down the length of the fish at the backbone from the head to the tail, keeping the knife as close to the backbone as possible.
- b. Cut down the width of the fish, starting from just behind the gills. Slice underneath the flesh lengthwise towards the tail, keeping as close to the bones as possible.
- c. Remove the fillet just before the tail.
- d. Turn the fish over and repeat on the other side.

3. Skinning:

- a. Make a cut just behind the gills, but don't cut its' head off completely.
- b. Drop its' head down, away from the body and scoop out its' guts.
- c. Wash the fish to clean out the body cavity.
- d. Cut along the back bone keeping the knife as tight to the bone as possible. Spread the fish open like opening a book, flesh side down so that you can see the supporting bone structure.
- e. Remove the backbone. Most of the adjoining bones will come away at the same time if it is done carefully, however a pair of tweezers and small knife will help to pull away any small 'pin' bones.

16.6 FISH CUTS

The following table shows some of the fish cuts commonly used in restaurants.

Fillets The flesh is completely removed from the bone in long flat pieces. Round fish produce two fillets, flat fish produce four.

Delice A folded fillet, usually of a flat fish. It is a menu term synonymous with fillet.

Paupiette A rolled and stuffed fillet, usually of a flat fish. The stuffing would generally be a fine fish farce.

Goujon/Goujonette A fish "finger" or baton approximately 80 x 10 x 10mm, a Goujonette is smaller and may be used as a garnish.

Supreme A portioned piece of fish cut on the slant from the fillet of a large round or flat fish.

Darne Also called a steak. This is a section across a round fish cut across the backbone approximately 25 mm thick. This cut is well suited to large dark fish such as Mackerel and Swordfish.

Troncon This is similar to the Darne. It is a section of a large flat fish such as Turbot or Brill after being split down the backbone, approximately 45 mm thick.

16.7 COOKING FISH

It is important to cook fin fish thoroughly, but not to overcook it. Proper cooking: develops the flavor, softens the small amount of connective tissue present in fish, and makes the protein easier to digest. Two cooking methods can toughen fin fish and destroy the natural moisture and flavor:

- cooking at too high a temperature, and
- cooking for too long a time.

Some common methods of cooking fin fish include:

Grilling White fish should be brushed lightly with a little oil before grilling, but oily fish needs nothing added. Make sure the grill is hot before the fish is inserted. A squeeze of lemon and seasoning is all that's needed! Very simple and fresh way to cook fish. Turn the fish over once only.

Shallow Shallow frying is the best way to fry fish. The fish must

Frying be dried with kitchen paper, coated with beaten egg and dusted with flour. A little oil in the frying pan should be hot enough to sizzle the fish immediately it is added. This will seal the fish. If the oil isn't hot enough, the fish will taste oily and the coating will be mushy – yuck!

Deep Frying is usually done with battered fish. The batter is made from flour, milk, water and/or beer. The oil has to be hot enough for the fish to sizzle immediately it is added, or the same thing will occur as with shallowfrying.

Steaming is a very healthy option which uses a steamer that sits on top of a saucepan of boiling water. The resultant taste is fresh and clean. Spices and herbs can be used in the steamer to infuse into the fish.

Poaching is a great way to gently cook tender and delicate fish.

Many liquid flavours are used, the most popular one being white wine. Herbs and spices are often added, but care needs to be taken not to mask the taste of the fish with overpowering flavours.

Baking is a good way to cook fish as much of the flavour is retained. When cooked in parcels with herbs and a little wine, the flavours develop and enhance the taste of the fish. This type of baking fish is perfect for barbecuing.

Microwaving is easy and very quick, this method is usually done when the fish is poached in liquid. Milk works very well with salmon, as does white wine, cider or lemon juice. Be careful not to overdo the cooking time though, as the fish can quite easily become dry and overcooked.

16.8 LET US SUM UP

Fish and seafood are valuable in a balanced diet as they contain more natural goodness, weight for weight, than any other type of food. They are high in good quality protein but low in calories. All fish are rich stores of essential vitamins and minerals; fatty fish such as herrings, mackerel, tuna, sardines, and salmon are particularly good sources of vitamins A & D. They are also very easy to digest.

There are three basic categories of seafood: fin fish, shellfish and invertebrates. Fin fish are cold-blooded vertebrates with gills. Fin fish have skin and scales which cover the body. They move with the help of fins. True fish have an internal skeleton and a backbone. Fish can be divided into various sub-categories according to habitat, shape and flesh type.

Shellfish are aquatic invertebrates used as food. The main difference between fish and shellfish is their skeleton. There are two main categories of shellfish, crustaceans and mollusks. Invertebrates are spineless marine animals with no outer shell. They include the squid and octopus family. Two cooking methods can toughen fin fish and destroy the natural moisture and flavor: cooking at too high a temperature, and cooking for too long a time. as salmon and mackerel, capable of reducing serum cholesterol levels and having anticoagulant properties.

Invertebrate An animal, such as an insect or mollusk, that lacks a backbone or spinal column.

Glisten A sparkling, lustrous shine.

Farce A seasoned stuffing, as for roasted turkey.

Tweezers A hand tool for holding consisting of a compound Lever

.

LESSON 18

SANDWICHES

CONTENTS

INTRODUCTION

Sandwiches are popular in today's culture. They are easy to make and eat practically anywhere and can be as fancy or as simple as we like. A sandwich is the most innovative and versatile food, which are acceptable on every occasion. Open or closed, single or decked, flat or rolled, sweet or savoury, hot or cold there are sandwiches with fillings and toppings which will take a life time to describe.

The first recorded sandwich was made by the famous Rabbi, Hillel the Elder, who lived during the 1st century B.C. A poor man, but a great scholar, he began the Passover custom of sandwiching a mixture of chopped nuts, apples, spices, and wine between two matzohs to eat with bitter herbs. This sandwich is the foundation of the Seder and is named after him. But matzoh, being unleavened bread, is not absorptive of sauces and juices as today's sandwich has become. John Motagu, 4th Earl of Sandwich, invented the "meal between the slices" that has retained his name. The Earl lived in England in the 18th Century. Human beings, being adventurous, have developed the sandwich into both a quick and easy meal, and an art form. Po-boy, muffuletta, clubhouse, Reuben, grilled, meat, tuna or egg salad – these are just some of the many different types of sandwiches frequently eaten for lunches or light dinners.

18.2 SANDWICHES

A sandwich is a food item typically made of two or more slices of leavened bread with one or more layers of meat, seafood, vegetables, cheese or jam or butter. The bread can be used as is, or it can be coated with butter, oil, or other optional or traditional condiments and sauces to enhance flavor and texture. The slices of bread are stacked neatly, resting on a crust of bread. They are then buttered (unless this has been done before each slice is cut) and the prepared fillings are added, so the complete loaf is made into long sandwiches. If they are to be kept for any length of time the crusts are replaced and the loaf wrapped in clean cloth, greaseproof paper or foil. When required for service the sandwiches are easily and quickly cut into any required size or shape, neatly dressed on a doily on a flat dish and sprinkled with washed and drained mustard cress.

A typical set of fillings for a loaf could be: ham, tongue, smoked salmon, tomato, cucumber, egg., etc. Sandwiches are commonly carried to work or school in lunchboxes or brown paper bags (in sandwich bags) to be eaten as the midday meal on picnics, hiking trips, or other outings. In some parts of the world, they are also served in restaurants as entrées, and are sometimes eaten at home, either as a quick meal or as part of a larger meal. When eaten as part of a full meal, sandwiches are traditionally accompanied with such side dishes as a serving of soup (soup and-

sandwich), a salad (salad-and-sandwich), French fries/ chips, potato chips/ crisps and a pickle or coleslaw.

18.3 TYPES OF SANDWICHES

Sandwiches may be made from every kind of bread, fresh or toasted, in a variety of shapes and sizes and with an almost endless assortment of fillings. Few example of general types of popular sandwiches are explained in this section. Combinations of sandwiches and fillings are endless and the limitation in number is merely a matter of limitation in individual's imagination.

18.3.1 Double Decker

These types of sandwiches use three slices of bread. The filling is placed on the top of the first slice. The next slice is buttered and placed on top, lettuce, tomato and cucumber or fillings of choice are placed on top of this slice. The final slice is placed in position.

Pressed, trimmed and held together with a plastic cocktail stick with stuffed olive or cherry.

18.3.2 Sandwich Cake

These types of sandwiches are made from round bread loaves and look like iced layer cakes. They are sliced into two or three round slices with different savoury spread in each layer and iced on top with soft icing containing butter, cheese, etc. It is cut into wedges like cakes. Finished product may look like a cylinder. Sometimes, the regular ice cream of choice flavour may also be used as a spread and stored in the fridge before serving. It may be stored after cutting into slices or stored as a whole and cut into slices prior to serving.

18.3.3 Loaf Sandwich

These types of sandwiches are made from bread loafs. The loaf of bread is taken and sliced lengthwise, filled with filling of choice and iced. It is sliced across the bread and served.

18.3.4 Pinwheel Sandwich

Pinwheel sandwiches are generally prepared using the top crust of the loaf. The top crust is taken out of the sandwich loaf. It is then sliced lengthwise, and butter and soft filling are spread evenly. Pinwheel Sandwiches Each slice is rolled and wrapped firmly in a foil and chilled till it is set. It is cut into thin slices and served. Pinwheel sandwiches may be served with other sandwiches or as cold canapés.

18.3.5 Bookmaker Sandwich

Bookmaker Sandwich has underdone (rare) minute steak between two slices of hot buttered toast.

18.3.6 Ribbon Sandwich

Ribbon sandwiches are prepared using two coloured breads. Whole wheat loaf and white bread loaves are sliced lengthwise in ¼ inch strips. Whole wheat bread slice is tinted with chive cheese. White bread slice is spreaded with deviled ham or minced tuna fish salad mix.

A five layered loaf is prepared by alternatively placing whole wheat bread slice and white bread slice on top of one another. They are then wrapped into waxed paper and chilled. They are then sliced into ½ inch bite sized strips.

18.3.7 Club Sandwich

A club sandwich, also called a clubhouse sandwich, is a type of sandwich sometimes served as a double-decker. The double-decker version is usually cut into quarters, and often held together by Tooth picks. The traditional club ingredients are turkey, bacon, lettuce, and tomato.

The sandwich is usually served on toasted bread, but untoasted bread can be used. Ham is sometimes substituted for bacon, and chicken sometimes for turkey.

18.3.8 Open Sandwich or Scandinavian Smorrebrod

This is prepared from a buttered slice of any bread garnished with any type of meat, fish, eggs, vegetables, salads, etc. The varieties of open sandwiches can include some of the following spreads / fillings: smoked salmon, lettuce, potted shrimps, slice of lemon; s crambled egg, asparagus tips, chopped tomato; grilled bacon, cold fried egg, tomato sauce, mushrooms; cold sliced beef, sliced tomato, fans of gherkins (type of cucumber).

18.4 TYPES OF BREADS USED IN SANDWICH MAKING

It may seem obvious, but the bread used when making sandwiches is the first thing that is noticed. It is of utmost importance that the bread is fresh and appetizing to the eye. There are many different types of breads used in sandwich making now, but some people still prefer their sandwich the ‘old fashioned way’ with two slices of white or brown sandwich bread. Others enjoy more exotic types of bread. These can include:

- Basic sandwich loaf in white or brown – this can come pre-sliced or as a whole loaf.
- Wraps – these come in a variety of flavours, such as plain, tomato, etc. They are less filling than normal bread.
- Bagels – a popular choice of a round bun with a hole in the centre.
- Baguette / Roll – these can be long or round, in a variety of flavours.
- Pitta Breads – flat and oval in shape. It is better to lightly toast these prior to slicing

- Tomato breads, olive breads, etc. There are many varieties of other types of breads which can be cooked in house or bought in.

18.5 TYPE OF SPREADS, FILLINGS AND SEASONINGS USED IN SANDWICH MAKING

Types of Spread:

There are three commonly used spreads used in sandwich making. They are peanut butter, margarine butter and plain or salted.

Fillings to Flavour Sandwiches:

Butter / mayonnaise, Different types of meat –shredded chicken, sliced beef, etc., Eggs in a variety of styles (hot and cold) – egg mayonnaise, sliced egg, etc., Different types of fish – tuna, salmon, etc., Cheeses, Pulses & seeds, Dressings and sauces

Seasonings to Flavour Sandwiches:

Mayonnaise (egg, salmon, etc), Vinaigrette (crab, lobster, fish, egg), English mustard (ham, beef), French mustard (cheese, tongue), Chutney (cheese, tinned meat) and Pickles.

Examples of Combination Fillings:

Fish and lettuce; Cheese and tomato; Cucumber and egg; Apple and chutney; Roast beef and coleslaw; Roast pork and apple sauce; Tuna fish and cucumber; Chopped ham, celery and apple.

18.6 PREPARATION OF SANDWICHES

18.6.1 Preparation of Vegetarian Cheese steak Sandwich

Vegetarian Cheese Steak-Sandwich

mushrooms, thinly sliced

Onion, thinly sliced

Green bell pepper, thinly sliced

Olive oil

Salt and freshly ground pepper to taste

Garlic powder

Cheddar cheese

1. Saute the mushrooms, onions, and peppers until tender and onions are slightly golden over medium heat. Stir in seasonings and cook for 1 to 2 minutes longer.

2. Mound mixture onto bottom half of each bread roll. Top each with 2 slices of cheese and place under broiler for a minute or two to melt.
3. Place the top bread roll halves on and serve sandwiches immediately.

18.7 LET US SUM UP

A sandwich is a food item typically made of two or more slices of leavened bread with one or more layers of meat, seafood, vegetables, cheese or jam or butter. The bread can be used as is, or it can be coated with butter, oil, or other optional or traditional condiments and sauces to enhance flavor and texture. Sandwiches are commonly carried to work or school in lunchboxes or brown paper bags (in sandwich bags) to be eaten as the midday meal on picnics, hiking trips, or other outings. In some parts of the world, they are also served in restaurants as entrées, and are sometimes eaten at home, either as a quick meal or as part of a larger meal. When eaten as part of a full meal, sandwiches are traditionally accompanied with such side dishes as a serving of soup (soup-and-sandwich), a salad (salad-and-sandwich), French fries/ chips, potato chips/ crisps and a pickle or coleslaw. Sandwiches may be made from every kind of bread, fresh or toasted, in a variety of shapes and with an almost endless assortment of fillings.

LESSON 10

YOGHURTS AND CREAMS

CONTENTS

10.0 Aims and Objectives

10.1 Introduction

10.2 Yoghurt

10.3 Varieties of Yoghurts

10.3.1 Strained Yoghurt

10.3.1.1 Types of Strained Yoghurt

10.3.2 Dadiyah or Dadih

10.3.3 Tarator

10.3.4 Labneh Yoghurt

10.3.5 Rahmjoghurt

10.3.6 Caspian Sea Yoghurt

10.3.7 Jameed

10.4 Creams

10.4.1 Types of Cream

10.4.2 Storage of Cream

10.5 Let us Sum Up

10.6 Lesson End Activity

10.7 Key Words

10.8 Questions for Discussion

10.9 References

10.0 AIMS AND OBJECTIVES

At the end of this lesson, students should be able to demonstrate appropriate skills, and show an understanding of the following:

- Yoghurts and its varieties
- Creams and type of cream
- Storage of creams

10.1 INTRODUCTION

Fermentation is one of the oldest methods practiced by human beings for the transformation of milk into products with an extended shelf life. The exact origin(s) of the making of fermented milks is difficult to establish, but it could date from some 10 – 15 thousand years ago as the way of life of human beings changed from being food gatherers to food producers. This change also included in the domestication of crops and animals that the transition occurred at different times in different parts of the world. Archaeological evidence shows that some civilizations were all Food Production and Patisserie - I advanced in agricultural and animal husbandry methods and in the production of fermented milks such as yoghurt.

Although there are no records available regarding the origin of yoghurt, the belief in its beneficial influence on human health and nutrition existed in many civilizations over a long period of time. Cream is also a dairy product that is composed of the higher butterfat layer skimmed from the top of milk before homogenization.

In un-homogenized milk, over time, the lighter fat rises to the top. In the industrial production of cream this process is accelerated by using centrifuges called "separators". In many countries, cream is sold in several grades depending on total butterfat content. Cream can be dried to a powder for shipment to distant markets.

10.2 YOGHURT

Yoghurt or **yogurt** is a dairy product produced by bacterial fermentation of milk. Fermentation of the milk sugar (lactose) produces lactic acid, which acts on milk protein to give yoghurt its texture and its characteristic tang. Yogurt can be made from sheep's, cows, goats or even Soya milk (called soy yogurt).

The word "yoghurt" comes from the Turkish *yogurt*. The word is derived from the adjective *yogun*, which means "dense" and "thick", or from the verb *yogurmak*, meaning "to knead". Originally, the verb may have meant "to make dense", which is how yoghurt is made.

Yoghurt is made by introducing specific bacteria strains into milk, which is subsequently fermented under controlled temperatures and environmental conditions (inside a bioreactor), especially in industrial production. The bacteria ingest natural milk sugars and release lactic acid as a waste product. The increased acidity causes milk proteins to tangle into a solid mass (curd in a process called denaturation). The increased acidity (pH=4–5) also prevents the proliferation of potentially pathogenic bacteria. Pasteurised products, which have no living bacteria, are called fermented milk (drink).

Nutritional Value:

Natural whole milk yogurt has a similar nutritional value to whole boiled milk, being rich in protein and minerals, especially calcium and phosphorus. Low fat and fat free yogurts are made from skimmed milk powder; they have a slightly higher carbohydrate and protein content than whole milk yogurts. The bonus is that protein, calcium and phosphorus are more easily absorbed from yogurt than from milk as they are partially digested during the fermentation process.

Yogurt can be helpful in restoring the digestive tract to its normal condition after a course of antibiotics, which are liable to indiscriminately destroy all intestinal bacteria, both good and bad.

Yoghurt also has medical uses, in particular for a variety of gastrointestinal conditions and in preventing antibiotic-associated diarrhea.

10.3 VARIETIES OF YOGHURTS

There are different varieties of yoghurts. Some commonly used yogurt are discussed below:

10.3.1 Strained Yoghurt

Strained yoghurt is yogurt which has been strained in a cloth or paper bag or filter, traditionally made of muslin, to remove the whey, giving a consistency between that of yoghurt and cheese, while preserving yoghurt's distinctive sour taste. It is a traditional food in the Middle East and South Asia, where it is often used in cooking, as it is high enough in fat not to curdle at higher

temperatures. Like many yoghurts, strained yoghurt is often made from milk which has been enriched by boiling off some of the water content, or by adding extra butterfat and powdered milk.

Strained yoghurt is used in both savoury and sweet dishes, both cooked and raw. In the Middle East and South Asia, it is often used to enrich savoury sauces, as it does not curdle when cooked like unstrained yoghurt. It is used raw in savoury sauces and dips and in sweet desserts.

10.3.1.1 Types of Strained Yoghurt

Greek Strained Yoghurt:

Greek yoghurt is traditionally made from ewe's milk; nowadays, cow's milk is often used, especially in industrial production. Strained yoghurt is used in Greek food mostly as a dessert, where honey, sour cherry syrup, spoon sweets, and the like are often served on top. A few savoury Greek dishes use strained yoghurt.

Dahi:

Dahi is yoghurt of the Indian subcontinent, known for its characteristic taste and consistency.

- A typical preparation, a dessert called shrikhand, is made with the yoghurt placed in a soft cloth with very fine holes, which is hung to drain for a few hours while all the water drains out. Sugar, saffron, cardamom, diced fruit and nuts may then be mixed in for taste.
- A special Indian preparation called raita involves adding grated cucumber or grated bottle gourd and spices. In South India, the preparation involves using tomato, cucumber, onion, spinach, radish or snakegourd with cashew nuts or poppy seeds ground along with coconut.

Food Production and Patisserie - I

- In South India, it is common for people to eat rice mixed with plain yoghurt or buttermilk as the last course in a meal.
- Dahi chutney (curd, green chillies & onions) is an accompaniment of the popular Hyderabadi biryani.

Bulgarian Yoghurt:

Bulgarian yoghurt commonly consumed plain, is popular for its taste, aroma, and quality. The qualities arise from the *Lactobacillus bulgaricus* and *Streptococcus thermophilus* culture strains used in Bulgaria. It is also used to prepare Bulgarian milk salad.

Levant:

Strained yoghurt or labneh is popular in the Levant. Besides being used fresh, labneh is also dried then formed into balls, sometimes covered with herbs or spices, and stored in olive oil. Labneh is a popular mezze dish and sandwich ingredient. The flavour depends largely on the sort of milk used: labneh from cow's milk has a rather milder flavour.

10.3.2 Dadiah or Dadih

Dadiah is a Traditional Minangkabau water buffalo yogurt which is fermented in bamboo container covered with banana leaf. Dadih is usually eaten for breakfast, mixed together with ampiang (traditional rice krispies) and coconut sugar. Dadih can also be eaten with hot rice and sambal.

10.3.3 Tarator

Taratur or tartor is a cold soup (or a liquid salad), popular in the summer time in Albania and the Republic of Macedonia. It is made of yoghurt, cucumbers, garlic, walnuts, dill, vegetable oil, and water. It is best served chilled or even with ice. The cucumbers may, on very rare occasions, be replaced with lettuce or carrots.

10.3.4 Labneh Yoghurt

Labneh yoghurt of Lebanon is a thickened yoghurt used for sandwiches. Olive oil, cucumber slices, olives, and various green herbs may be added. It can be thickened further and rolled into balls, preserved in olive oil, and fermented for a few more weeks. It is sometimes used with onions, meat, and nuts as a stuffing for a variety of Lebanese pies or Kebbeh balls.

10.3.5 Rahmjoghurt

Rahmjoghurt is a creamy yoghurt with much higher milkfat content (10%) than most yoghurts offered in English-speaking countries, is available in Germany and other countries.

10.3.6 Caspian Sea Yoghurt

This yoghurt variety, called Matsoni, is started with *Lactococcus lactis*. It has a unique, viscous, honey-like texture. It is milder in taste than other varieties of yoghurts. Ideally, Caspian Sea yoghurt is made at home because it requires no special equipment nor unobtainable culture. It can be made at room temperature (20–30°C) in 10 to 15 hours.

10.3.7 Jameed

Jameed is yoghurt which is salted and dried to preserve it. It is popular in Palestine and Jordan.

10.4 CREAMS

Cream is the fat that rises to the top of whole milk. It has a smooth, satiny texture and is labeled according to its butterfat content (heavy to light). Creams are usually labeled "pasteurized" or "ultrapasteurized".

Ultra pasteurized creams have a longer shelf life than pasteurized creams, but taste is affected (some say it has a cooked flavor). For superior taste, although it can be hard to find, buy 'pasteurized' not 'ultra pasteurized' cream.

10.4.1 Types of Cream

Cream is made by separating milk into fat-rich cream and almost fat-free (skimmed) milk. This is usually done by centrifugal force. There are many varieties of cream, categorized according to the amount of milk fat in it:

Light Cream:

Light cream also called coffee or table cream, can contain anywhere from 18 to 30 percent fat, but commonly contains 20 percent. It cannot be whipped.

Whipping Cream:

Whipping cream contains 30 to 36 percent milk fat and sometimes stabilizers and emulsifiers. Whipping cream will double in volume when whipped. Good for fillings but does not hold up well for piping.

Whipped Cream:

Whipped cream in pressurized cans is a mixture of cream, sugar, stabilizers, emulsifiers and gas, such as nitrous oxide. It is expanded by the gas into a "puffy" form. Aerosol "dessert toppings," which are usually made with hydrogenated vegetable oils, have absolutely no cream in them (and doesn't taste like cream either).

Heavy Cream:

Heavy cream also called heavy whipping cream, is whipping cream with a milk fat content of between 36 and 40 percent. Heavy cream is used for filling and decorating pastries. It's usually only available in specialty or gourmet markets.

Half-and-Half:

Half and half is a mixture of equal parts milk and cream, and contains 10 to 12 percent milk fat, and cannot be whipped. It is mainly used in beverages.

Single Cream:

Single cream has 20% butterfat content and is used in both sweet and savory cooking.

Double (Rich) Cream:

Double (rich) cream has 48% butterfat content and can be whipped and is also used in pies and sauces.

Clotted Cream (Devonshire or Devon Cream):

Clotted cream is a thick, rich, yellowish cream with a scalded or cooked flavor that is made by heating unpasteurized milk until a thick layer of cream sits on top. The milk is cooled and the layer of cream is skimmed off. Clotted cream has 55-60 percent fat content and is so thick it does not need whipping.

Crème Fraîche:

Crème is pronounced 'krem fresh'. It is a thick and smooth heavy cream with a wonderfully rich and velvety texture. This matured cream has a nutty, slightly sour taste produced by culturing pasteurized cream with special bacteria. The butterfat content varies (usually 30%), as there is no set standard so you will find every brand tastes a little differently. *Crème fraîche* is used in both sweet and savory dishes. It makes a wonderful topping for fresh berries, cobblers and puddings.

10.4.2 STORAGE OF CREAM

- All creams, unless ultrapasteurized (briefly heated to 149°C / 300°F and then cooled), is highly perishable and should be kept in the coldest part of the refrigerator.
- Cream should be kept in the container in which it is delivered.
- Cream should be kept covered as it easily absorbs smells from other foods, such as onion and fish.
- Fresh cream should be ordered daily.
- Tinned cream should be stored in cool, dry ventilated rooms.
- Frozen cream should only be thawed as required and not refrozen.

CHECK YOUR PROGRESS

1. What are the raw materials used in making yoghurt?
2. What is raita and how it is prepared?
3. How is cream prepared?

10.5 LET US SUM UP

Yoghurt or **yogurt** is a dairy product produced by bacterial fermentation of milk. Fermentation of the milk sugar (lactose) produces lactic acid, which acts on milk protein to give yoghurt its

texture and its characteristic tang. Yogurt can be made from sheep's, cows, goats or even Soya milk (called soy yogurt).

Natural whole milk yogurt has a similar nutritional value to whole boiled milk, being rich in protein and minerals, especially calcium and phosphorus. Cream is also a dairy product that is composed of the higherbutterfat layer skimmed from the top of milk before homogenization.

In un-homogenized milk, over time, the lighter fat rises to the top. In the industrial production of cream this process is accelerated by using centrifuges called "separators".

All cream, unless ultrapasteurized (briefly heated to 149°C / 300°F and then cooled), is highly perishable and should be kept in the coldest part of the refrigerator

LESSON 20

CHEESE CONTENTS

20.0 Aims and Objectives

20.1 Introduction

20.2 Cheese

20.3 Types of Cheese

20.3.1 Fresh Cheese

20.3.2 Semi-Ripened Cheese

20.3.3 Washed-Rind Cheese

20.3.4 Natural-Rind Cheese

20.3.5 Blue-Veined Cheese

20.3.6 Uncooked, Pressed Cheese

20.3.7 Cooked, Pressed Cheese

20.3.8 Processed Cheese

20.4 Basics of Cheese Making

20.4.1 Curdling

20.4.2 Curd Processing

20.4.3 Ageing

20.5 Storage of Cheese

20.6 Preparations of Cheese Dishes

20.6.1 Preparation of Cheese Sauce

20.6.2 Preparation of Cheese Omelet

20.7 Let us Sum Up

20.8 Lesson End Activity

20.9 Key Words

20.10 Questions for Discussion

20.11 References

20.0 AIMS AND OBJECTIVES

At the end of this lesson, students should be able to demonstrate appropriate skills, and show an understanding of the following:

- Cheese and their types
- Basics of cheese making
- Storage of cheese
- Preparation of cheese dishes

20.1 INTRODUCTION

“A meal without cheese is like a beautiful woman who lacks an eye” - Jean Anthel Brillat-Savarin. glorious cheese!" Most people love cheese, whether in chunks or strips, or melted on bread for a grilled sandwich. Cheese is a part of the cuisine of nearly every culture, and variations on the theme are legion. Cheese is an ancient food whose origins predate recorded history. There is no conclusive evidence indicating where cheesemaking originated. Proposed dates for the origin of cheesemaking range from around 8000 BCE (when sheep were first domesticated) to around 3000 BCE. The earliest archaeological evidence of cheese making has been found in Egyptian tomb murals, dating to about 2000 BCE. The earliest cheeses were likely to have been quite sour and salty, similar in texture to rustic cottage cheese or feta, a crumbly, flavorful Greek cheese.

Cheese has become the most popular milk invention. Cheese is one of the most versatile foods in a cook's arsenal. It can add flavor and texture to a dish - and may even cover a few mistakes in preparation. Cheese has served as a hedge against famine and is a good travel food. It is valuable for its portability, long life, and high content of fat, protein, calcium, and phosphorus. Cheese is a more compact form of nutrition and has a longer shelf life than the milk from which it is made.

20.2 CHEESE

Cheese is a food made from the milk of cows, buffalows, goats, sheep and other domesticated mammals, by coagulating the milk. This is accomplished by first acidifying it with a bacterial

culture and then employing the enzyme rennet (or rennet substitutes) to coagulate the milk to form "curds and whey." The precise bacteria culture used and processing of the curds play a role in defining the texture and flavor of most cheeses. Some cheeses also feature molds, either on the outer rind or throughout.

There are hundreds of types of cheese produced all over the world. Different styles and flavors of cheese are the result of using milk from various mammals or with different butterfat contents, employing particular strains of bacteria and molds, and varying the length of aging and other processing techniques. Other factors include animal diet and the addition of flavoring agents such as herbs, spices, or wood smoke. Whether the milk is pasteurized may also affect the flavor. The yellow to red coloring of many cheeses is a result of adding annatto extract called bixin. Cheeses are eaten both on their own and cooked as part of various dishes; most cheeses melt when heated.

20.3 TYPES OF CHEESE

There are lots of different types of cheese and there is no standard way of classifying them. Some cheeses also fall into more than one category. They can be classified by age, country of origin, fat content, dairy content, manufacturing methods, texture and special characteristics. Steven Jenkins, a renowned American cheese expert and member of the Confrérie des chevaliers du Taste Fromage (an elite society of cheese connoisseurs), suggests the following categories:

20.3.1 Fresh Cheese

Fresh cheeses are the most basic. They're uncooked, unaged and sometimes still contain whey (the liquid part of milk). They don't keep very long and therefore need to be eaten soon after they're made. This cheese category includes mozzarella, cottage cheese, ricotta, cream cheese, farmer cheese, mascarpone and queso fresco. Fresh cheese is characterized by its soft, creamy texture and mild taste.

20.3.2 Semi-ripened Cheese

Soft-ripened cheeses are semisoft in texture and sometimes have a white, or "bloomy," rind. This is created with the application of molds. Soft-ripened cheeses are usually a little more flavorful and buttery than fresh cheeses, but they're still very mild. Camembert and Brie are examples of this type of cheese.

20.3.3 Washed-rind Cheese

Most varieties of "stinky" cheese, like Limburger, are washed rind, or monastery cheese. These cheeses have reddish-orange rinds. The "stink" comes from being washed in a liquid, such as salted water, wine or beer, during the ripening phase. The washing encourages the growth of bacteria and mold, which gives the cheese a very strong smell and taste.

20.3.4 Natural-rind Cheese

Some cheeses have rinds that form naturally, without the introduction of molds or bacteria. These natural-rind cheeses are usually aged and are heavier than other types of cheeses. Many of them are made from raw milk, and they include English Stilton and the French fromage de chèvre.

20.3.5 Blue-veined Cheese

English Stilton is a blue-veined cheese. These cheeses resemble marble, with bluish-green veins crossing through the pale cheese. The veins are mold cultures, introduced during the cheese making process. Depending on the type of cheese, the mold may give it a very strong flavor. Maytag Blue, Gorgonzola and Roquefort are other examples of blue-veined cheese.

20.3.6 Uncooked, Pressed Cheese

Cheddar, one of the most well-known cheeses, is an uncooked, pressed cheese. This means that the curds have not been heated and the cheese has been pressed to get rid of the liquid whey, to give it a very compact, dense texture.

20.3.7 Cooked, Pressed Cheese

Cooked, pressed cheese has its curds heated before being pressed. Parmigiano-Reggiano, Gruyère and Emmental are all cooked, pressed cheeses. Within this category are pasta filata, cheeses like provolone in which the curds are stretched.

20.3.8 Processed Cheese

Processed cheese isn't technically a cheese but a byproduct of the cheesemaking process. It may be made with scraps of cheese, which can also include whey, cream, water, dyes, gums and other ingredients. It has a long shelf life, melts easily and can be made in spreadable varieties. This type of cheese includes American cheese (although this name is also used for some American-made cheddars) as well as products like Cheez Whiz, Velveeta and spray cheese. However, not all processed cheese is American-made - the

French La Vache Qui Rit (Laughing Cow) is also processed. Cheese (with the exception of processed cheese) can be made with milk from mammals other than cows. Roquefort, a

blueveined cheese, and Pecorino Romano, a cooked, pressed cheese, are both made with sheep's milk. Many varieties of cheese, including soft-ripened and blue-veined, can be made with goat's milk.

20.4 BASICS OF CHEESE MAKING

20.4.1 Curdling

The only strictly required step in making any sort of cheese is separating the milk into solid curds and liquid whey. Usually this is done by acidifying the milk and adding rennet. The acidification is accomplished directly by the addition of an acid like vinegar in a few cases (paneer, queso fresco), but usually starter bacteria are employed instead. These starter bacteria convert milk sugars into lactic acid. The same bacteria (and the enzymes they produce) also play a large role in the eventual flavor of aged cheeses. Most cheeses are made with starter bacteria from the Lactococci, Lactobacilli, or Streptococci families.

Some fresh cheeses are curdled only by acidity, but most cheeses also use rennet. Rennet sets the cheese into a strong and rubbery gel compared to the fragile curds produced by acidic coagulation alone. It also allows curdling at a lower acidity— important because flavor-making bacteria are inhibited in high-acidity environments. In general, softer, smaller, fresher cheeses are curdled with a greater proportion of acid to rennet than harder, larger, longer-aged varieties.

20.4.2 Curd Processing

At this point, the cheese has set into a very moist gel. Some soft cheeses are now essentially complete. The whey present in. For most of the rest, the curd is cut into small cubes. This allows whey to drain from the individual pieces of curd. Some hard cheeses are then heated to temperatures in the range of 35°C - 55°C (100°F - 130°F). This forces more whey from the cut curd. It also changes the taste of the finished cheese, affecting both the bacterial culture and the milk chemistry. Cheeses that are heated to the higher temperatures are usually made with

The thermophilic (heat tolerant) starter bacteria survive this step, either lactobacilli or streptococci.

Salt plays a number of roles in cheese besides adding a salty taste. It preserves cheese from spoiling, draws moisture from the curd, and firms up a cheese's texture in an interaction with its proteins. Some cheeses are salted from the outside with dry salt or brine washes. Most cheeses have the salt mixed directly into the curds.

A number of other techniques can be employed to influence the cheese's final texture and flavor. Some examples:

- Stretching: The curd is stretched and kneaded in hot water, developing a stringy, fibrous body. Example: Mozzarella, Provolone.
- Cheddaring: The cut curd is repeatedly piled up, pushing more moisture away. The curd is also mixed (or milled) for a long period of time, taking the sharp edges off the cut curd pieces and influencing the final product's texture. Example: Cheddar and other English cheeses
- Washing: The curd is washed in warm water, lowering its acidity and making for a milder-tasting cheese.

Most cheeses achieve their final shape when the curds are pressed into a mold or form. The harder the cheese, the more pressure is applied. The pressure drives out moisture - the molds are designed to allow water to escape - and unifies the curds into a single solid body.

20.4.3 Ageing

A newborn cheese is usually salty, bland in flavor and, for harder varieties, rubbery in texture. These qualities are sometimes enjoyed, cheese curds are eaten on their own, but usually cheeses are left to under carefully controlled conditions. This ageing period (also called ripening, or, from the French, affinage) can last from a few days to several years. As a cheese ages, microbes and enzymes transform its texture and intensify its flavor. This transformation is largely a result of the breakdown of casein proteins and milkfat into a complex mix of amino acids, amines, and fattyacids.

20.5 STORAGE OF CHEESE

1. Unpasteurised cheese with a range of flavours should not be sliced until purchase otherwise it will start to lose its subtlety and aroma.
2. Keep the cheese in conditions in which it matures. Hard, semi-hard and semi-soft cheeses are stored in the temperatures from around 8° – 13° C.
3. Keep the cheese wrapped in the waxed paper and place it in a loose-fitting food-bag not to lose humidity and maintain the circulation of air.
4. Chilled cheeses should be taken out of the refrigerator one and a half or two hours before serving.
5. Cheeses contain living organisms that must not be cut off from air, yet it is important not to let a cheese dry out.

6. Do not store cheese with other strong-smelling foods. As a cheese breathes, it will absorb other aromas and may spoil.
7. Wrap soft cheeses loosely. Use waxed or greaseproof paper rather than cling film.
8. Let cold cheese warm up for about half an hour before eating to allow the flavor and aroma to develop.

20.6 PREPARATIONS OF CHEESE DISHES

20.6.1 Preparation of Cheese Sauce

Cheese Sauce

100 gms Cheese

2 tbsp Flour

½ tsp Salt

¼ tsp Pepper powder

½ tsp Mustard

2 tbsp Butter

2 cups Milk

1. In a pan, melt butter.
2. Add flour to it and make smooth paste.
3. Cook till the mixture turns bubbly.
4. Gradually add the milk. Stir and cook till smooth and thick.
5. Add pepper, salt and mustard. Now mix grated cheese and again cook. Cook till cheese melts.
6. Cheese Sauce is ready.

20.6.2 Preparation of Cheese Omelet

Cheese Omelet

1/3 cup Grated Parmesan cheese

1 tbsp Finely chopped parsley

1 tbsp Finely chopped fresh mint

4 Eggs

¼ cup Milk

¼ cup Butter

2 tbsp Salt and black pepper to taste

1. In a mixing bowl beat the eggs with the salt and pepper until it starts bubbling.
2. Beat in the milk, mint, parsley, scallions, and cheese until well homogenised.
3. Add the egg mixture and mix the contents thoroughly.
4. In a heavy skillet melt the butter over moderate heat.
5. Pelt in the egg mixture and spread it out evenly.
6. Reduce the heat to low and cover it fully and cook until the edges of the omelet begin to get firm. Uncover and run a spatula around the edges to keep it from sticking to the pan.
7. When the center of the omelet is almost firm, place a plate over the skillet and invert, dropping the omelet onto the plate. Gently slide it back into the pan, cover, and cook for a few minutes longer until the underside is lightly browned.
8. Slide out onto a serving plate, cut into wedges, and serve hot once.

CHECK YOUR PROGRESS

1. How do you induce curdling in milk?
2. What are the procedures in cheese making?
3. What are the different types of cheeses available commercially?

20.7 LET US SUM UP

Cheese is the curd of milk, coagulated usually with rennet, separated from the whey, and pressed into a solid mass in a hoop or mold. There are hundreds of types of cheese produced all over the world. Different styles and flavors of cheese are the result of using milk from various domesticated animals such as cow, buffalo, sheep and goat or with different butterfat contents, employing particular species of bacteria and molds, and varying the length of aging and other processing treatments. Cheese is generally prepared by curdling with the addition of bacterial culture or by adding vinegar or lime juice. After curdling, it is aged and then processed before packaging.