

CHALIMBANA UNIVERSITY  
DIRECTORATE OF DISTANCE EDUCATION

**FPC 2200:FOOD PRODUCTION I**

**FIRST EDITION 2020**

**Chalimbana University**  
**School of Vocational & Practicals Skills Studies**  
**Department of Hospitality and Tourism**  
**Management**

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First Edition

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**School of Vocational & Practicals Skills Studies**  
**Department of Hospitality and Tourism**  
**Management**

## **Module Overview**

This module equips students with knowledge and skills of preparation and cooking techniques of various food commodities of animal meats.

## **Rationale/ Background**

The purpose of this module is to provide you, with knowledge and skills of preparation and cooking techniques of various food commodities of animal meats

## **Aim**

The aim of this module is to equip students with knowledge and skills of preparation and cooking techniques of various food commodities of animal meats

## **Module outcomes**

### **At the end of this course, students will be expected to:**

- Explain the various types of meats and the examples
- Mention different types of animal breeds
- Discuss the composition of meat structure
- Analyze the cuts of various animals cuts
- Discuss on the grading of meat
- Discuss on what to consider when buying various meats
- Analyze Nutritive value of various meats
- Explain different methods of preparation or cooking of the various meats
- Explain the preparation and cookery terms associated with meat cooking
- Demonstrate different preparation and cookery techniques of meat cookery

## **Summary**

This course is all about cookery techniques of various animal meats such as poultry, beef and veal, mutton and lamb, goat and pork meats. Various suitable methods of cooking different cuts of meat will be discussed and used during practicals.

## **Study Skills**

As a distance student, you should not expect to sit behind the chair and learn everything from the lecturer. You are expected to find time to study as an individual or as a group from your area or

nearby areas. The lecturer is there as a guide each times you come for contact sessions. Take advantage of the presence of lecturers and fellow students to cover as much work as possible.

### **Time Frame**

This course will be covered in three terms of one academic year.

### **Need Help**

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### **List of Equipment needed for this Module**

- Various Food commodities for practicals

### **Required Resources**

- Projectors
- Laptops

### **Assessment**

Continuous Assessment	<b>50%</b>
Assignments, presentations, Quizzes	25%
Tests	25%
Final Exam	<b>50%</b>
Total	



## TABLE OF CONTENTS

Copyright.....	i
Acknowledgements.....	ii
Table of contents.....	iii
Module Overview.....	iv
Introduction.....	v
Rationale.....	v
Aim.....	v
Course outcomes.....	v
Summary.....	v
Assessment.....	vi
<b>UNIT 1.....</b>	<b>7</b>
ANIMAL MEAT.....	7
<b>UNIT 2.....</b>	<b>23</b>
PORK.....	23
<b>UNIT 3.....</b>	<b>28</b>
GOAT MEAT.....	28
<b>UNIT 4.....</b>	<b>32</b>
LAMB AND MUTTON.....;	32
<b>UNIT 5.....</b>	<b>39</b>
OFFALS.....	39
WHITE MEAT.....	40
FISH.....	52
STOCK, SOUP & SAUCES.....	75
<b>UNIT 6.....</b>	<b>137</b>
HERBSAND SPICES.....	78
MENU AND MEAL PLANNING.....	
<b>UNIT 7.....</b>	<b>105</b>
PREPARING AND COOKING VARIOUS ANIMAL MEATS.....	103
<b>UNIT 8.....</b>	<b>105</b>
UNDERSTANDING PREPARATION AND COOKERY TECKNIQUES.....	105
REFERENCES.....	133

## **UNIT 1: ANIMAL MEAT**

### **Introduction**

This unit introduces you to different sources of animal meats, breeds of cattle, cuts of beef, suitable methods of cooking beef and the composition of meat structure. Nutritive value of various meats will also be discussed in this module.

### **Learning Outcomes**

As you study through this unit, you are expected to:

- Explain the various types of meats and the examples
- Mention different types of animal breeds
- Discuss the composition of meat structure
- Analyze the cuts of various animals cuts
- Discuss on the grading of meat
- Discuss on what to consider when buying various meats
- Analyze Nutritive value of various meats
- Explain different methods of preparation or cooking of the various meats
- Explain the preparation and cookery terms associated with meat cooking
- Demonstrate different preparation and cookery techniques of meat cookery

### **MEAT**

Meat comes from the muscle system of various animal meats .obtained directly from an animal such as cattle, goat.

There two types of meat, red meat and white meat. Red meat has more myoglobin than white meat. Myoglobin is a red protein containing haem(iron), which carries and stores oxygen in muscle cells.

#### **Examples of red meat include the following:**

- Beef and veal,
- Mutton and Lamb,
- Goat,
- Hogget
- Game/wild meat ( Kudu, Lechwe, Kudu, Buffalo, Deer- Venison etc).

#### **Examples of white meat include the following:**

- Poultry (Chicken, Duck, Turkey, Pigeons, Quails etc.)
- Fish (oily fish, White fish, Shell fish).

## **RED MEAT**

### **BEEF AND VEAL**

- Beef is meat obtained from the older cattle, while Veal is obtained from young calf.

### **CATTLE BREEDS OF BEEF**

There different breeds of cattle some of which include the following:

#### **Black Angus**

Black Angus is the most common breed of beef cattle in the U.S. One reason the breed is so popular is their carcass characteristics, which are marketed as yielding well-marbled, flavorful beef. Also, Angus cattle require little maintenance during calving season, are good mothers, and are very feed efficient

#### **Charolais**

It has been said that no other breed has impacted the North American beef industry so significantly as the introduction of Charolais. The Charolais came into widespread use in the United States cattle industry at a time when producers were seeking larger framed, heavier cattle than the traditional British cattle breeds. Charolais are white or creamy white in color and the hair coat is usually short in summer, but thickens and lengthens in cold weather.

#### **Hereford**

Originating in England, Herefords became very popular in the U.S. for their early maturity and fattening ability. Dark red to red yellow in color with a white face, Herefords are known for their longevity, and for being docile, easy calvers, good milkers, and good mothers.

#### **Simmental**

The Simmental is among the oldest and most widely distributed of all breeds of cattle in the world. The red and white animals were first introduced to the U.S. in the late 19th century and have been positively influencing the beef community ever since. They have a large body frame, but they require little assistance during calving season and have excellent weight gaining potential.



## **Red Angus**

Not as popular as Black Angus, Red Angus do offer the same valuable carcass characteristics that result in increased marbling and flavor. Red Angus are also a docile cattle breed and possess good mothering traits. They are more tolerant to hot temperatures than black Angus.

## **Texas Longhorn**

The Texas Longhorn is the end product of “survival of the fittest”. Brought by Christopher Columbus and the Spanish colonists, the cattle breed is known for its characteristic horns, which can extend to over 1.8 m tip to tip for bulls, and 2.1 m tip to tip for steers and exceptional cows. Texas Longhorns are known for their diverse coloring, and can be any color or mix of colors, but dark red and white are the most dominant.

## **Gelbvieh**

A European breed introduced to the United States through artificial insemination, the Gelbvieh breed is red in color, with strong skin pigmentation, and horned. Polled cattle have developed in the United States from the use of naturally hornless foundation females. Fans of the breed claim the breed has superior fertility, calving ease, mothering ability, and growth rate of the calves. While the black and white cattle are the most popular breed for dairy, Holsteins not used for breeding stock or milk production are raised for their value as beef cattle. Beef from finished Holstein finished steers has many desirable characteristics and provides a consistent product. Genetic similarity contributes greatly to the consistency of the quality of beef provided by

## **Limousin**

The golden-red breed are native to the south central part of France in the regions of Limousin and Marche. From the initial U.S. concentrations in Oklahoma, Texas, and South Dakota, the Limousin breed has expanded across North America. Today, there are more than a million registered head here. The tremendous carcass traits of the breed have attracted the full attention of the entire beef industry.

## **Highlands**

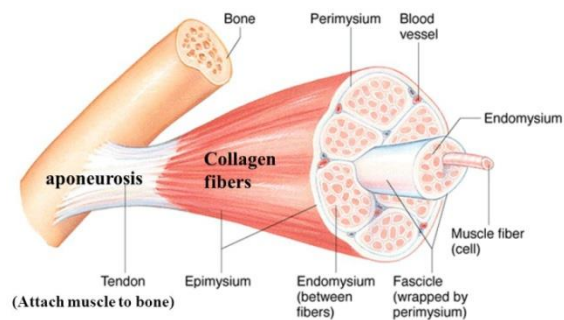
With long horns and a double coat, Highlands require little in the way of shelter, feed supplements, or expensive grains to achieve and maintain good condition and fitness. Cold weather and snow have little effect on them. They have been raised as far north as Alaska and the Scandinavian countries. They also adapt well to the more southerly climates with successful herds as far south as Texas and Georgia. Long lashes and forelocks shield their eyes from flying

insects, and as a result, pinkeye and cancer eye are uncommon. Highland beef is meat that is lean, well marbled and flavorful, with little outside waste fat.

## THE COMMON CATTLE BREEDS IN ZAMBIA

- Barotse breeds
- Tonga breeds
- Angoni breeds
- Exotic breeds

## COMPOSITION OF A MEAT STRUCTURE



## CUTS OF BEEF AND SUITABLE METHODS OF COOKING THEM

It is important to choose the correct cut for the method of cooking. The tenderest piece can be cooked by dry heat i.e grilled or roasted. The less tender although generally more flavorsome cuts are best cooked a moist cooking method such as stewing braising or pot roasting

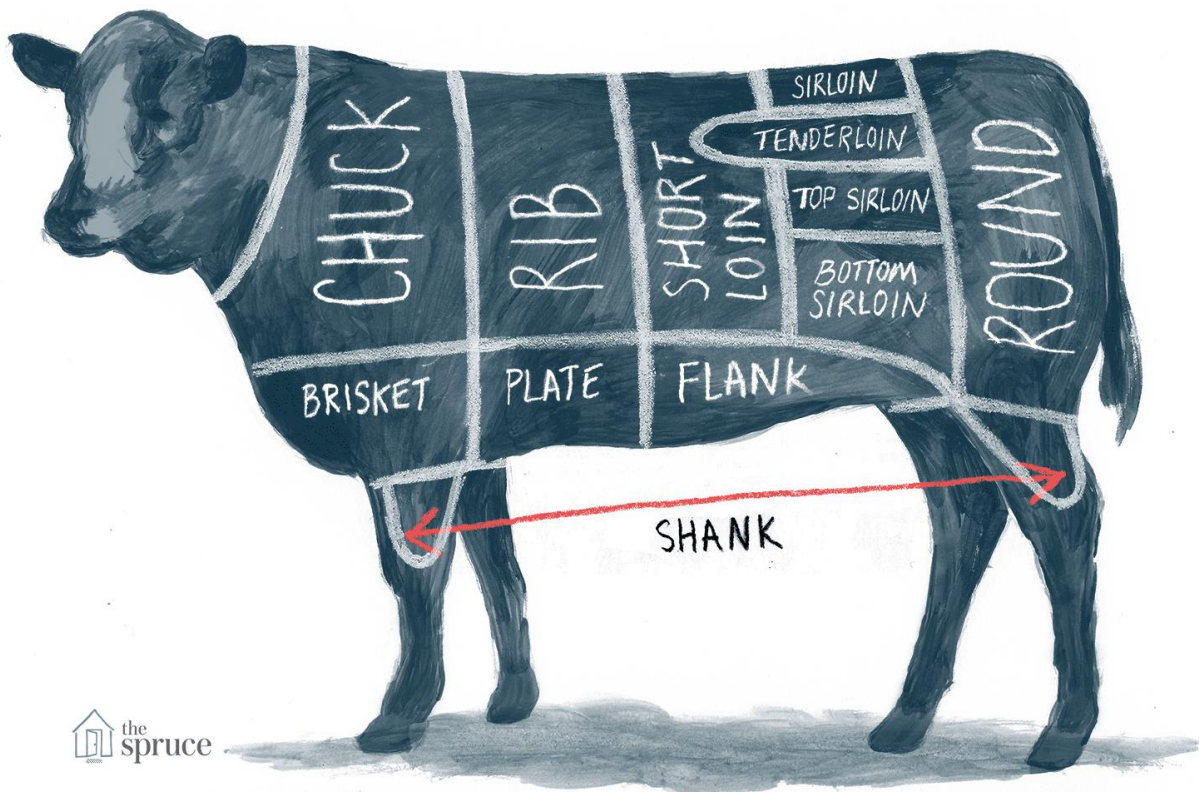
- **Brisket:** an economical joints sold on the bone or boned and rolled. It has high percentage of fats and needs a slow, moist cooking method but the flavor is good pot-roast or braise. Also sold pickled in which case it is best boiled.
- **Chuck and blade:** this is lean meat from the shoulder which is removed from the bone and used for braising stewing and pies. Also called shoulder.
- **Fillet:** this is the most tender cut of beef it forms parts of the sirloin and also sold separately. It is cut into steaks for grilling or frying, or cooked in a piece.

- **Flank:** often divide into flank skirt and thin skirt. This cut needs a moist cooking method it has a full flavor and benefits from braising pot- roasting and stewing thin skirt cut into long thin strips across the grain can be stir-fried
- **Neck and clod:** a rich flavored meat ideal for stews
- **Leg:** ideal for stewing cut producing a richly flavored gravy
- **Ribs:** sold as grilling or frying steaks on the bone or boned and rolled for roasts, an entrecote steak is cut from the fore and rump rib end. This, ribs are divided into different cuts. Wing ribs also called standing ribs or best chine is an expensive cut for roasting as it is next to the sirloin. Back ribs and top ribs are less expensive and best braised or pot-roasted. The rib eye is a boneless, piece from the rib fore are similar to wing ribs the main difference being the length of the bone.
- **Rump:** the perfect steak for grilling and frying it is not the most tender steak but it has a full flavor also called pope's eye
- **Shin:** excellent meat for stews and soups produces a rich flavor some stock particularly when cooked with bone.
- **Silverside:** sold fresh pickled or salted traditionally boiled but can be braised roasted or pot roasted very lean meat with no bone.
- **Sirloin:** a tender and delicious cut. Can be roasted in the piece or cut into steaks. The fillet is found on the inside of the sirloin bone and fillet and sirloin together make an excellent roasts. The sirloin from both sides of the carcass when undivided are known as baron of beef. T- bones sirloin and porterhouse (chateaubriand) steaks come from the sirloin. The joints for roasting can be bone-in or boneless.
- **Top rump:** also called thick flank leg of beef or first cutting. A lean cut, cut sold sliced and ready for frying or grilling. As a joints it needs a slow, moist cooking method. Pot-roasting is ideal.
- **Topside:** a lean cut often sold boned and rolled with layer of fat tied round it. Can be roasted but cook` it slowly and serve it under done to preserve its tenderness. Best pot-roasted or braised. Maybe called buttock steak.

## VEAL

- **Best end of neck:** a roasting or braising joint

- **Breast:** usually sold boned this cheaper cut can be rolled and tied either as it is or with stuffing. It is very good pot-roasted or braised
- **Escalop (schnitzel):** these are usually cut from the topside fillet or best end of neck. Flatten than shallow fry or grill.
- **Fillet:** these are very thin slice cut from the leg. They are very lean and can be flattened and fried, cooked in a sauce or stuffed and rolled
- **Knuckle:** knuckle of veal is cut into rounds with the marrow bone in the centre. Traditionally stewed for osso bucco.
- **Loin:** a succulent roasting joint. Veal chops are also cut from the loin.
- **Neck:** a stewing cut that needs slow, moist cooking. It can be cut into piece for pies.
- **Pie veal:** small piece of shin, leg and neck for use in veal and ham pies, stew or in sauces.
- **Scrag:** a stewing or braising cut.
- **Shoulder:** a large joint usually boned rolled and tied then cut into pieces. Can be stuffed. Roast, braise or use in stews and sauces.



## GRADES OF MEAT

Quality grades are reflective of the eating quality of beef. Beef carcasses are cut between the 12<sup>th</sup> and 13<sup>th</sup> rib, making the ribeye easy to view. United States Department of Agriculture (USDA) Graders evaluate the the following:

- The distribution on marbling in the ribeye. Marbling is the white pieces of fat that are seen inside the lean.
- Additionally, quality grading of meat has a brighter, more cherry-red colored ribeye. While the ribeye with less fat or less marbling has a duller color to the meat.
- The age or maturity of the animal is also factored into the quality grade any cattle that are graded Prime, Choice or Select are going to be young cattle. The USDA grading system breaks down the quality grades of beef into :
  - **Prime**, Prime is the highest quality of beef available. They have the most marbling and are sure to provide a wonderfully juicy and extremely tasty eating experience. The high level of marbling makes them great for grilling and other dry cooking methods.
  - **Choice**, Choice is still high quality beef that has less marbling than Prime. Consumers are going to receive a delicious and juicy eating experience. Tender cuts are still great for grilling and other dry cooking methods, while less tender cuts are more suitable for a liquid added type of cooking.
  - **Select**, Select is a uniform, leaner quality of beef. It still is tender and can provide pleasurable eating experiences, having less marbling Select beef is going to tend to be less juicy and tender than Prime or Select. Most often select cuts are either marinated or braised to achieve the most eating satisfaction.
  - **Utility, Cutter, and Canner**. What It Means: These remaining three grades won't be appearing on any labels at the store (would you buy something called “**Utility Meat**, they are from older cattle with no marbling, and used for really cheap ground **beef**, processed **meat** products like hot dogs, even dog food.
- The majority of the steaks sold in the retail cooler at the local supermarket are going to fall into Prime, Choice or Select.

**Some specific guidelines to consider when selecting certain meats:**

- Never buy meat that's past the expiration or sell-by date. Also, buy meats at the store after you've found all your other items to decrease the time the meat is out of refrigeration.
- .
- Avoid any beef or pork that's dark brown or discolored, has a strong odor, or feels tough or slimy.
- Avoid any poultry that looks faded, has a strong odor, or feels tough or slimy.
- Avoid any fish that's faded or discolored, has squishy or slimy flesh, and has a strong fishy or ammonia-like odor.
- Avoid any meat that's in damaged, leaking, or torn packages, as it's likely been exposed to the air and harmful bacteria.
- When **purchasing meat** and poultry, it's important to use your senses of touch, smell and sight. Always make sure the **meat** is firm to the touch, and check that the packaging doesn't have any tears, holes or excessive amounts of liquid. It should also be cold to the touch and have no odor
- Expiration Date, As with all perishable items, the Food and Drug Administration, or FDA, requires a product dating system like a Use By or Sell By date printed on the packaging. Check the date on this package when shopping for beef. The FDA recommends consuming vacuum-sealed fresh beef no more than three to five days after purchasing.
- Liquid, Observe the color of the beef -- look for a rich red, almost maroon color. Pink fluid pooled in the bottom of the package does not indicate spoilage -- it indicates freshness. However, excess pooled moisture -- if it covers the meat by more than 1/4 inch -- is the result of faulty refrigeration.
- Color, Beef cuts have a natural deep red, almost ruby color. When sealed in a vacuum package free of oxygen, beef exudes a much darker, almost purplish color, which should not be confused with spoilage. Once fresh beef is exposed to oxygen it will begin to display its natural color after about 15 minutes. When beef appears brownish around the edges, this indicates air and possible bacteria exposure: The first signs of spoilage.

- Odor, Packaged beef may have an odor when first removed from the package -- this is normal. It is NMJHipates in about 30 minutes; however, if the odor does not dissipate after 30 minutes, it indicates protein degradation

### What to look for when buying raw meat?

- **Meat quality** is usually defined as a measurement of **attributes** or characters that determine the suitability of **meat** to be eaten as **fresh** or stored for reasonable
- **Fresh meat** refers to **meat** that has not undergone any preserving process other than chilling, freezing or quick-freezing, including **meat** that is vacuum-wrapped or wrapped in a controlled atmosphere. ... **Fresh meat** of domestic and wild ungulates includes **fresh meat** of for example: bovine animals (including buffalo and bison)
- Consumers determine **quality meat** as one with desirable color, firm texture, less drip, high marbling, and moderate visible fat and **fresh meat** odor, while discoloration, soft texture, large amount of drip, less marbling, excessive visible fat and abnormal **meat** odor are considered as poor **quality traits** for **fresh meat**
- **Fresh meat** has specific **characteristics** to check, before you give your money to the store. When you press a finger into **fresh meat**, the pressure hole quickly ...
- **Meat quality** is normally defined by the compositional **quality** (lean to fat ratio) and the palatability factors such as visual appearance, smell, ...
- **Raw meat quality** is reported to be severely affected by the stress conditions during slaughtering process and the slaughtering methods
- The development of vacuum-sealed packaging removes oxygen from around meat, disabling aerobic bacteria which need oxygen to decompose the beef. Depending on the quality of packaging, transportation and refrigeration of beef products, they can have a shelf life of several months, but the freshest cuts can be determined by a few factors, such as color, odor and texture.
- **Beef** cuts have a natural deep red, almost ruby color. When sealed in a vacuum package free of oxygen, **beef** exudes a much darker, almost purplish color,
- **Fresh meat** has specific characteristics to check, before you give your money to the store. On the surface, fresh meat is lightly crusted with a lightly pink look about it. When

you press a finger into fresh meat, the pressure hole quickly disappears and the meat goes back to its original shape. When in contact with fresh meat, your palm stays dry.

- Where meat is cut, it does not stick to your hands. Meat that leaks juice after cutting, has just been defrosted, or is not fresh.
- The fat of the **fresh meat** is soft, cream-colored and uniform, which can vary to reddish-white. Yellow fat is a sure sign that the meat is not fresh.
- **Fresh meat** is distinguished in that the muscles and tendons are tight fitting to the bone. The smell of meat is special, but not bad.
- The characteristic of fresh veal color is red for **beef** - pink and gray, for mutton - brownish-red, for pork-white, or pink.
- The smell of different meats is also decisive for their freshness. The smell is determined at room temperature after a slight cut with a knife.
- The smell of raw beef is specific, but much less pronounced. When the meat is cooked, the flavor is nice and strong.
- Raw **pork** is almost odorless and boiled pork is sweet and has a pleasant fragrance. Specific odor reminiscent of ammonia is offered by mutton and boiled mutton smells of rich beef stew, or beef.
- Meat from older sheep has an unpleasant odor which is felt when boiled. Beef, which has been stored for long, gets the distinct odor of old meat. Frozen meat does not smell.
- Meat quality is normally defined by the compositional quality (lean to fat ratio) and the palatability factors such as visual appearance, smell, firmness, juiciness, tenderness, and flavour. The nutritional quality of meat is objective yet "eating" quality, as perceived by the consumer, is highly subjective.
- Visual Identification The visual identification of quality meat is based on colour, marbling and waterholding capacity. Marbling is small streaks of fat that are found within the muscle and can be seen in the meat cut. Marbling has a beneficial effect on juiciness and flavour of meat. The lean should be surrounded by a layer of creamy white fat which is firm and dry. The lean of roasting joints should be smooth and velvety in texture. Lean with a coarse grain will be too tough for roasting. Marbling, or fleck of fat in the meat help give it flavor and moisture. Beef that has been pickled will look grey when raw,



turning pink when cooked. Meat should have a normal colour that is uniform throughout the entire cut. Beef, lamb, and pork should also have marbling throughout the meat.

- **Smell**, Another quality factor is smell. The product should have a normal smell. This will be different for each of the species (i.e. beef, pork, chicken), but should vary only slightly within the species. Any rancid or strange smelling meat should be avoided.
- **Firmness**, Meat should appear firm rather than soft. When handling the retail package, it should be firm, but not tough. It should give under pressure, but not actually be soft.
- **Beef**: look for a fresh, slightly moist appearance The colour can vary from bright red to brownish red, according to the length of time it has been exposed to the air and this need not affect your choice.
- **Juiciness**, Juiciness depends on the amount of water retained in a cooked meat product. Juiciness increases flavour, helps soften meat - making it easier to chew, and stimulates saliva production in the mouth. Water retention and lipid content determine juiciness. Marbling and fat around edges helps hold in water. Water losses are from evaporation and drip losses. Meat aging can increase water retention and therefore increases juiciness.
- **Tenderness**, Has been linked to several factors, such as the animal's age, sex or the muscle location. One important way to tenderize meat is by aging. Carcasses are aged by holding them at refrigeration temperatures for extended periods of time after slaughter and initial chilling.
- **Flavour**, Flavour and aroma are intertwined to create the sensation the consumer has during eating. These perceptions rely on the smell through the nose and on the sensations of salty, sweet, sour and bitter on the tongue. Meat flavour is affected by type of species, diet, cooking method and method of preservation (e.g. smoked or cured).

## **NUTRITIVE VALUE OF MEAT**

Meat is an excellent source of many nutrients, especially **protein, B vitamins, iron and zinc**.

- **Proteins** - it provides high quality protein sources
- **Fat**.
- **Vitamins** - Meat is a major dietary source of :
  - Thiamin, riboflavin, niacin, vitamin B6 and vitamin B12.
- **Minerals**

- Iron : dietary iron is present in food as heme or nonheme iron. The human body absorbs heme iron at a rate about five to ten times higher than it absorbs nonheme iron. Heme iron accounts for fifty to sixty percent of the iron in beef, lamb and chicken and thirty to forty percent of that in pork, liver and fish. All remaining iron in meat is in the nonheme form. Scientists have established that ascorbic acid can aid in the absorption of nonheme iron. By drinking a glass of orange juice with a meal containing meat, you can enhance nonheme iron absorption by a substantial amount. Other components in food such as tannins in tea and polyphenols in coffee can inhibit the absorption of nonheme iron. Consuming coffee one hour before a meal will not affect nonheme iron absorption. If coffee is consumed with a meal, or one hour after a meal, nonheme iron absorption can be reduced nearly forty percent. The absorption of heme iron has not been found to be affected by these foods.
- **Zinc:** Meat, liver, eggs and seafoods, especially oysters, are excellent sources of highly available zinc. In general, zinc is more readily available from animal sources than from vegetable sources. There are, however, many dietary and physiological factors that affect the absorption and bioavailability of dietary zinc.

#### **Which meat is healthier? White Meat or Red Meat**

- Meat is a great way to get protein and numerous vitamins and minerals, but which type of meat is better: white or red?
- First, what makes the meat white or red? Red meats simply have more myoglobin, which are the cells that transport oxygen to muscles in the bloodstream. Muscles used more frequently are darker. This is why chicken and turkey legs are slightly darker than breast meat - because legs are used more, more myoglobin is present, creating a darker appearance. Although it can depend on the culture or cuisine, white meat is generally classified as poultry (chicken and turkey), while red meat typically refers to beef, pork, and lamb.
- The biggest difference between the two is fat content. White meat is a leaner source of protein, with a lower fat content. Red meat contains higher levels of fat, but also contains higher levels of vitamins like iron, zinc and B vitamins. The iron present in red meat is a type called heme iron, which is more easily absorbed by the body compared to iron found

in plant sources. Because red meat is high in these vitamins, vegetarians and vegans are often found to be deficient, especially B vitamins.

- Although it may contain more vitamins and minerals, high consumption of red meat has been correlated with increased incidence of certain cancers, specifically colorectal cancer.
- High-temperature cooking, like grilling, can form carcinogenic (cancer-causing) compounds in the meat. This is especially true for charred meats.
- Both white and red meat have benefits; if you eat meat, it's a good idea to include small amount of both in your diet. Opt for leaner cuts of red meat, like those that end in "-loin" (sirloin, tenderloin, etc). Further, trim visible fat around the edges to reduce fat intake and avoid charring while cooking. In this way, you can try to reduce the disadvantages of eating red meat

## **Handling meat and Storing meat**

### **Handling meat**

- Wash your hands frequently when preparing any type of meat, fish, or poultry. Bacteria can quickly spread between your hands and meat. Always wash your hands with soap and water for at least 20 seconds before and after handling meat, whether it's raw or cooked.
- Because bacteria can spread easily, prepare the meat on a surface that's separate from all other cooking materials. Keep vegetables and other ingredients away from meat, especially if you aren't cooking them together in the same dish.
- Try to use separate cutting boards, clean all cooking utensils after they touch raw meat, and use different

### **Storing meat**

- Remove meat from its wrapping and place on a clean plate cover it loosely with foil or plastic and place in refrigerator. Fresh meat will keep for up to 2 days for chops and smaller cuts or 4 days for joints and large pieces. Fresh minced beef, boned and stuffed meat and offal must always be cooked on the day of purchase.
- Wrap **meats** very tightly in either plastic wrap or freezer paper, pressing the wrapping right up against the surface of the **meat**. Next, wrap another layer of aluminum foil around the **meat** or seal it inside a zip-top freezer bag. Packaged like this, **meat** can be kept **frozen** for at least three month

- Uncured, raw meat generally lasts safely for around three days in the refrigerator. If you plan to keep uncooked meat longer, freezing it is your best bet. Seal the meat in an airtight package before freezing. Then, it can usually be frozen for at least several months.
- Safe freezing and refrigeration time also depends on the storage temperature. Keep your freezer as close to 0°F (-17.8°C) as possible. This helps retain nutrients and keep food fresh. Keep your refrigerator at around 34°F (1.1°C), just above freezing, to effectively prolong the shelf life of foods.
- **Freezing:** before you prepare meat for the freezer check your hands, utensils and preparation surface are spotlessly clean.
- Below are general guidelines for how long basic meats can be kept safely if they're stored properly.

Type of meat	Safe storage times (in the refrigerator)	Safe storage times (in the freezer)
uncooked poultry	1–2 days	9 months (pieces) to 1 year (whole)
uncooked ground meat	1–2 days	3–4 months
uncooked steaks or chops	3–4 days	4–12 months, depending on the item
uncooked fish	1–2 days	6 months
cooked poultry, meat, or fish	3–4 days	2–6 months
hot dogs and lunch meat	up to 1 week (open package) or 2 weeks (closed package)	1–2 months

### **Thawing frozen meat:**

- Frozen joints are best thawed before cooking. Leave in their wrapping and place on a wire rack over a plate. Thawing time will vary according to temperature and size of joints but allow about 24 hours for an average sized piece.
- Meat can alternatively be thawed slowly in the refrigerator allow 48 hours chops and small pieces of meat take about 3 hour to thaw.
- Defrost Overnight - the best way to thaw meat safely is to plan ahead. Defrost it overnight on a plate in the refrigerator. By the next day, you're ready to cook
- Cold water" method. Keep the chopped or ground meat wrapped tight. Note: Proper packaging prevents bacteria from forming and water from seeping in. Place the wrapped meat in a large bowl and fill with cold water. Change the water every 30 minutes as the meat continues to thaw. A 1-pound package of meat can thaw in an hour or less. Packages of 3 to 4 pounds can take more than two hour
- Never keep meat at room temperature for more than two hours. Once you've thawed frozen meat, you can't refreeze it unless it's in a stock, soup or liquid

### **Activities**

- Draw and label the cuts of cattle beef
- Explain with an illustration of a meat structure
- Discuss the suitable method of cooking meat

### **Assignment**

- Make a picture booklet of various animal breeds discussed in this module

## **UNIT 2: PORK**

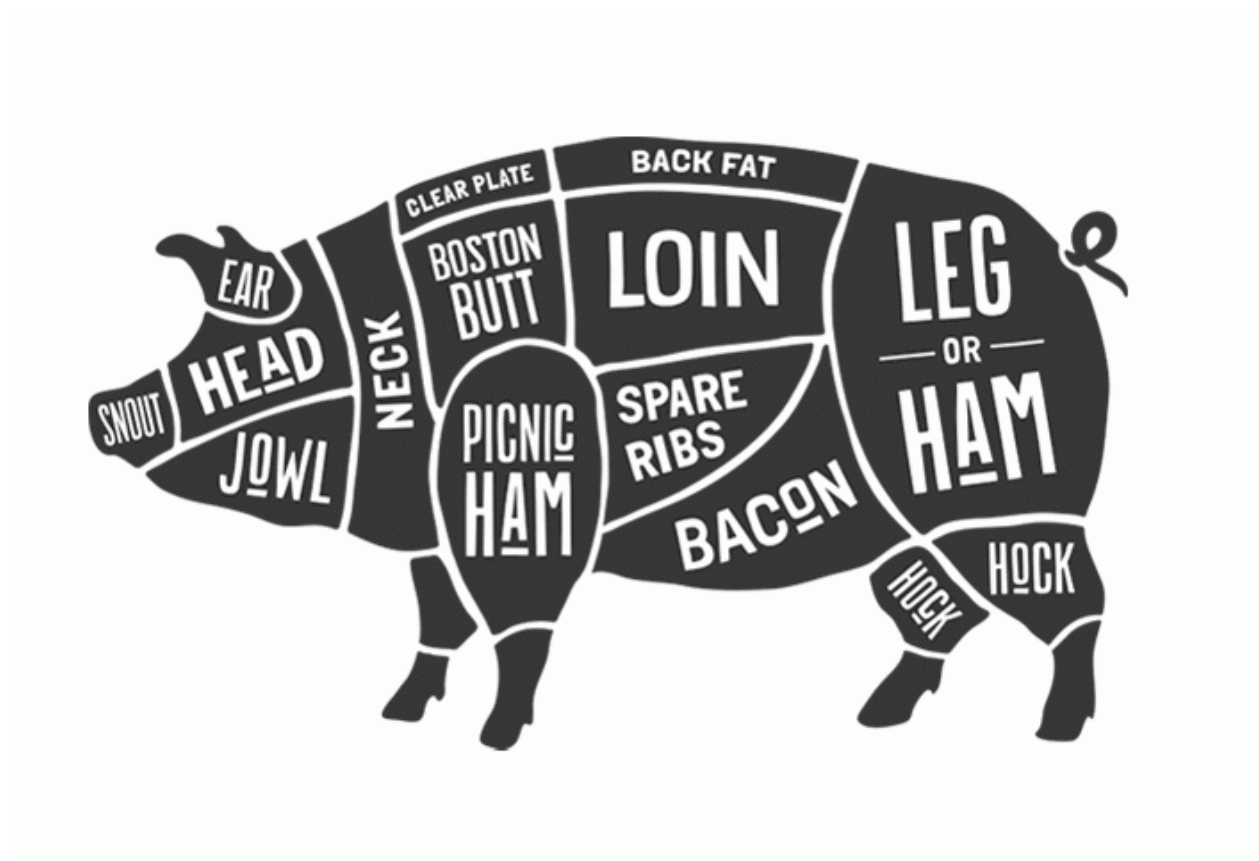
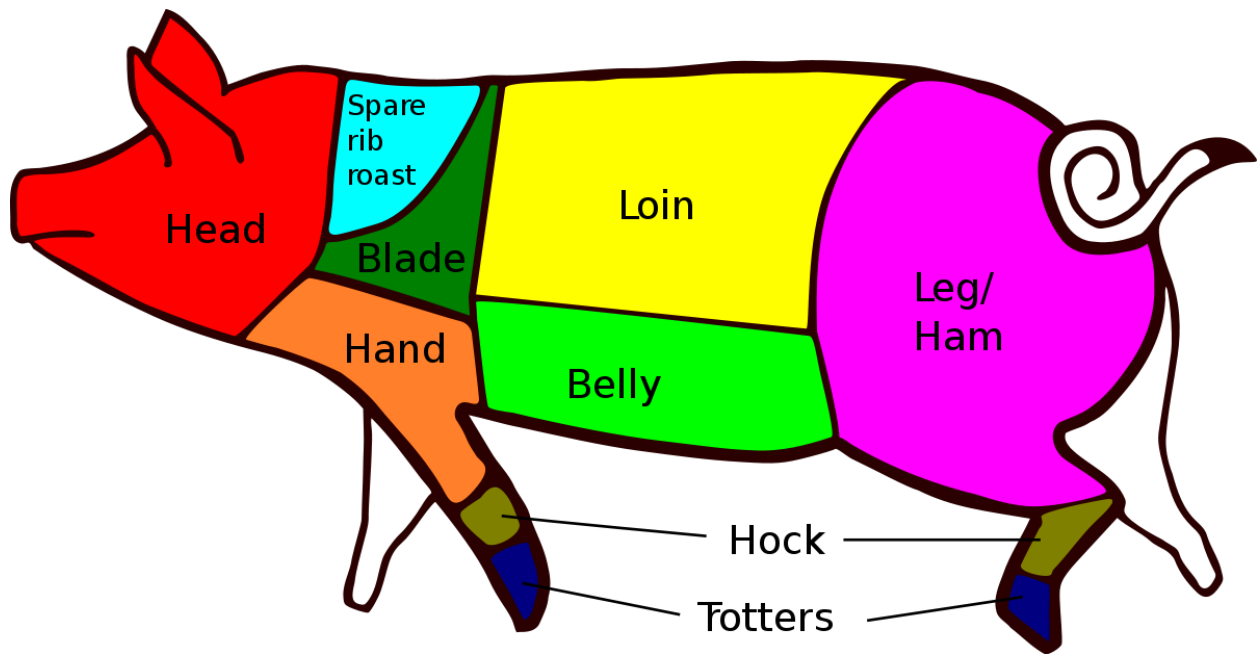
### **Introduction**

This unit introduces you different types of animal breeds, the cuts of pork, the grading and quality of pork meat. Different suitable methods of preparation and cooking of pork meat shall also be discussed.

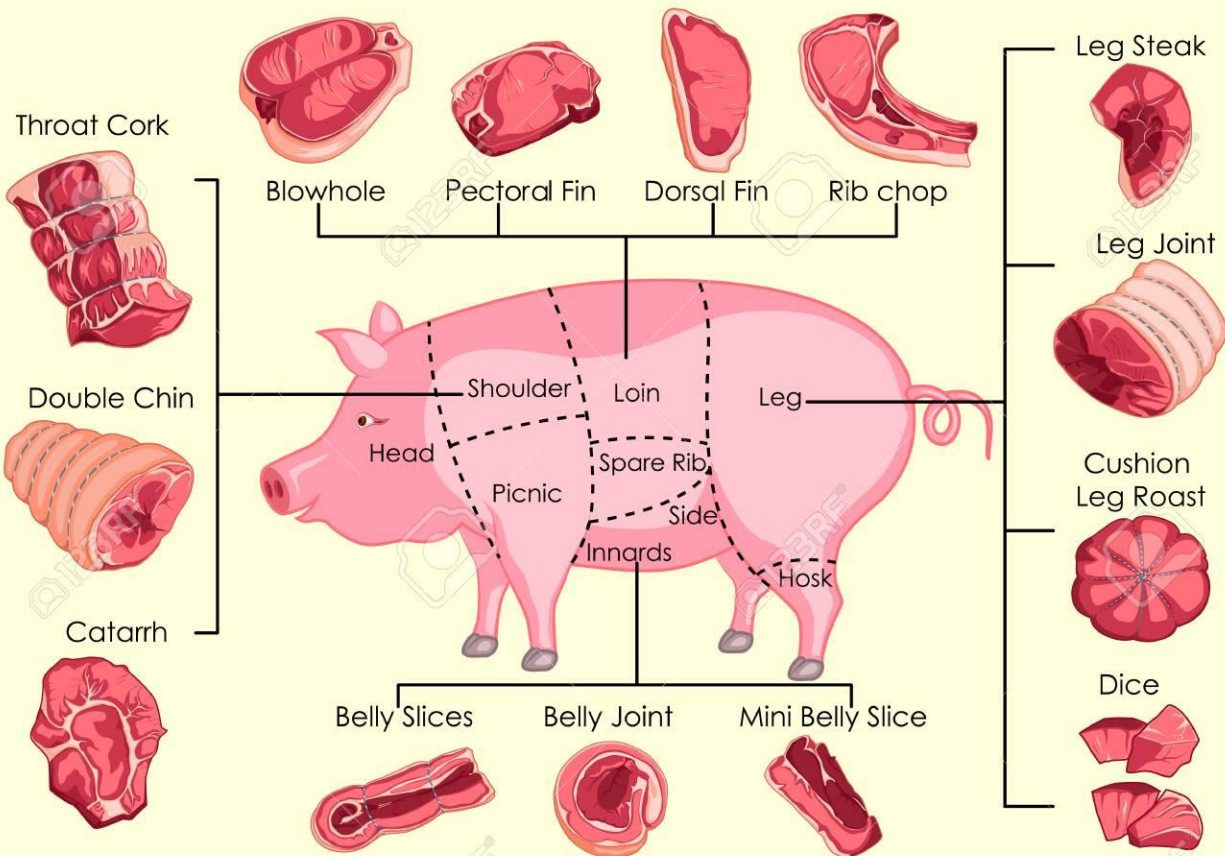
### **Learning Outcomes**

As you study through this unit, you are expected to:

- Mention different types of animal breeds
- Analyze the cuts of pork
- Discuss on the grading and quality of pork meat
- Explain different suitable methods of preparation or cooking of pork meat



# Cuts Of Pork



## Pork Quality






- When buying raw meat pork look for firm, dry lean meat with a good pinkish color. The fat should be firm and creamy white. If you like crackling check the rind is left on and ask the butcher to score is deeply and evenly at intervals.
- The quality of pork depends on its color, texture, and marbling which can be determined by visual evaluation or scientific tests such as ultimate pH. Fresh pork is more tender and juicy when it is reddish-pink, firm and non-exudative.
- Pork should always be cooked to at least the high end of medium because it can carry potentially dangerous worms and parasites
- Marbling can also improve flavor and moisture just like it does in beef. The chart below helps to demonstrate the variations in pork quality. The USDA does not grade pork in the same way it does beef. Pork carcasses are not ribbed, and grades of pork are determined by back fat thickness and carcass muscling.

# PORK QUALITY STANDARDS







Quality of fresh pork varies greatly. The quality levels shown below will appear differently to consumers, taste differently when cooked, and perform differently when converted to processed products. High quality pork has greater monetary value than low quality pork. Quality can be evaluated by simply visual appraisal, or it can be determined more accurately by scientific tests. This chart may be used to help identify variations in pork quality. Color and Marbling Standards cards are also available.

**pork** The Other White Meat™








## COLOR - TEXTURE - EXUDATION

		
<b>PSE</b> Pale pinkish gray, very soft and exudative. Undesirable appearance and shrinks excessively.	<b>RFN</b> Reddish pink, firm and non-exudative. "IDEAL". Desirable color, firmness and water-holding capacity.	<b>DFD</b> Dark purplish red, very firm and dry. Firm and sticky surface, high water-holding capacity

## COLOR STANDARDS

					
<b>1.0</b> Pale pinkish gray to white Minolta L* Value <sup>1</sup> 61	<b>2.0</b> Grayish pink 55	<b>3.0</b> Reddish pink 49	<b>4.0</b> Dark reddish pink 43	<b>5.0</b> Purplish red 37	<b>6.0</b> Dark purplish red 31


## MARBLING STANDARDS<sup>2</sup>

						
<b>1.0</b>	<b>2.0</b>	<b>3.0</b>	<b>4.0</b>	<b>5.0</b>	<b>6.0</b>	<b>10.0</b>

Color and marbling scores are as described in "Composition & Quality Assessment Procedures", 1998, NPPC.  
<sup>1</sup> Minolta L\* values use D65 daylight light source.  
<sup>2</sup> Marbling scores correspond to intramuscular lipid content.

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## BACON

- Bacon is cured from the sides and back of pig bred specially for its lean meat. All bacon is preserved in salt and it can then be smoked, or left unsmoked. Unsmoked or green bacon has a pale rind and pink flesh; smoke bacon has a golden brown rind and darker pink flesh. Bacon from Denmark, Holland and Britain is normally mild cured and less salty than bacon from other countries such as Poland and Russia.
- **Buying:** bacon should have a pleasant smell with no stickiness. The rind should be thin and smooth and the fat firm and white. Bacon can be bought ready boned and rolled in joints and it can be film wrapped or vacuum-packed. Some joints are sold in boilable bags.
- **Freezing:** cured meats do not freeze as well as fresh meat. Commercially vacuum-packed bacon freezes best, either as rashers or a joint. Bacon for freezing must be very fresh. Store for 1 to 2 months or 4 months for vacuum packs. Vacuum-packed bacon stores well for longer and is stamped with a sell-by date
- **Storing:** wrap bacon joints in foil and store in the refrigerator for up to 3 days. Green bacon rashers can be stored for up to 7 days, smoked for 10. Wrap in foil or place in a covered plastic container.
- **Soaking bacon:** bacon that is labeled sweetcure or mild cure needs no soaking as it will not be excessively salty. Other joints should be for smoked. To soak, place the joint in a large bowl or saucepan and cover it with cold water. After soaking for the correct time, drain off the water. Use fresh water for boiling the joint. If time is short and you have no time to soak the bacon place it in a saucepan and cover it with cold water. Bring it slowly to the boil, then drain off the water and discard it. Cook fresh water.

## Activities

- Draw and label the cuts of pork
- Discuss the suitable method of cooking pork meat

## UNIT 3: GOAT MEAT

### Introduction

This unit introduces you different types of breeds of goats, the cuts of goat meat, the grading and quality of goat meat. Different suitable methods of preparation and cooking of goat meat shall also be discussed under this module.

### Learning Outcomes

As you study through this unit, you are expected to:

- Mention different types of goat breeds
- Analyze the cuts of goat
- Discuss the nutritive value of goat meat
- Discuss on the grading and quality of goat meat
- Explain different suitable methods of preparation or cooking of goat meat

### GOAT

**Goat meat** or **goat's meat** is the **meat** of the domestic **goat** (*Capra aegagrus hircus*). The common **name** for **goat meat** is simply "**goat**", though **meat** from adult **goats** is referred to as chevon and cabrito, while from young **goats**, it is capretto, natale or kid., Goat meat is healthier than beef and chicken .Goat meat is a healthy alternative to beef and chicken because it contains fewer calories, fat, and cholesterol. goat meat is tough and somehow less desirable than pork, lamb or beef.

### Breeds of goat meat

There are many goat breeds which are very suitable for farming according to the weather and climate of Zambia. **Boer**, German Alpine, Toggenburg, Saanen, Anglo Nubian and some other breeds are suitable for commercial and profitable goat farming in Zambia

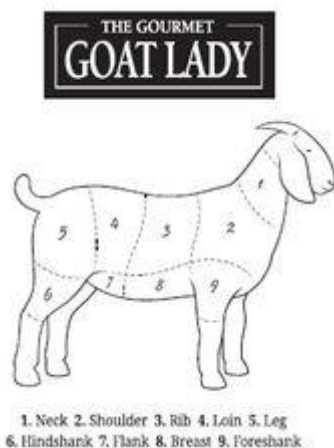
### What to consider when buying goat meat

- Red **meat** like lamb or **beef** should be bright red- that means it's the freshest. If it turns a bit purple, it's still ok but means it's been exposed to some oxygen.
- Press the **meat** firmly with your finger- if it springs back nicely, it is fresh; if not, it is most likely old because it is losing its firmness

## NUTRITIVE VALUE OF GOAT MEAT

- Excessive protein consumption, can hinder a balanced diet and increase risk for chronic illnesses like kidney disease
- goat is still considered an acquired taste. Besides the taste,
- Three ounces of goat meat has about 122 calories, 0.79 grams of saturated fat and 3.2 milligrams of iron. This is compared to 179 calories, three grams of saturated fat and 2.9 milligrams of iron in beef.
- Goat meat has more iron, comparable protein and lower levels of saturated fat, calories, and cholesterol compared to beef and chicken,” she said. “Goat meat is definitely superior nutritionally.”

### Cuts of goat Meat



These are the main goatmeat cuts and a guide for how each cut should be cooked.

#### 1. Neck

- **Main cuts:** Neck chops, Neck rosette, Neck fillet roast  
**Best cooking methods:** Slow cooking methods as braising, stewing and roasting

#### 2. Shoulder

- **Main cuts:** Bone-in shoulder, Easy carve shoulder, Forequarter rack, Forequarter chop  
**Best cooking methods:** Slow cooking methods as braising, stewing and roasting

#### 3. Rib

- **Main cuts:** Rack, Cullets  
**Best cooking methods:** High heat and quick methods such as grilling, barbecuing and pan-frying

#### 4. Loin

- **Main cuts:** Loin chops, Eye of loin, Tenderloin  
**Best cooking methods:** High heat and quick methods such as grilling, barbecuing and pan-frying

#### 5. Leg

- **Main cuts:** Leg bone-in, Easy carve leg, Leg (boned), Mini roast, Leg steak  
**Best cooking methods:** Searing and roasting and for Leg steaks, grilling, barbecuing and pan-frying

#### 6. Hindshank

- **Main cuts:** Shank, Drumstick  
**Best cooking methods:** Slow cooking methods as braising, stewing and roasting

#### 7. Flank

- **Main cuts:** Goat ribs  
**Best cooking methods:** Grilling and roasting

#### 8. Breast

- **Main cuts:** Goat ribs  
**Best cooking methods:** Grilling and roasting

#### 9. Foreshank

- **Main cuts:** Shank, Drumstick  
**Best cooking methods:** Slow cooking methods as braising, stewing and roasting

### GOAT MEAT RECIPES

- goat curries ,roast baby goats with chilli vinegar and onions, spicy wok-tossed goat and lemongrass, elegant Michelin-starred plated goat rib and loin plates goat head soup , raw goat goat with lemons and chillis and goat cooked with yogurt and flatbread

## **Activities**

- Draw and label the cuts of goat meat
- Discuss the suitable method of cooking goat meat
- Discuss the nutritive value of goat meat.

## UNIT 4: LAMB AND MUTTON MEAT

### Introduction

This unit introduces you different types of breeds of lamb, the cuts of lamb meat, the grading and quality of lamb meat. Different suitable methods of preparation and cooking of lamb meat shall also be discussed under this module.

### Learning Outcomes

As you study through this unit, you are expected to:

- Mention different types of lamb breeds
- Discuss the Major Cuts of Lamb:
- Analyze the cuts of lamb
- Discuss on the grading and quality of lamb meat
- Explain different suitable methods of preparation or cooking of lamb meat

### Lamb Grades

- Lamb grades are based on age, conformation (carcass muscling), and other lean quality factors such as color.
- There are five quality grades: Prime, Choice, Good, Utility, and Cull. More than 90 percent of lamb in the US will grade USDA Prime or Choice.

### BUYING LAMB MEAT

- **Lamb:** look for fine- grained, lean meat with a bright red color tinged with brown.
- The fat should be creamy white and not brittle.
- The bones should be moist and white at the joint.
- Legs and shoulders should have a thin covering of fat. The fat of some cuts is covered with thin papery skin. This should be pliable, not hard and wrinkled remove from chops before cooking but leave on roasting joints as it help to keep in the moisture.

### Cuts of Lamb and methods of cooking

- **best end neck:** also called ribs loin. Can be roasted whole or cut into cutlets very sweet, lean meat. Cutlets which are boned and rolled are called noisettes the whole best end can be boned stuffed and rolled there are seven joint to each best end and tied back to back they make a crown roast. Two best ends placed with the bone tips crossing are called a guard of honour.
- **Breast:** an economical, fatty cut which can be boned, stuffed and rolled for roasting, or cut into strips and cooked Chinese style instead of pork spare rib.
- **Leg:** an excellent lean roasting joint either on the bone or boned and stuffed it is often divided into fillet and shank ends. The fillet ends is the best roasting piece with a small amount of bones. The shank end can also be roasted and is very good for stews braises and kebabs also cut across the bone into steaks and chops. Leg is also known as gigot.
- **Loin:** a lean joint, skinned but with a thin covering of fats. A whole loin from both sides of the animal is called a saddle. More often divided into chump end and loin end ( or mid-loin) these pieces are then cut into loin (mid-loin) chops and chump chops for grilling and frying. Chump chops are meatier than loin chops.
- **Middle neck:** usually cut into chops for stews. Has a large bone which is sometimes removed by the butcher and the meat sold in a piece. Middle neck and shoulder are sold together as forequarter
- **Shoulder:** a very good roasting joint which is cheaper then leg. It can be boned and stuffed, which makes carving much simple. The meat can also be used for stews and kebabs. Shoulders is also cut in half to make a blade half shoulder and knuckle half shoulder, and into shoulder chop. The blade half has a higher proportion of meat to bone than the knuckle
- **Scrag or shank,** a stewing cut with a high proportion of bone and fat cut good flavor

### What is the best way to choose good mutton pieces

The **meat** from a **lamb** is just **called lamb** and is more tender, while the **meat** from an adult sheep has more flavor and is **called** mutton. People commonly eat both mutton (**meat** from adult sheep) and **lamb**. Generally, in the U.S. most people that are eating whole cuts like roasts and chops are eating **lamb**



Lamb and sheep are confusing terms when applied to sheep for eating. What is the difference between the two?

**Meat from both lambs and sheep is eaten by people. The meat from a lamb is just called lamb and is more tender, while the meat from an adult sheep has more flavor and is called mutton.**

People commonly eat both mutton (meat from adult sheep) and lamb. Generally, in the U.S. most people that are eating whole cuts like roasts and chops are eating lamb. This is because lamb is more tender.

The difference between lamb and mutton is strictly age of the animal when it was slaughtered. The meat from a sheep that is under one year of age is called lamb. A sheep that is older than one year of age at slaughter is called mutton.

### **Is lamb meat actually baby lambs?**

There are various criteria to classify mutton. Usually people classify mutton by amount of bone it contains. In that way legs, shoulders, round (raan) are the best option as these pieces contains very less amount of bone. Raan will be bit tough compared to other two.

Fat is another factor to consider. Many people like the meat with fat as it keeps the moisture in the meat and does not allow the meat to get dried. The fat also add flavour to it. Neck and chops (contains more fat) are the meat with fat.

- 
- [Which are the best mutton cuts for making a simple mutton curry, gardan, seena, kaleji, thigh, liver, or something else?](#)

First rule, the younger the goat, the better. Best ones are usually under 10 kg in India.

The best ones are from around the joints in the limbs and the ribs and neck.

As a rule, if the piece is shiny and lustrous red/purple, it is usually better than those which are thick and/or brown coloured and where you can see fabric like patterns.

If ordering quantities smaller than 500g, go for a conservative mix. For larger quantities, you can opt for the full upper portion of a limb. The marrow makes excellent food-nutrition combo. In smaller weights, this is offset by the bone weight.

- What do you look for when you buy mutton meat?

At First we should see that the meat is fresh or not and if it is fresh we look howold it is like bigger in size as the age of the goat and (the main thing that we should not buy the packed meat because it may contain preservatives in it to presrve it) the procedure to check that the meat is fresh is not we can see the colour of the meat if it is darker then it means its not fresh and then according to the taste and more amount of flesh we should select the leg part (RAAN) it is a good selection and we should not take the fat which makes the dish oily if your the lover of an oily food then you can have it and if you are not intersted in oily food then you should reject it then it is a good selection.

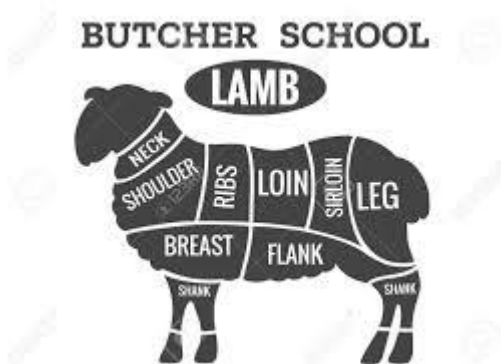
- Which is the best part of a goat for eating?
- How do I buy mutton, as I am a girl in India?
- What are the differences between sheep, lamb, goat, ram and mutton?

Firstly goat meat isn't mutton. It is chevon, and chevon is NOT mutton. Mutton is meat from sheep.

The Major Cuts of Lamb: Foresaddle and Hindsaddle

- Lamb is divided into large sections called primal cuts. These large cuts are then broken down further into individual retail cuts that you buy at the supermarket or butcher's shop.

Unlike beef, which is divided into sides, [lamb](#) is first divided into sections called the foresaddle and hindsaddle, which are then broken down further into their component primal cuts.



The Foresaddle: Lamb Shoulder

- The lamb primal cuts in the foresaddle, which is the front of the animal.

- As a rule, lamb is fairly tender, which means that most cuts of lamb can be cooked using dry heat—even when the same is not true for a corresponding cut of beef or pork. One example of this is the lamb shoulder.
- The lamb shoulder is often [roasted](#), in which case it is usually boned and rolled; it can be stuffed as well.
- Lamb shoulder is also sometimes cut into chops, though these chops are not as desirable as the rib or loin chops.
- Lamb shoulder can also be cooked with moist heat, such as braising.

#### The Foresaddle: Lamb Rib

- Sometimes called the "hotel rack," the lamb rib primal cut is where we get some of the animal's most impressive-looking cuts: [lamb rib chops](#), lamb crown roast, and [rack of lamb](#).
- Imagine being presented a rack of lamb with all the legs [perfectly frenched](#) (fat and sinew trimmed away) and the row of chops in the rack glowing with a top crust of aromatic herbs, garlic, olive oil, and crushed pistachios. Depending on the size of the ribs, some lamb chops might comprise two ribs.

#### The Foresaddle: Lamb Breast

- A lamb's breast, which is worked heavily whenever the animal moves, contains a lot of cartilage and other connective tissues. This makes the breast one of the few lamb primal cuts that need to be cooked low and slow with [moist heat](#). Lamb breast can also be used to make [ground lamb](#).

#### The Foresaddle: Lamb Neck

- Another tougher cut with a lot of cartilage, the lamb neck is best used for making [lamb stew](#), a traditional ingredient in Irish stews and perhaps a few lamb shanks to the slow-cooking pot. Root vegetables and peas go in the last half hour.

## Lamb Shanks (Foresaddle and Hindsaddle)

- The shanks are the lower section of the animal's leg. On each side, there's a foreshank in the foresaddle and a hindshank in the hindsaddle. They're extremely tough and full of connective tissue because they work all day, every day.
- The lamb shank is the basis of [braised lamb shanks](#), a dish that's a favorite of chefs for its fall-off-the-bone tenderness and particularly succulent consistency and flavor. Lamb shanks are usually oven braised with a good red wine, vegetables, and herbs in a roasting pot or dutch oven; they can also be made successfully [in a slow cooker](#).
- The Hindsaddle: Lamb Loin

lamb primal cuts from the back of the animal—the hindsaddle. This area is the source of some of the tenderest and, thus, prized cuts of the lamb.

The lamb loin is where we get [lamb loin roast](#) and lamb loin chops, both tender cuts that are best prepared using dry heat. The entire lamb loin can also be cooked on the grill slathered with rosemary, garlic, and fresh lemon juice—frequently used with lamb to cut the generous fatty taste of the animal. There's also the [Barnsley \(or saddle or double-loin\) chop](#).

- The Hindsaddle: Lamb Sirloin

The lamb sirloin is sometimes considered part of the leg primal cut, but it can also be prepared separately. In this case, it is frequently cut into chops or steaks and cooked using dry heat.

- The Hindsaddle: Lamb Flank

Lamb flank can be tough unless cooked with moist heat, so braising is best. Lamb flank can also be used for [making ground lamb](#).

- The Hindsaddle: Leg of Lamb

The leg of lamb, a large, relatively expensive cut of 3 to 5 or 6 pounds, can be cut into leg chops, though it is usually prepared whole and presented with pride at big family meals or on special occasions.

- Some recipes for **Leg of Lamb**

- [Roasted leg of lamb](#), studded with slivers of garlic and sprinkled with oregano and fresh lemon juice or red wine and surrounded by rough-cut potatoes cooked in the pan juices, is a common preparation in Mediterranean countries.
- In Greek and other cuisines, leg of lamb braised with tomatoes, garlic, and wine with orzo or another pasta is popular.
- In France, the classic roast lamb with white kidney beans of coastal Brittany comprises a leg of lamb (*un gigot*) that's studded with garlic slivers and sprinkled with fresh thyme, then roasted and served with white *haricot* beans precooked in wine and plenty of aromatics and a luscious gravy of pan juices.

### **Activities**

- Draw and label the cuts of lamb meat
- Discuss the suitable method of cooking lamb and mutton meat
- Discuss the nutritive value of lamb meat
- Discuss the major cuts of lamb

## Introduction

This unit introduces you different types offals and quality and storage of offals. Different suitable methods of preparation and cooking offals shall also be discussed under this unit.

## Learning Outcomes

As you study through this unit, you are expected to:

- Mention different types of offals
- Discuss quality and storage of offals.
- Discuss nutritive value of offals
- Explain different suitable methods of preparation or cooking of offals

## OFFALS

Offal also called variety meats, is the internal organs of animals. These are extremely nutritious and tasty and generally reasonably priced. They can be served as the main meat dish added to mixed meat for a richer flavor

**Brains:** from calves, lambs and oxen. They are delicately flavored with a soft texture.

**Liver:** from calves, lambs, pig, oxen or poultry. A rich source of iron and B vitamins.

**Heart:** from calves, lambs, pigs, or oxen. It is very lean

**Kidney:** from calves, lambs, pigs and oxen. They are similar in food value to liver and are richly flavored

**Sweetbreads:** from calves and lambs (the pancreas). They have a soft texture and delicate flavor.

**Tongue:** from calves, lambs and oxen. The meat is very lean and is often sold salted.

**Tripe:** the lining of an ox's stomach, generally sold partially cooked. It must be fresh and is often sold frozen.

## Activities

- Analyze the various sources of offals
- Discuss the suitable method of cooking offals
- Discuss the nutritive value of offals
- Discuss the storage and quality of offals

## UNIT 6: WHITE MEAT

## **Introduction**

This unit introduces you different types poultry and cuts of chicken. Breeds and different suitable methods of preparation and cooking poultry shall also be discussed under this unit.

## **Learning Outcomes**

As you study through this unit, you are expected to:

- Explain the various types of poultry and the examples
- Mention different types of poultry breeds
- Analyze the cuts of various poultry cuts
- Discuss on the grading of poultry
- Discuss on what to consider when buying various poultry meat
- Analyze Nutritive value of various poultry meats
- Explain different methods of preparation or cooking of the various poultry meats
- Demonstrate different preparation and cookery techniques of poultry meat cookery

## **CLASSIFICATION OF WHITE MEAT**

### **POULTRY**

**Poultry farming** is the form of animal husbandry which raises domesticated birds such as chickens, ducks, turkeys and geese to produce meat or eggs for food.

### **TYPES OF POULTRY**

#### **CHICKEN**

How do you want your poultry- whole, cut up, drumsticks only, boneless? Whether you want chicken, turkey, duck, or goose, you can buy different types of poultry in a wide variety of forms.

When buying poultry, look for plump, meaty birds. The skin should be smooth and soft. Color of the skin may vary from a creamy white to yellow, depending on the food eaten by the bird. Avoid poultry with tiny feathers or bruised or torn skin.

Use poultry that has been stored in the refrigerator within one to two days. For longer storage, freeze.



## **TYPES MEAT BIRDS**

- New Hampshire chicken
- Cornish chicken
- Plymouth Rock chicken
- Orpington chicken



- Leghorn chicken

## **CUTS OF CHICKEN**



# THE BUTCHER'S GUIDE

## • CUTS OF CHICKEN •



SET

2



## QUALITY, COMPOSITION AND NUTRITIONAL VALUE OF CHICKEN MEAT

- Chicken is the second most consumed meat in the world,

## NUTRITIONAL VALUE OF CHICKEN

- Chicken has a caloric value of 145 kilocalories per an edible portion of 100 grams (with skin). As broken down by the Spanish Nutrition Foundation and Fedecarne in its nutritional guide of meat, in 100 grams of chicken 70.3% is water, 9.7% are lipids or fats and 20% protein. Therefore, protein, not counting water is the most prominent macronutrient in the nutritional composition of chicken.
- Chicken meat is one of the most recommended by experts to incorporate high quality proteins and nutrients into our diet. In addition, it has a low-fat content which makes it ideal for any type of diet.
- **LOW-FAT MEAT**
  - Without skin, chicken is one of the meats with the lowest fat content, especially in the breast part, with a proportion of approximately 2% fat. Therefore, especially the lean part, is a food often recommended in slimming diets.
  - One of the advantages of chicken meat is that the fat is very visible, so if you remove parts such as the skin, the caloric value of the piece will be lower.
- **RICH IN PROTEIN**
  - Chicken provides proteins of high biological value i.e. those containing the 9 essential amino acids found in food of animal origin.
- **VITAMINS AND MINERALS**
  - Chicken meat provides vitamins mainly from the B complex, including Niacin or vitamin B3, which is essential for the metabolism of fats and sugars in the body, as well as for maintaining healthy cells. It also contains minerals such as magnesium, potassium, phosphorus and zinc. In addition, its cholesterol content is low, with the exception of the skin. Chicken also has a remarkable content in phosphorus (mineral present in bones and teeth), selenium (with antioxidant action) and contains vitamins such as B3 and vitamin B6.

## PROPERTIES OF CHICKEN BREAST

- In chicken meat, the nutritional properties of the breasts are among the most valued. As it is one of the leanest areas, it provides low fat concentrations (approximately 2% of its

composition is fat). Much of the value of the chicken breast is also given by its high protein content, which amounts to 21.8 grams for a piece of 100 grams.

- The **chicken** breast is lean and has the most protein by weight, making it ideal for people who want to lose weight, maintain muscle mass and improve recovery. Fattier cuts like the thigh, drumstick and wings have more calories, which make them **better** for people wanting to build muscle or gain weight

## Chicken

Chicken has light and dark meat. The light meat is leaner and has a milder flavor than the dark meat. The bird's age determines the tenderness of its meat and the cooking method to use. The terms used on the package label also give an indication.

- **Broiler-fryer chicken.** The most tender and most common.
- **Roaster chicken.** They are slightly larger than broiler-fryers and yield more meat per pound.
- **Stewing chicken.** Older, mature birds, less tender than younger bird's,
- **Rock Cornish game hens.** Young. Small chicken of a special breed in relation to size than other chicken. One hen usually makes one serving.
- **Capons.** DE sexed rooster under ten months old.

Chicken is a popular, nutritious and economical food. It is also versatile as it can be served in countless ways to produce wide variety of dishes, compared to other meats, it has a high protein content but is low in fat. This makes it particularly useful for slimmers and those on low fat diets. It can be roasted, braised or casserole. Portions can be grilled or fried and older hens are steamed or boiled to tenderize the flesh.

Most chickens bought these days are broilers. Most are sold frozen or chilled. Some free-range birds are available from farms but they tend to be more expensive. Both broilers and free-range birds can sometimes be bought after they have been hung for a few days to develop flavor. They are called new York dressed. They are sold without being gutted, drawn or cleaned. The chicken is displayed with all body feathers removed and once bought, the butcher will clean it for you. Those sold with the innards removed are called eviscerated. The neck, liver, gizzard and

heart, known as the giblets, are packed and sold with the bird. Frozen chicken usually have the giblets packed separately inside the body cavity. They should be removed before cooking and used for gravy or stock.

POUSSINS are 4 to 6 week old chickens weighting about ½ kg (1lb)

BOILING HENS 1 to 3 kg (2 ½ to 7lb) are older birds, usually previously eggs layers or broiler breeders. They need a long, slow moist cooking method to make them tender and they have a very good flavor. They are available oven ready or new York dressed. For the basic boiling method see p.73. finish the bird off in the oven to crisp and brown the skin, skip the meat from the bones and use in pies with sauces or in other made-up dishes.

CAPON are small cockerels which are specially reared to produce a high proportion of meat to bone; they can weight from 3kg (6lb) to 5kg (10lb).

CHICKEN PORTIONS: for main meals buy chicken quarters, either breast and wing pieces or legs. For party food, chicken drum-sticks or thighs are a good choice. Boned chicken breasts can be stuffed and fried as for chicken kiev or flattened and cooked as for veal escalopes. Turkey breast slices can be used in this way. Chicken portions can also be stewed or casseroleed

### **Buying:**

look for an unbroken, straight supple breastbone and a plump breast

When buying poultry, look for plump, meaty birds. The skin should be smooth and soft. Color of the skin may vary from a creamy white to yellow, depending on the food eaten by the bird. Avoid poultry with tiny feathers or bruised or torn skin.

Use poultry that has been stored in the refrigerator within one to two days. For longer storage, freeze. Frozen chicken should be in pierced, clean bags and show no sign of dehydration or freezer burn. Allow 200 to 300kg (8 to 12oz) drawn weight per portion. The larger the bird, the higher the proportion of meat to bone. The head and innards will weight about ½ kg (1lb) so allow extra weight if the bird is new York dressed.

**Freezing:** cooked poultry can be frozen whole or in portions. Cool quickly, then wrap the ends of the legs in crumpled foil to prevent them from piercing the wrapping. Chill in the refrigerator before freezing. Store for up to 3 months.

Pack useable amount of fried, grilled or uncooked portions together. Large boneless breast piece can be interleaved with greaseproof paper plastic tissue to separate them. Store portions for up to 2 months. If freezing poultry, pack the vegetables and sauce together, separately from the bird.

Poultry may be labeled in one of two ways either fresh or frozen. Fresh poultry has never been chilled below 26 frozen (-4 degree Celsius). Frozen means that the poultry has been chilled to below 0 frozen (-18 degree Celsius).

**Thawing:** unwrap and cover loosely. The best way is to thaw slowly. Place chicken on a plate and leave in the bottom of the refrigerator for 2 days. Alternatively, place on a rack with a plate underneath and thaw at room temperature for about 8 hours or overnight. Refrigerator sealed bag in a bowl of warm water and leave 2 hours, but the flavor will not be as good. Chicken must be thoroughly defrosted.

## **TURKEY**

Turkey is larger than chicken and have a stronger flavor. The light meat is leaner and tenderer and has a milder flavor than the dark meat. When buying a whole turkey, you have a choice of several types. They differ mainly in size. All are suitable for roasting, the most common for cooking turkey.

- **Beltville or fryer- roaster turkeys.** The smallest, with average weight of 5 to 9 pounds (2.3 to 4.5 kg). They are not always available.
- **Hen turkeys.** Female. Weigh about 8 to 16 pounds (4 to 8 kg).
- **Tom turkeys. Male.** Can weigh up to 24 pounds (12 kg).

Turkey is available fresh or frozen. Fresh turkey is displayed without being gutted or cleaned and, once bought will be prepared for roasting by the butcher. Frozen turkey is sold oven ready with the giblets packed in side the bird. Frozen ready-basted turkey are also available. To roast a

ready-bested turkey follow the instructions on the bag. A turkey can weight 3kg (6lb) to 13kg (26lb)

.

### **Buying:**

Whole turkeys are sold fresh or frozen.

You can also buy turkey parts, such as drumsticks, thighs, and wings. Turkey breast is sold bone-in, boneless, or cut into tenderloins and cutlets

A large turkey is traditionally served for special occasions.

However, it is becoming an increasingly versatile meat and you can now buy a selection of cuts and portions, for family meals. The range of cut includes turkey breast fillets, turkey drumsticks, casserole pack of diced turkey meat and small boneless turkey joints. There are even turkey burgers and turkey sausages to choose from.

Fresh turkey should have bright eyes, white flesh, smooth back legs and a pliable breastbone. Frozen turkey should be wrapped in a unpierced clean bag and have no sign of dehydration or freezer burn. Allow about 300g (12oz) raw turkey, including bone, per portion. Hen birds are slightly better buy as they have higher proportion of flesh to bone.

**Thawing:** Remove giblets as soon as possible. This will speed up the thawing process.

## **DUCK AND GOOSE**

### **DUCK:**

ducklings range from 6 weeks to 3 months old and are available fresh in spring and early summer and frozen all the year. Duck are always available but at their best from early summer to later winter. Ducks have a rich flavor and a high proportion of fat they usually served with a sharp-flavored sauce such as orange or apple sauce.

**Buying duck:** the beak on a fresh duck should be soft and pliable the legs smooth and the webbing soft and easily torn.

When buying a frozen bird check that the skin is a good color and the wrapping not torn. An average sized duck weight 1 ½ to 2kg (3 to 4lb) will serve 4 portion. A duckling will only serve two.

**Thawing duck:**

unwrap and cover loosely.

It is best thawed slowly place duck on a plate and leave in the bottom of the refrigerator for 24 hours

. Alternatively, place on a rack with a plate underneath and thaw at room temperature for about 8 hours, or overnight.

**GOOSE:**

is usually roasted and served with a sharp sauce. It is rich in fat, like duck but much bigger, so it is ideal for larger parties.

**Buying goose:** the breast should be plump and not too fatty, and the skin smooth. The flesh toughens once the bird is more than a year old. A goose can weight anything from 3 to 5kg (7 to 11lb) and will serve 5 to 10 portions.

**Thawing goose:** thaw as for turkey, allowing slightly less time thaw.

**RABBIT AND HARE**

Hare has a dark, gamey-flavored flesh while rabbit has a blander flavor, more like chicken. Both hare and rabbit have a tendency to be dry and are therefore best suited to a moist cooking method. They are very good jointed and braised or casseroleed. For braising allow about 1 hour's cooking time rabbit and 1 to 1 ½ hours for hare, depending on age and size. Young hare can be roasted, in which case the flesh should be well covered with fats bacon or softened butter. The saddle and hindquarters of hare are the tender roasting cuts. The saddle and forequarter is used for stews and braises.

**Storing:**

freshly killed rabbit should be stored for up to one day hung by the feet with a plastic bag over the head to catch the blood. Skin immediately before cooking. Hang here for 3 to 6 days depending on the weather. The blood caught from hanging hare can be added to the sauce to thicken it as in jugged hare.

## **Stuffings**

Stuffings are useful in many ways. They add flavor to meat and poultry, but can be also make a meal more substantial and stretch the protein content. Meat and poultry can be boned out (a butcher will do this for you if given advance noticed) and the cavity filled with stuffing. Not only will the meat go further and taste more exciting, but the carving will be easier, too, with no bones to negotiate.

## **DUCK AND GEESE**

Ducks and geese have all dark meat, which is very flavorful but relatively high in fat. Usually, only whole, frozen ducks and geese are sold.

## **GROUND POULTRY**

With the growing emphasis on healthful eating ground chicken and turkey are found in many supermarket meat departments. When buying either product, read the label carefully. If it states “ground turkey breast” or “ground chicken,” both the flesh and the skin were used. As you may recall most of the fat in the skin. If the word meat is part of the description, such as “ground turkey breast meat” or “ground chicken meat,” the poultry was ground without the skin. Poultry ground without skin is leaner.

You can use ground poultry in place of ground beef, but it result in drier, blander product. Usually you need to add a little more liquid and more seasoning to the recipe.

## **GIBLETS**

Edible poultry organs are called giblets (JIB-luhts). Giblets are usually included in a package stuffed inside the whole, cleaned poultry. They include the liver, gizzards are also sold separately.

## **PROCESSED POULTRY**

Turkey is also processed into products such as ham and bacon. Turkey and chicken are also processed into frankfurter and other types of sausage.



## INSPECTION AND GRADING

Poultry is inspected and graded by the USDA. Grading is a voluntary program, just as it with meat. The inspection and grade marks can appear on the label or on a wing tag attached to the bird. Grade A is the grade of poultry most commonly found in supermarkets. It indicates the poultry is practically free of defects, has a good shape and appearance, and is meaty.

## BUYING AND STORING POULTRY

### General food safety tips

Replace sponges and kitchen towels regularly.

Washing your dishes and cutting boards with dirty sponges and towels can spread more bacteria. Bacteria and other disease-causing pathogens also grow on sponges and towels over time, so make sure to clean your sponge thoroughly every other day and replace it about once per week.

## HEALTH BENEFITS OF EATING WHITE MEAT

**Lean meats** are **meats** with a relatively low fat content. Skinless chicken and turkey and red **meat**, such as pork chops, with the fat trimmed off are examples of **lean meat**. The fat on a pork chop accounts for about two thirds of its fat content and the skin on chicken can account for 80 per cent of its fat content

**White meat** is a leaner source of protein, with a lower **fat** content. **Red meat** contains higher levels of **fat**, but also contains higher levels of vitamins like iron, zinc and B vitamins. ...

Both **white** and **red meat** have benefits; if you eat **meat**, it's a good idea to include small amount of both in your diet

### Rhabdomyolysis

When muscle is damaged **myoglobin** is released into the bloodstream. It is then filtered out of the body by the kidneys. **Myoglobin** breaks down into substances that can damage kidney cells. Rhabdomyolysis may be caused by injury or any other condition that damages skeletal muscle

Rhabdomyolysis is the breakdown of muscle tissue that leads to the release of muscle fiber contents into the blood. These substances are harmful to the kidney and often cause kidney damage.

### **Causes**

When muscle is damaged, a protein called myoglobin is released into the bloodstream. It is then filtered out of the body by the kidneys. Myoglobin breaks down into substances that can damage kidney cells.

Rhabdomyolysis may be caused by injury or any other condition that damages skeletal muscle.

Problems that may lead to this disease include:

- Trauma or crush injuries
- Use of drugs such as [cocaine](#), amphetamines, statins, [heroin](#), or PCP
- Genetic muscle diseases
- Extremes of body temperature
- Ischemia or death of muscle tissue
- Low phosphate levels
- [Seizures](#) or muscle tremors
- Severe exertion, such as marathon running or calisthenics
- Lengthy surgical procedures
- Severe dehydration

### **Activities**

- Analyze the various breeds of poultry
- Discuss the suitable method of cooking poultry
- Discuss the nutritive value of poultry
- Discuss the storage and quality of poultry

## UNIT 7: FISH

### **Introduction**

This unit introduces to you different types of fish and cuts of fish. Common breeds of fish in Zambia and different suitable methods of preparation and cooking fish shall also be discussed under this unit. What to consider when buying various fish and shellfish and Nutritive value of various fish shall also be covered.

### **Learning Outcomes**

As you study through this unit, you are expected to:

- Explain the various types of fish
- Mention different types of shell fish
- Analyse the various cuts of fish
- Discuss the various species of fish found in Zambia
- Discuss on what to consider when buying various fish and shellfish
- Analyse Nutritive value of various fish
- Explain different methods of preparation or cooking of the various fish and shellfish
- Explain the safe storage of fish
- Demonstrate different preparation and cookery techniques of fish cookery

## FISH

### **TYPES OF FISH AND SHELLFISH**

What is the difference between fish and shellfish? Most fish have fins and a bony skeleton with a backbone. Shellfish have neither fins nor bones, but have a shell instead.

Some fish and shellfish come from freshwater lakes, rivers streams, and ponds. They are known as freshwater varieties. Saltwater varieties, also known as seafood, come from oceans and seas. Today, some types of freshwater and saltwater fish and some shellfish are raised on fish farms.

## **TYPES OF FISH**

There are dozens of varieties of fish. For cooking purposes, many are similar. If a specific fish isn't available, you can substitute a fish similar in flavor, color, and/ or texture. The chat on the right gives some examples.

As you have learned, most fish have fat content.

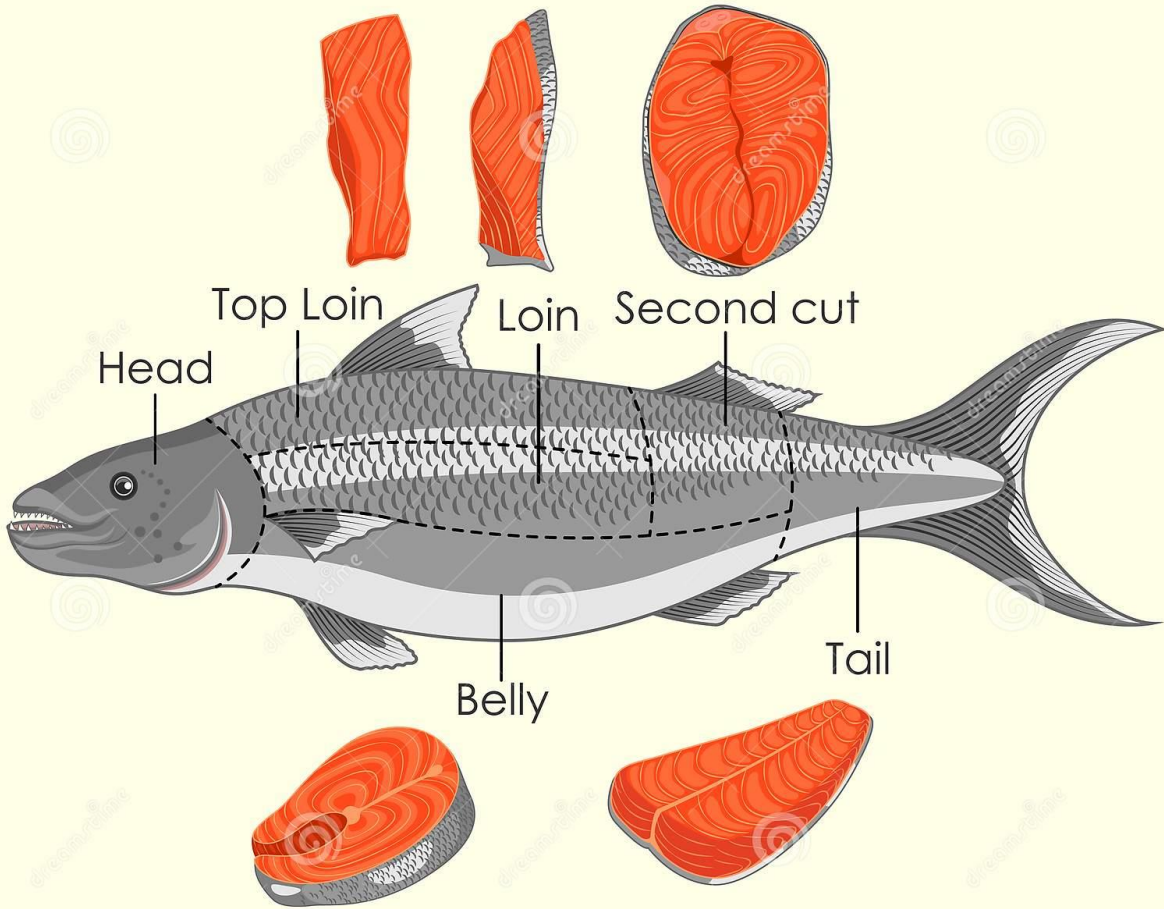
## **MARKET FORMS OF FISH**

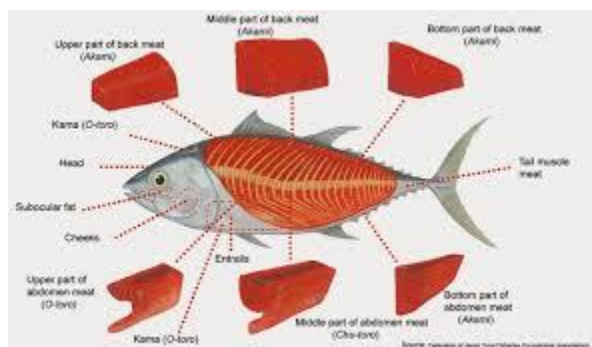
You can purchase fish in several market forms. See the drawing on page 507. The most common are

- **Drawn.** Whole fish with scales, gills, and internal organs removed.
- **Dressed or pan-dressed.** Drawn fish with head, tail, and fins removed.
- **Fillets.** Sides of fish cut lengthwise away from bones and backbone. Usually boneless. Large fillets may be cut into smaller ones.

**Steaks.** Cross section cut from large, dressed fish. May contain bones from ribs and backbone

# Cuts Of Fish





### The Role of Fish in the First 1,000 days in Zambia

Fish is especially rich in essential omega-3 long-chain polyunsaturated fatty acids and micronutrients, including bioavailable calcium, iron and zinc. Fish features prominently in the diet of most, especially poor, Zambians

<b>Iron (mg)</b>	<b>Zinc (mg)</b>	<b>Retinol<sup>2</sup> (RAE)</b>
7	13	287
14	10	72
9	14	198

was estimated based on dry matter measured. (3) Eicosapentaenoic acid (EPA) content and fatty acid composition

the role fish can play in the First 1000 Most Critical Days Programme in Zambia.

Zambia is particularly well endowed with surface water resources, most of good environmental quality, and which provide fish and other aquatic foods, mainly from capture fisheries (Nkhuwa, Mweemba and Kabika 2013). Fish is the most important animal-source food in the diet of many

people (NFNC 2009), and dried small fish is thought to be the most common animal-source food of the poor,

In Zambia, rates of malnutrition in children under five years are very high, with stunting, wasting and underweight all falling well above the thresholds recommended by the World Health Organization (ibid.). The 2009 National Nutrition Surveillance System (NNSS) results show that chronic malnutrition, as measured by stunting (height-for-age < -2 z-scores), was 49.5 per cent in children under five years of age.

the first 1,000 days of life<sup>2</sup> can help combat malnutrition. Fish is a rich source of multiple nutrients with high bioavailability;<sup>3</sup>

all species of fish are rich in protein, while some species have particularly high levels of essential fatty acids and micronutrients, including calcium, iron and zinc (Beveridge et al. 2013).

Thus, fish offers an important source of key nutrients required by pregnant and lactating women and young children for optimal child growth and development.

Nutrient content of commonly consumed fish species in Zambia essential nutrients in sun-dried kapenta and chisense. As these small fish are dried whole, with heads, bones and organs, they

are a concentrated source of multiple essential nutrients.... Small fish consumed whole including the head and viscera...

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- ... Another important characteristic of small pelagic fish is their nutritional value compared to large fish. Since small fish are sun-dried whole, with heads, bones and viscera intact, they represent a concentrated source of multiple essential nutrients, in contrast to large fish which are usually not eaten whole and therefore do not contribute as much to micronutrient intake

### **SPECIES OF FISH FOUND IN ZAMBIA**

The majority of fish consumed in Zambia comes from capture fisheries and includes

small pelagic - species known as kapenta and chisense . Kapenta is a mixture of *Limnothrissa miodon* and *Stolothrissa tanganicae* found in Lake Kariba, Lake Tanganyika and Lake Itzhi-Tezhi. Chisense is a mixture of *Potamothrissa acutirostris*, *Microthrissa stappersii* and *Poecilothrissa moeruensis* and caught in Lake Bangweulu, Lake Mweru and Lake Mweru-wa-Ntipa. Several tilapia species (breams) are eaten both fresh and dried and catfish feature prominently among fish consumed.

Chisense and kapenta

cultured (farmed) fish consumed include indigenous tilapia species and exotic species such as Nile tilapia (*Oreochromis niloticus*) and common carp (*Cyprinus carpio*).

Fish come in many shapes, sizes and colours:

The largest freshwater fish in Zambia and Southern Africa is the Vundu (*Heterobranchus longifilis*). It is an air breathing catfish that can reach up to 1.5 m in length. Amongst the smallest are the cichlids which live in Lake Tanganyika – these can be less than 10 cm long. It is thought that 98% of the cichlids found in this lake are endemic. The Lake Tanganyika Sardine



(*Limnothrissa miodon*) matures at just 6.8 cm and although they can grow up to 17 cm in length, they rarely reach longer than 10 cm long.

***Zambia has at least 40 species of endemic freshwater fish***

### **Catfish**

*Amphilius cryptobullatus* – Luongo River

*Chiloglanis macropterus* – Luongo River

*Chiloglanis productus* – Lunzua and Lufubu Rivers

*Congoglanis safitta* – tributaries of Lake Mweru, Luongo and Chambeshi Rivers, and Kasanka National Park

*Synodontis ilebrebis* – Lake Tanganyika

*Synodontis lucipinnis* – Lake Tanganyika

*Zaireichthys kafuensis* – the Gorge on the Kafue River

### **Cichlid**

*Benthochromis horii* – Lake Tanganyika

Brown Julie (*Julidochromis dickfeldi*) – Lake Tanganyika

*Chetia mola* – Luongo and Luwombwa Rivers

*Cyprichromis coloratus* – Lake Tanganyika

*Cyprichromis zonatus* – Lake Tanganyika

Fire-tailed Pseudocrenilabrus (*Pseudocrenilabrus pyrrhocaudalis*) – Lake Mweru

*Greenwoodochromis bellcrossi* – Lake Tanganyika

*Lamprologus laparogramma* – Lake Tanganyika

*Neolamprologus caudopunctatus* – Lake Tanganyika

*Neolamprologus prochilus* – Lake Tanganyika

*Neolamprologus cancellatus* – Lake Tanganyika

*Orthochromis kalungwishiensis* – Kalungwishi River

*Orthochromis luongoensis* – Luongo River, a tributary of the Luapula River

*Perissodus eccentricus* – Lake Tanganyika

*Petrochromis horii* – Lake Tanganyika

*Tilapia baloni* – Luongo and Kalungwishi Rivers

*Tilapia jallae* – Upper Zambezi River system

*Xenotilapia rotundiventralis* – Lake Tanganyika

### **Killifish**

Kafue Killifish (*Nothobranchius kafuensis*) – Kafue National Park and upper Zambezi Rivers

Bangweulu or Rosenstock's Killifish (*Nothobranchius rosenstocki*) – Lavushi Manda and Kasanka National Parks

*Nothobranchius boklundi* – seasonal pools on the Luangwa River

*Nothobranchius milvertzivi* – Lushiba Marsh, part of Lake Mweru drainage

*Nothobranchius oestergaardi* – swamps of the Mwawe River and Lake Mweru Wantipa

### **Milkfish**

*Kneria paucisquamata* – headwaters of the Luongo River

### **Cyprinid**

*Barbus altidorsalis* – Kafue eco-region

*Barbus lornae* – Chambezi River and Kasanka National Park

*Barbus owenae* – Lake Bangweulu, Chilui Islands and the Chambezi River

*Coptostomabarbus bellcrossi* – Luongo River, Lake Mweru and Kasanka National Park

Georgous Barb (*Barbus bellcrossi*) – Upper Zambezi River at Nyakesya

### **Elephantfish**

*Hippopotamyrus smithersi*

*Petrocephalus frieli* – Chambeshi River to Lake Bangweulu and the upper Luapula River

*Petrocephalus longianalis* – Luongo system of the lower Luapula tributary and the upper Luapula River

### **Distichodontidae**

Banded Neolebias (*Neolebias lozii*) – restricted to the Kataba River



Brown Julie (*Julidochromis dickfeldi*)



Pseudocrenilabrus pyrrhocaudalis



Nothobranchius rosenstocki



Synodontis lucipinnis

### ***Lakes***

The highest diversity of fish species is found in Lake Tanganyika, whilst Lake Mweru-Wantipa has the lowest diversity.

### ***Lake Tanganyika***

Lake Tanganyika is the second largest and the second deepest lake in the world –

The lake has over 250 known species of cichlid fish – 98% are endemic. They all belong to the subfamily *pseudocrenilabrinae*. They are very varied in body shape, size and colouring and they also have fascinating complex behaviour patterns.

The largest cichlid in the lake is the Emperor Cichlid (*Boulengerochromis microlepis*) and males can grow up to 90 cm in length. They live along the shoreline in shallow waters and adults prey on other fish, as well as crabs, shrimps, molluscs, and insect larvae.

The smallest is the Dwarf cichlid (*Nanochromis transvestitus*) which grow to just 3.4 cm in length. The second smallest is the Ocellated Shell-dweller (*Lamprologus kungweensis*) which grows to just 3.5 cm long.

Lake Tanganyika cichlids have become very popular with tropical fish enthusiasts. These colourful fish have interesting behaviours and displays and are relatively easy to breed in captivity, making them suitable for aquariums. Some of the most popular cichlids include: Tropheus, Frontosa, Goby, Sardine cichlids along with shell-dwellers, featherfins and sand-sifters.

The lake is also home to 80 other species of fish, with about 60% of these being endemic. In the open waters live the Tanganyika Sardine (*Limnothrissa miodon*) which can grow up to 17 cm in length. Although they are endemic to the lake, they were introduced into Lake Kariba in the late 1960s for the fishing industry. Every year between 20,000 and 30,000 tonnes are fished from Lake Kariba. Along with the Lake Tanganyika Sprat (*Stolothrissa tanganyicae*) these are both more commonly known as 'kapenta'.

There are 11 sub-species of catfish belonging to the genus *Synodontis*. One of the more unusual is the Cuckoo catfish (*Synodontis multipunctatus*). These grown up to 27.5 cm in length and gather in large shoals in depths of about 40 m. Their breeding behaviour is similar to a cuckoo from which it gets its name – when cichlids lay their eggs, the Cuckoo catfish will quickly eat these eggs before they are collected by the cichlid and then will release and fertilise their own eggs. When the cichlid scoops up her own eggs into her mouth, she unwittingly collects the catfish's eggs and when they are hatched they then eat the cichlids eggs. As these cichlids do not have any parental care it allows them to breed more frequently than some other fish.

Another species that has evolved in the lake are spiny eels (*Mastecembelus*) – with 13 out of the 15 species found being endemic. It is thought that these eels colonised and immediately diversified soon after the lake formed, which is why there is such a high diversity of species.

A deep water fish is the Lake Tanganyika Perch (*Lates angustifrons*) which is also called the Buka fish. It is a species of 'lates' perch and is endemic to the lake. They can grow up to 200 cm and weigh up to 100 kgs, preying mainly on cichlids. They are now considered endangered due to over-fishing by commercial and sports fishermen.



Emperor Cichlid

#### Fishermen on Lake Tanganyika

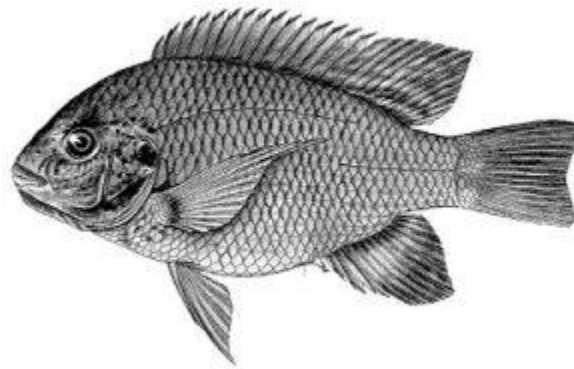
##### ***Lake Mweru***

Lake Mweru lies on the border of DRC and Zambia and is a rift valley lake

Due to rich plankton levels, Lake Mweru has 94 fish species. These are mainly different species of bream, catfish, tilapia, elephantfish and tiger fish. Around a third of these are endemic to the region, including five species of *Barbus*, three *Nothobranchius*, nine cichlids, three knerlids, five catfish and three mormyids. Also endemic are the Lake Mweru Sprat (*Microthrissa moeruensis*), Mweru Hump-backed Bream (*Tylochromis mylodon*), the Mweru Lampeye (*Lacustricola moeruensis*), the Fire-tailed Pseudocrenilabrus (*Pseudocrenilabrus pyrrhocaudalis*) and the Mweru Tilapia (*Oreochromis mweruensis*).

The lake has always been noted for its Greenhead Tilapia (*Oreochromis macrochir*), locally called 'pale' which are found in the quiet waters along the floodplains, feeding on microscopic foods, such as algae. Females mouth brood the eggs and small fry in summer. These tilapia are now being threatened by an alien invasive fish species – the Nile Tilapia (*Oreochromis niloticus*) – which is displacing it in areas where both species occur, making the Greenhead Tilapia vulnerable.

The lake was also noted for its highly valued Rednose Mudsucker (*Labeo altivelis*). These fish graze on algae and migrate upstream from the lake into the Luapula River to the foot of Johnston Falls where they spawn between January and March. This massive spawning is intensively fished for ‘kapenta’ and caviar is produced from the eggs. The Rednose Mudsucker is also becoming rare in the Lake.



Greenhead Tilapia (*Oreochromis macrochir*)

#### ***Lake Mweru-Wantipa***

. Only fish, such as the catfish (*Clarias mossambicus*), who can breathe oxygen from the air are able to survive. In seasons with heavier rains, the Kalungwishi River spills over and flows into the lake. The lake is part of Mweru Wantipa National Park.

It is thought that about 33 different fish species are found in the lake, mainly being species of carp, tilapia and catfish, such as the Greenheaded tilapia (*Oreochromis macrochir*), Threespot barb (*Barbus trimaculatus*), the ray-finned *Microthrissa acutirostris* and *Chryschthys mabusi*.

#### ***Lake Bangweulu – ‘where the water meets the sky’***

Lake Bangweulu is part of one of the world’s greatest wetland regions, which also includes the Bangweulu Flats and swamps..

The Bangweulu Lake, Flats and Floodplains are home of 87 different species of fish, mainly being catfish, tilapia and cichlids. There is one endemic species – the Bangweulu or Rosenstock’s Killifish (*Nothobranchius rosenstockii*) –They co-exist with other small species of annual killifish, catfish, barbus, Banded tilapia (*Tilapia sparrmanii*), Blackspot Climbing Perch (*Ctenopharynx multispine*) and Bulldog Fish (*Marcusenius macrolepidotus*).

Some of the other fish species that occur include Mormyids: Zambezi Parrotfish (*Cyphomyrus discorhynchus*), Bottle Fish (*Mormyrus sp.*) and Churchill (*Petrocephalus catostoma*). Barbus species include Sidespot Barb (*Barbus neefi*), Dwarf Barb (*Barbus brevidorsalis*), Copperstripe Barb (*Barbus multilineatus*) and Straightfin Barb (*Barbus palundinosus*). Characids include Dwarf Tigerfish (*Brycinus peringueyi*) and ‘Manda’ Tigerfish (*Hydrocynus vittatus*). Catfish include the ‘air-breathing’ Sharptooth Catfish (*Clarias gariepinus*), Blunt-tooth Catfish (*Clarias ngamensis*) and the very large Vundu (*Heterobranchus longifilis*). Cichlids include the Southern Mouthbrooder (*Pseudocrenilabrus philander*), Okavongo Tilapia (*Tilapia ruweti*) and the Redbreast Tilapia (*Tilapia rendalli*).



Vundu (*Heterobranchus longifilis*)



Sharp-toothed Catfish (*Clarias gariepinus*) known locally as the 'Black Barbel'

### ***Rivers***

Zambia has three main rivers – Zambezi, Kafue and Luangwa Rivers which are all part of the Zambezi Basin. There are numerous smaller rivers to the north which form the Luapula (Congo) Basin which include the Chambeshi and Luapula Rivers.

### ***Zambezi River***

Several fish species are mostly limited to the Zambezi River region, such as Dwarf Sanjika (*Opsaridium zambezense*), Brown Squeaker (*Synodontis zambezensis*) and Zambezi River Bream (*Pharyngochromis acuticeps*). Larger species, such as Vundu (*Heterobranchus longifilis*), Electric Catfish (*Malapterurus shirensis*), Nkupe (*Distichodus mossambicus*) and Chessa (*Distichodus schenga*) are only found below the Falls. Other species found in the Lower Zambezi River include Cornish Jack (*Mormyrops anguilloide*), Eastern Bottlenose (*Eastern Bottlenose*), Large Scale Yellowfish (*Barbus marequensis*), Mozambique Tilapia (*Oreochromis mossambicus*), Tigerfish (*Hydrocynus vittatus*), Zambezi Happy (*Pharyngochromis acuticeps*) and Zambezi Parrot Fish (*Hippoptamyrus discorhynchus*).

The Zambezi's two main tributaries within Zambia are the Kafue and Luangwa Rivers.





Tigerfish (*Hydrocynus vittatus*)

### ***Kafue River***

The Kafue river has about 60 different species of fish. These include 18 species of Barb, 13 bream, six catfish, four largemouth, three minnow, two catlet, two mudsuckers, and three Robber. It is also home to Bottlenose (*Mormyrus lacera*), Bulldog (*Marcusenius macrolepidotus*), Pike (*Hepsetus odoe*), Silverfish (*Petersuis rhodesiensis*), Broadbar (*Nannocharax niloticus*), Multi Banded Citharind (*Hemigrammocharax multifasciatus*) and Spiny Eel (*Mastacemblalus mellandi*). Spined Climbing Perch (*Ctenopoma multispinis*). The region has one endemic fish – the Kafue Killifish (*Nothobranchius kafuensis*) which



Kafue Killifish (*Nothobranchius kafuensis*) ©V

Treat

### ***Luangwa River***

61 fish species have been recorded with cichlids, cyprinids and elephantfish dominating. One endemic species of killifish, *Nothobranchius boklundi*, has been found in the seasonal pools on the eastern floodplains of the Luangwa River.



Nothobranchius boklundi

### ***Chambeshi and Luapula Rivers***

This whole river system is home to about 100 different fish species, including five endemic species of Barbus – such as the *Barbus lornae* in the Chambezi River. It is also home to three Nothobranchius; three elephantfish; nine cichlids, such as the *Orthochromis luongoensis* in the Luongo River; and five catfish, including *Chiloglanis productus* in the Lunzua and Lufubu Rivers.

### **What Is Shellfish?**

Shellfish have been eaten all over the world for centuries.

They're rich in lean protein, healthy fats, and minerals. Regularly eating shellfish may boost your immunity, aid weight loss, and promote brain and heart health.

However, shellfish are one of the most common food allergens, and some types may contain contaminants and heavy metals.

This article reviews different types of shellfish, their nutrition, health benefits, and possible dangers.



## Types of Shellfish

As the name suggests, shellfish are animals that dwell in water and have a shell or shell-like exterior.

They can be divided into two groups: crustaceans and mollusks. Crustaceans include [shrimp](#), crayfish, crab, and lobster, while clams, [scallops](#), oysters, and mussels are examples of mollusks (1).

Most shellfish live in saltwater, but the name also refers to species found in freshwater.

Most types of shellfish are eaten steamed, baked, or fried. Some — such as oysters and clams — can be eaten raw or partially cooked. Their flavor ranges from sweet to briny, from subtle to delicate — depending on the type and cooking method.

### Nutritional Powerhouses

Shellfish are low in calories and rich sources of [lean protein](#), healthy fats, and many micronutrients.

Here’s a nutrition comparison of 3-ounce (85-gram) servings of different types of shellfish

Type	Calories	Protein	Fat
<b>Shrimp</b>	72	17 grams	0.43 grams
<b>Crayfish</b>	65	14 grams	0.81 grams
<b>Crab</b>	74	15 grams	0.92 grams
<b>Lobster</b>	64	14 grams	0.64 grams
<b>Clams</b>	73	12 grams	0.82 grams
<b>Scallops</b>	59	10 grams	0.42 grams
<b>Oysters</b>	69	8 grams	2 grams
<b>Mussels</b>	73	10 grams	1.9 grams

Most of the fat in shellfish is in the form of [omega-3 fatty acids](#), which offer a range of health benefits, such as improving brain and heart health

shellfish are rich in iron, zinc, magnesium, and vitamin B12 — all of which have important roles in your body.).

Keep in mind that shellfish are most nutritious when steamed or baked. Breaded or fried shellfish Shellfish are low in calories and rich in protein and omega-3 fatty acids. They also contain high amounts of certain micronutrients, including iron, zinc, magnesium, and vitamin B12.

## **Potential Health Benefits**

Due to their impressive nutrient content, shellfish may be good for your waistline, brain, heart, and immune system.

### **May Aid Weight Loss**

Shellfish are low in calories and high in lean protein and healthy fats — making them excellent foods to eat while trying to [lose weight](#).

### **May Promote Heart Health**

Shellfish are loaded with nutrients that may promote heart health, including omega-3 fatty acids and [vitamin B12](#).

Several studies have linked eating omega-3 fatty acids from fish and shellfish to a lower risk of heart disease. This is likely because omega-3s have anti-inflammatory effects

### **Good for Your Brain**

The same nutrients in shellfish that are good for your heart are also vital for [brain health](#).

In fact, several studies have identified inadequate blood levels of vitamin B12 and omega-3 as risk factors for issues with brain development in children and with healthy brain function in adults ([16Trusted Source](#), [17Trusted Source](#), [18Trusted Source](#), [19Trusted Source](#)).

Some research also suggests that vitamin B12 and omega-3 fatty acids may enhance each other's activities to promote brain health.

### **Rich in Immune-Boosting Nutrients**

Some types of shellfish are loaded with immune-boosting [zinc](#).

This mineral is necessary for developing cells that make up your body's immune defense. It also acts as an antioxidant, protecting against damage from inflammation

Regularly eating shellfish — especially oysters, clams, mussels, lobster, and crab — may improve your zinc status and overall immune function.

## **Possible Downsides**

Even though shellfish are highly nutritious, there may be some downsides to eating them.

### **Heavy Metal Accumulation**

Shellfish may accumulate heavy metals from their environments, such as [mercury](#) or cadmium.

Humans cannot excrete heavy metals. Over time, a build-up of these compounds in your body can lead to organ damage and other health issues

One study found that shellfish in some areas may contain cadmium levels that are twice the recommended daily limit for human intake. Shellfish may also contain mercury, but generally have less than larger fish

The FDA recommends that adults eat 3–5 ounces (85–140 grams) of low-mercury fish twice a week. If the amount of shellfish you eat per week is equal to or less than that, heavy metals should not be of concern.

### **Foodborne Illness**

Eating contaminated shellfish can lead to [foodborne illness](#).

### **Allergic Reactions**

Shellfish are one of the [top eight food allergens](#) in the US

A shellfish allergy typically develops in adulthood but can also occur in childhood.

Symptoms of an allergic reaction to shellfish include:

- Vomiting and diarrhea
- Stomach pain and cramps
- Swelling of the throat, tongue, or lips
- Hives
- Shortness of breath

In some cases, people with a shellfish allergy may experience a life-threatening anaphylactic shock that needs immediate treatment

### **Shellfish**

Shellfish generally have a mild, sweet flavor. Almost all shellfish come from ocean and seas, but a few come from fresh water. There are, but a few come from fresh water. There are two types of shellfish: crustaceans (krus-TAY-shhns) and mollusks.

### **Crustaceans**

**Crustaceans** are shellfish that have long bodies with jointed limbs, covered with a shell. They include crabs, crayfish, lobsters, and shrimp.

- **Crabs.** Have an oval shell, four pairs of walking legs, and two claws. Different varieties and size are available. Whole crabs are sold live, cooked and frozen. Cooked crabmeat is available refrigerated, frozen, and canned.
- **Crayfish.** Freshwater crustaceans. They are also called **crawfish** or **crawdads**. they look like small lobsters. Crayfish are sold whole, and canned.

- **Lobsters.** Have a long, jointed body with four pairs of walking legs and two large claws, all covered with a hard shell. Average weight is from 1 and a coter pounds (625 g) to 2 and a coter (1125 g). Main lobster is the most popular. fish is sold live
- **Shrimp.** Vary in size and color. They are usually sold frozen or previously frozen and thawed. You can buy raw shrimp, shelled, cooked shrimp.

### **Mollusks**

**Mollusks** are shellfish with soft bodies that are covered by at least one shell. They include claims, mussels, oysters, scallops, and squid.

- **Clams.** Have two shell hinged at the back with edible flesh inside. Many varieties are available, from small to large. They are sold live (still in the shell) or shucked (removed from the shell).
- **Mussels.** Have a thin, oblong shell. Length varies from 1 and half inches (3.8 cm) to 6 inches (15 cm). Shell color also varies. The fish is creamy tan and not as tender as that of oysters or claims. Mussels are sold in the shell.
- **Oysters.** Have a rough, hard, gray shell. In color, flavor, and texture. Oysters are sold live or shucked.
- **Scallops.** Grow in beautiful, fan-shape shells. Only the muscle that hinges the two shells. is sold. Bay scallops are very tiny- about half inch (1.3 cm) in diameter –sweet, and tender. Sea scallops are larger- about 1 and half inches (3.8 cm) in diameter – and hot as tender as bay scallops.
- **Squid.** Also known as calamari (kah- luh-MAH-ree). It is sold fresh. Squid is popular I Asia and the Mediterranean area and has become popular in the United States.

### **Processed fish**

Fish may be dried, pickled, smoked, or cured. Sometimes more than one method is used. For example, lox is a type of cured, smoked salmon. Cod is often salted and dried. Herring may be cut into chunks, pickled in vinegar and spices, and then packed in jars.

Canned fish and shellfish are ready to eat as it, heat, or use in recipes. To cut down on fat, look for fish packed in water instead of oil. If the fish is packed in oil, drain it well. And rinse off the oil before using. Many other convenience forms of fish, such as frozen breaded fish filets, are available.

### **Inspection and grading**

The food and drug administration (FDA) has a modern food safety system for fish, known as hazard analysis and critical control point, or HACCP (pronounced HAS-sip). All seafood processed, repacks, and warehouse-both domestic and foreign exporters to this country- must use it. The system focuses on identifying and preventing hazards that could cause foodborne illness.

A voluntary inspection and grading program is also carried on jointly by the FDA and the national marine fisheries service of the U.S department of commerce. The program attempts to focus on those parts of fish processing that may be risks to consumer safety. Some state and local fish inspection service are also available.

### **Buying fish and shellfish**

- When you are buying fish, a fishy odor should make you suspicious. Fresh fish and shellfish that have gone bad will smell “fishy” or have an unpleasant ammonia odor. Here are some tips for buying fish and shellfish:
  - Buy from a reliable source. Pay attention to the way fresh fish is display. If layers are piled on ice, the top layer may be too warm for safekeeping. Don’t buy ready-to-eat fish that is piled next to fresh fish. Harmful bacteria from the fresh fish may have transferred to the ready-to-eat product.
  - Use appearance, Aroma, and touch to judge quality. Fresh fish should have shiny skin and a glistening color. Whole fish should have clean, full eyes and bright red or pink gills. Any fish should spring back when pressed.
  - Some shellfish must be alive if bought fresh. Look for signs that they are alive, such as movement in lobsters. Mollusks shells should close when they are trapped.

### **Storing fish and shellfish**

After you bring fish home, store it in the refrigerator or freezer immediately. Refrigerate live shellfish in containers covered with a clean, damp cloth. They need breathing space to stay alive.do not put live saltwater shellfish in fresh water- they won’t live.

Use fish stored in the refrigerator within one to two days. For longer storage freeze.



## Seafood and raw fish safety

Fish has a wide spectrum of safe cooking methods, depending on the type and quality of fish you're cooking. The cooking method you use is also extremely important.

Check the cooking instructions for different types of fish. Fish should generally be cooked all the way through, but medium-rare may be acceptable for certain types. Raw fish, such as sushi, should be eaten with caution. It must be sushi-grade fish that's prepared carefully to reduce the risk of contamination.

### Fish safety

1. Most fish must be cooked to at least 145°F (62.8°C) to be safe to eat.
2. Raw fish generally needs to be frozen at -4°F (-20°C) for at least a week before being prepared for sushi, sashimi, and other raw fish dishes.
3. Some fish, including salmon and tuna, are considered sushi-grade after they've been frozen and prepared properly.
4. Don't cross-contaminate a cutting board used for sushi-grade or cooked fish with a cutting board used for non-sushi-grade or uncooked fish. If you mix the two, you can spread harmful bacteria to the safe fish.
5. Refrigerate fresh fish at 40°F (4.4°C) or below if you're planning to eat it soon.
6. Always wash your hands between preparing cooked fish and uncooked fish.

When cooking different types of seafood, look for the following to make sure that it's cooked:

**In fish:** The flesh should not be see-through (light shouldn't pass through it at all), and it should be very easy to cut with a fork, with the flesh falling apart.

**In clams, oysters, and mussels:** The shells should be open and any that don't open should be thrown away.

**In scallops:** The flesh should be rigid and not at all see-through.

**In shrimp and lobster:** The meat should be shiny and not at all see-through.

Don't leave any cooked seafood out for longer than two hours. Keep it refrigerated or insulated with ice if you're planning to eat it later.

## UNIT 8: STOCKS, SOUPS AND SAUCES.

### Introduction

In this unit you will learn on the different types of stocks, soups and sauces  
Activities on how to make various stock, soups and sauces shall too be covered.

### Learning Outcomes

As you study through this unit, you are expected to:

- Explain the various types of soups
- Mention different types of sauces
- Demonstrate different ways of preparing soups and sauces

### SOUPS

What comes to your mind when you hear the word soup? Whether you picture a soup kettle simmering away for hours, a can of your favor, or a container from a supermarket deli, soup can be a delicious, nutritious meal.

#### Making soups

The first step in making most soups is to saute' **aromatic vegetables**, vegetables, such as onions, celery and carrots, that add flavor to soup and other recipes.

Saute'ing vegetables before adding them helps develop the flavors.

Use a stock pot and about 1 teaspoon (5ml) of oil.

Next comes the liquid. Many soups starts with **stock**, a clear, thin liquid made by simmering water favored with the bones of meat, poultry, or fish, plus aromatic vegetables and seasonings.

Many people today use canned convenience broth or bouillon cube as a base for making soup you can also combine broth with a seasoned vegetable juice for addition flavor and nutrients. Taste the soup and correct the seasonings just before serving. This will help you avoid over seasoning the soup early in the cooking process.

#### Kinds of soups

Soups are usually highly nutritious. Some B vitamins and vitamin C may be destroyed by heat, especially if the soup is cooked for a long time. Other water-soluble vitamins and minerals, however, remain in the liquid. There are two types of soups:

- ❖ **Clear soups**. These soups are usually based on unthickened, clear stock or broth.

**Bouillon** ( BOOL-yon) is simple, clear soup without solid ingredients. Also called broth, the liquid is strained to remove any solids. **Consommé** ( kahn-soh-MAY) the clearest broth, is rich and flavorful

- ❖ **Thick soups.** Unlike clear soups, these soups are not transparent and they are thickened. One type, cream soup, is traditionally made with a **with sauce** milk-based sauce thickened with starch plus cooked vegetables, poultry, or shell-fish. Soups made this way can be high in fat.

### **Vegetable soup**

Vegetable soup, one of the most popular soups, is basically a clear soup with vegetables. Which vegetable are used is largely a matter of taste, although many recipes feature potatoes, tomatoes, peas, and corn, among others. Use at least three or four different vegetables for a rich flavor and colorful appearance.

When adding the vegetables, begin with those that take the longest to cook. Then add the remaining vegetables according to the time needed for cooking. Season the soup with herbs and spices. Cover and simmer the soup until the vegetable are tender.

For variety, flavor and more nutrients, add cooked legumes or grain products (pasta, rice, or barley). These foods contain starch and will thicken the soup. You can also add cooked leftover meat and poultry sliced in thin strips or cut into small cubes. Making soup can be fun-and a terrific way to use leftovers.

### **Purees**

Purees, thick, low-fats alternatives to cream soups, are unique since they are naturally thickened by mashing or grinding one or more of their ingredients. Black bean soup, made from pureed black beans, is a well known choice.

Purees can be quick to fix, low in fats, and packed with nutrients. You can make a simple, low-fat puree using one or more pureed cooked vegetables, a starchy base, and enough stock or broth for desired consistency. Fat-free dry milk can be added, too.



## **UNIT 8: HERBS AND SPICES**

### **Introduction**

In this unit you learn about different types of herbs and spices and their suitable usage in cookery of various foods.

### **Learning Outcomes**

As you study through this unit, you are expected to:

- Explain the various types of herbs
- Explain the various types of spices
- Demonstrate usage of various ways of using the spices and hearbs

### **HERBS**

Of the thirty well known types of herbs, approximately twelve are generally used in cooking. Herbs may be used fresh, but the majority are dried, so as to ensure a continuous supply throughout the year. The leaves of herbs contain an oil which gives the characteristic smell and flavour.

Herbs have no food value but are important from a nutritive point of view in aiding digestion because they stimulate the fow of gastric juices. These are most commonly used herbs.

### **BASIL**

Basil is a small leaf with a pungent flavour and sweet aroma. Used in raw or cooked tomato dishes or sauces, salads and lamb dishes.

### **Bay leaves**

Bay leaves are leaves of the bay laurel or sweet ay trees or shrubs. They may be fresh or dried and are used for flavouring many soups, sauces, stews, fish and vegetable dishes, in which case they are usually included in a faggot of herbs (bouquet garni).

### **Borage**

This is a plant with furry leaves and blue flowers that produces a flavoured similar to cucumber

## **Chervil**

Chervil has small, neatly leaves with a delicate aromatic flavour. It is best used fresh, but may also be obtained in dried form. Because of its neat shape it is employed a great deal for decorating chaud-froid work. It is also one of the fines herbs, the mixture of herbs used in many ordinary preparations.

## **Chive**

Chive is a bright green member of the onion family resembling a coarse grass. It has a delicate onion flavour. It is invaluable for flavouring salads, hors-d'oeuvre, fish, poultry and meat dishes, and chopped as a garnish for soups and cooked vegetables. It should be used fresh.

## **Coriander**

A member of the parsley family, coriander is one of the oldest flavouring used by man. It is both a herb and a spice. The leaves have a distinctive pungent flavour.

## **Dill**

Dill has feathery green-grey leaves and is used in fish recipes and pickles.

## **Fennel**

Fennel has a feathery bright green- leaves and a slightly aniseed flavour and is used for fish sauces meat dishes and salads.

## **Lemon grass**

Lemon grass is a tall plant with long spear-shaped grass-like leaves with a strong lemon flavour.

## **Lovage**

Levage leaves have a strong celery-like flavour; when finely chopped they can be used n soups, stews, sauces and salads.

## **Marjoram**

Marjoram is a sweet herb which may be used in salads and pork, fish, poultry, cheese, egg and vegetable dishes and when dried can be used for flavouring soups, sauces, stews and certain stuffing.

### **Mint**

There are many varieties of mint. Fresh sprigs of mint are used to flavour peas and new potatoes. Fresh or dried mint may be used to make mint sauce or mint jelly for serving with roast lamb. Another lesser known but excellent mint for the kitchen is apple mint. Chopped mint can be used in salads.

### **Oregano**

Oregano has a flavour and aroma similar to marjoram but stronger. It is used in Italian and Greek-style cooking in meats, salads, soups, stuffing, pasta, sauces, vegetable and egg dishes.

### **Parsley**

Parsley is probably the most common herb in Britain and has numerous uses for flavouring, garnishing and decorating a large variety of dishes.

### **Rosemary**

Rosemary is a strong fragrant herb which should be used sparingly and may be used fresh or dried for flavouring sauces, stews, salads and for stuffings. Rosemary can also be sprinkled on roasts or grills of meat, poultry and fish during cooking and on roast potatoes.

### **Sage**

Sage is strong, bitter, pungent herb which aids the stomach to digest rich fatty meat and is therefore used in stuffings for duck, goose and pork.

### **Tarragon**

This plant has a bright-green attractive leaf. It is used fresh, particularly when decorating chaud-froid dishes. Tarragon has a pleasant flavour and is used in sauces, one well-known example

being sauce béarnaise. It is one of the fines herbs and as such is used for omelettes, salads, fish and meat dishes.

### **Thyme**

Thyme is a popular herb in the UK and is used fresh or dried for flavouring soups, sauces, stews, stuffings, salads and vegetables.

### **Fine herbs (fines herbs)**

This is a mixture of fresh herbs, usually chervil, tarragon and parsley, which is referred to in many classical cookery recipes.

### **Balm, Bergamot, Fennel, Savory, Sorrel, Tansy, Lemon Thyme**

These and others herbs are used in cookery, but on a much smaller scale.

## **SPICES**

Spices are natural products obtained from the fruits, seeds, roots, flowers or the bark of a number of different trees or shrubs. They contain oils which aid digestion by stimulating the gastric juices. They also enhance the appearance of food and add a variety of flavours. As spices are concentrated in flavour, they should be used sparingly; otherwise they can make foods unpalatable. Most spices are grown in India, Africa, the West Indies and the Far East.

### **Allspice or Pimento**

This is so called because the flavour is like a blend of cloves, cinnamon and nutmeg. It is the unripe fruit of the pimento tree which grows in the West Indies. Allspice is picked when still green, and dried when the colour turns to reddish brown. Allspice is ground and used as flavouring in sauces, sausages, cakes, fruits pies and milk puddings. It is one of the spices blended for mixed spice.

### **Anise**

This is also known as sweet cumin, and has a sweet aniseed flavour. It is used for fish, sweets, creams and cakes.



### **Anise (Pepper)**

A strong hot-flavoured, red pepper.

### **Anise (Star)**

Stronger than anise, this has a slight liquorice flavour. Used in Chinese cookery with pork and duck.

### **Asafoetida**

This is used in India cookery to add flavour to vegetarian dishes. Available in block or powder form.

### **Cardamom**

Cardamom is frequently used in curry, and has a warm, oily sharp taste.

### **Caraway**

Caraway seeds come from a plant grown in Holland. The seeds are about ½ cm (1/4 in) long, shaped like a new moon and brown in colour. Caraway seeds are used in seed-cake and certain breads, sauerkraut, cheese and confectionery. Also for flavouring certain liqueurs such as kummel.

### **Cassia**

This comes in thicker sticks than cinnamon, and is less delicate and more expensive. Used in spiced and curries.

### **Celery seed**

Slightly bitter, this should be used sparingly if celery or celery salt is not available.

### **Chillies and Capsicums**

These are both from the same family and grow on shrubs. The large bright red types are capsicums and these are ground and known as paprika. There are many types of chillies and they vary in taste, colour, piquancy and heat (always test the heat by cutting off a small piece and

taste with the tip of the tongue). The seeds are one of the hottest parts of the chilli and they can be removed by splitting the chilli in half then scooping them out with the point of the knife. Hands should always be thoroughly washed after preparing chillies because the oils are exceptionally strong and will burn the eyes, mouth and other delicate areas of the body. Chillies are used in many dishes: pizzas, pasta and in Indian, Thai and Mexican cookery.

### **Chinese Five spice powder**

Usually consists of powder anise, funnel, cloves, cinnamon and anise pepper. Used extensively in Chinese cookery.

### **Cinnamon**

Cinnamon is the bark of the small branches of the cinnamon shrub which grows in China and Sri Lanka. The inner pulp and the outer layer of the bark are removed and the remaining pieces dried. It is a pale brown colour and is obtained and used in stick or powdered form, mainly by bakeries and for pastry work.

### **Cloves**

Cloves are the unopened flower-buds of a tree which grows in Zanzibar, Penang and Madagascar. The buds are picked when green, and dried in the sun until they turn to a rich brown colour. They are used for flavouring stocks, sauces, studding roast, studding and roast ham joints and in mulled wine.

### **Coriander**

Coriander is a pleasant spice obtained from the seed of an annual plant grown chiefly in Morocco. It is a yellowish brown colour and tastes like a mixture of sage and lemon peel. It is used in sauces, curry powder and mixed spice.

### **Cumin**

This is frequently used in curry and is powerful, warm, sweet and has a slightly oily taste.

### **Dill Seeds**

These are used for flavouring soups, stews and cakes.

### **Fennel seeds**

Fennel seeds have a sweet aniseed flavour, used in fish dishes and soups.

### **Fenugreek**

Fenugreek is roasted, ground and frequently used in curry; slightly bitter, with a smell of fresh hay.

### **Garam Masala**

This is literally means ‘hot spice’ and is not a standard recipe, but a typical mixture which could include: cardamom seeds, stick cinnamon, cumin seeds, cloves, black peppercorns, nutmeg.

### **Ginger**

Ginger is the rhizome or root of a reed-like plant grown in the Far East. The root is boiled in water and sugar syrup until soft. Ground ginger is used mainly for pastry and bakery work and for mixed spice. Whole root is used for curries, pickles, stir-fry dishes and sauces.

### **Krachai**

Is a type of ginger with a slightly strange flavour.

### **Juniper berries**

If these are added to game, red cabbage, pork, rabbit and beef dishes, they give an unusual background flavour.

### **Nutmegs and Mace**

The tropical nutmeg bears a large fruit like an apricot which, when ripe, splits. Inside is a dark brown nut with a bright red net-like covering which is the part that becomes mace. Inside the nut is the kernel or seed which is the nutmeg. Although the two spices come from the same fruit flavour is different. Mace is more delicate and is used for flavouring sauces and certain meat and

fish dishes. Nutmeg is used in sweet dishes (particularly milk puddings), sauces, soups, vegetable and cheese dishes. It is also used for mixed spice.

### **Poppy seeds**

Poppy seeds are used as a topping for bread and cakes, etc.

### **Saffron**

The stigmas from a crocus known as the saffron crocus (grown chiefly in Spain) are dried and form saffron, which is flavouring and colouring spice. It is used in soups, sauces and particularly in rice dishes, giving them a bright yellow colour and distinctive flavour. Saffron is a very expensive as it takes the stigmas from approximately 4000 crocus flowers to yield 30 g (1 oz).

### **Sesame seeds**

They are used as a topping for bread, cakes and in Chinese and vegetarian cookery.

### **Surmac seeds**

These are used in Middle Eastern cooking for their acidic lemon peppery flavour. Deep red-maroon colour.

### **Turmeric**

Turmeric grows in the same way as ginger and it is the rhizome which is used. It is without any pronounced flavour and its main use is for colouring curry powder. It is ground into a fine powder, which turns it yellow. Turmeric is also used in pickles, relishes and as a colouring in cakes and rice.

## **Some additional ingredients used in Asian and Fusion Cuisine (a mixture of food styles and ingredients from the cookery styles of the East and West)**

### **AJOWAN**

A native Indian plant used in Indian recipes. An ingredient of Bombay mix, and breads such as parathas, bean and pulse recipes.

## **ANNATTO**

Shrub ingredients to both the Caribbean and tropical America, has heart-shaped glossy leaves, pink flowers. The seeds are washed and dried separately for culinary use. An orange food colour is made from the husk.

## **ASAFOETIDA**

Indigenous to Iran and Afghanistan and in the North of India. Used in vegetable, fish, pulse and pickle ingredients.

## **BAMBOO SHOOTS**

Mild flavoured, tender shoots of the young bamboo. Widely available fresh, or sliced or halved in cans.

## **BENGALI FIVE SPICES**

Bengal origin, also known as panch phoron. Cumin seeds, fennel seeds, mustard seeds, fennegreek seeds, nigella seeds.

## **BERBERA**

An Ethiopian blend spices. Dried red chillies, white cardamons, allspice berries, blackpeppercorns, cumin seeds, coriander seeds, ajowan seeds, ground ginger, fennegreek seeds, cloves, ground nutmeg, and salt.

## **BLACKBEAN SAUCE**

Made from the salted beans crushed and mixed with flour and spices (such as ginger, garlic or chilli) to form a paste. Sold in jars and cans.

## **CARDAMON PODS**

Available both as small green pods and larger black pods containing seeds. They have a strong aromatic quality.

## **CAJUN SPICE MIX**

Spice mixture used for fish, chicken and meat. Garlic, dried oregano, white mustard seeds, salt black peppercorns, chilli powder, cumin seeds, paprika, dried thyme.

## **CHILLIES**

There are over 24 different types of chillies, for example, small green or red, garlic etc.

## **CHILLI BEAN SAUCE**

Made from fermented bean paste mixed with hot chilli and other seasonings.

## **CHILLI OIL**

Made from fermented bean paste mixed with hot chilli and other seasonings.

## **CHILLI POWDER**

Milder than cayenne pepper and more coarsely ground; prepared from a variety of mild and hot chillies.

## **CHILLI SAUCE**

A very hot sauce made from chillies, vinegar, sugar and salt in bottles.

## **CHINESE RICE WINE**

Made from glutinous rice, also known as yellow wine huang jin or chiew because of its colour. The best variety is called shuo hsing or shuoxing and comes from south-East China. Dry sherrymay be used as a substitute.

## **CHINESE CHIVES**

Also known as garlic chives.

## **COCONUT MILK AND CREAM**

Ida cooking will rise to the surface like cream.

## **CURRY LEAVES**

Comes from the tropical tree of the citrus-rue family, native of southern India, Sri Lanka. Strong curry aroma.

A classical way is by frying mustard seeds in hot ghee, then adding a little asafoetida and several curry leaves for a few seconds, before stirring them into a plain dhal dish or dhal based Indian soup.

## **DASHI**

Light Japanese stock, available in powder form. The flavour derives from kelp seaweed.

## **DRIED SHRIMP AND SHRIMP PASTE**

Dried shrimps are tiny shrimps that are salted and dried. They are used as a seasoning for stir-fry dishes. Shrimp paste, also known as terasi, is a dark, odorous paste made from fermented shrimps.

## **GALANGAL**

Fresh galangal, also known as lengkuas, tastes and looks a little ginger with a pinkish tinge to its skin.

## **GRAFLOUR**

made from ground chick peas, this has a unique flavour.

## **HARISSA**

Spice mix used in Moroccan, Tunisian and Algerian cooking. Used as a dip or accompaniment. Dried red chillies, olive oil, coriander seeds, garlic, cumin seeds, salt.

## **HOI SIN SAUCE**

A thick brownish-red sauce which is sweet and spicy.

## **KAFFIR LIME LEAVES**

These are used like bay leaves, to give an aromatic lime flavour to dishes.

## **JUNIPER**

Grown in Hungary southern Europe. An evergreen coniferous tree of the cypress family. The berries taste of gin, used in the production of gin. A seasoning for some birds, venison, duck, rabbit, pork, ham and lamb.

## **LA KAMA**

Moroccan spice mix. Black peppercorns, ground ginger, ground turmeric, ground nutmeg.

## **LIQUORICE**

Native of the Middle East and South-East Europe. The root is the most important part, sends out a deep and extensive network of rhizomes, which are grown for 3-5 years before they are harvested. The roots and rhizomes are cleaned, pulped, then boiled and the liquorice extract is then concentrated by evaporation.

Liquorice is best known as an ingredient in confectionery, also used in the making of Guinness and the flavour of Italian Liquor Sambucco.

## **MAHLEBI**

Tree found only in Middle East and Turkey. The ground spice is used in breads and pastries.

## **MANGO POWDER**

The unripe mangoes are sliced, sun-dried and ground to a powder, then mixed with a little ground turmeric. Used in vegetarian dishes, curries, chutneys.

## **MIRIN**

A mild sweet, Japanese rice wine used in cooking.

## **MISO**

A fermented bean paste that adds richness and flavour to Japanese soups.



## **NIGELLA**

Grown in India . The seeds are held in a seed head similar to a poppy head. Sometimes used as a substitute for pepper. Nigella is one of the five spices in Bengali five spices (panch phoron).it is widely used in Indian cooking, in dhal and vegetable dishes, pickles and chutneys. The seeds are often scattered on naan bread.

## **NOODLES**

Cellophane noodles-also known as bean thread, transparent or glass noodles. Made from ground mung beans.

Egg-noodles-are made from wheat flour, egg and water.

Rice noodles-are made from ground rice and water.

Rice vermicelli- are thin brittle noodles that look like white hair.

Somen noodles-are delicate thin white Japanese noodles made from wheat flour.

Udon noodles-Japanese noodles made of wheat flour and water.

## **NORI**

Paper thin sheets of Japanese seaweed.

## **OYSTER SAUCE**

Made from oyster extract.

## **PAK CHOI**

Also known as bok choy this is a leaf vegetable with long, smooth milky white stems and dark green foliage.

## **PALM SUGAR**

Strongly flavoured, hard brown sugar made from the sap of the coconut palm tree.

## **PAPAYA SEEDS**

Seeds of the papaya fruit. Can be used fresh or fresh. Rich in enzyme papain which is an efficient meat tenderiser of commercial value.

## **POMEGRANATE SEEDS**

Grown in Mediterranean countries, South Africa, the USA and parts of Africa. Grenadine is syrup made from the juice of the pomegranate. Fresh pomegranate seeds are sprinkled on hummus.

## **RAS EL HANOUT**

Moroccan mixture. Black peppercorns, coriander seeds, cumin seeds, cloves, green cardamoms, ground turmeric, cinnamon stick, ground ginger, salt nutmeg, dried red chillies, dried flowers.

## **RED BEAN PASTE**

A reddish-brown paste made from pureed red beans and crystallised sugar.

## **RICE VINEGAR**

There are two types:

Red vinegar – made from fermented rice and has a distinctive dark colour.

White vinegar – stronger in flavour, distilled from rice.

## **SAKE**

A strong powerful fortified rice wine from Japan.

## **SAMBALS**

Sambals is an accompaniment that is spooned directly on to the plate. Made from seeded red chillies pureed with salt.

## **SAMBAL KEEAP**

Indonesian sauce used as an accompaniment on a dip. Dark soy sauce, lemon juice, garlic, red chilli, deep fried onion slices.

### **SAMBAAR POWDER**

Also known as sambar used in South Indian dishes, made from red chillies, coriander seeds, black peppercorns, fenngreek seeds, urad dhal, channu dhal, mung dhal, ground turmeric and cumin seeds.

### **SOY SAUCE**

A major seasoning ingredient in Chinese cooking, made from fermented soya beans, combined with yeast, salt and sugar. Chinese soy sauce falls into two main categories:

Light and dark, Light has more flavour than the sweeter dark sauce, which gives food a rich, reddish colour.

### **SPRING ROLL WRAPPERS**

Paper thin wrappers made from wheat or rice flour and water.

### **SUMAC**

Bush grown in Italy, Sicily and the Middle East. Red berries are dried. Widely used in Lebanese, Syrian, Turkish and Iranian cuisines.

### **SZECHUAN PEPPERCORNS**

Also known as tarchiew, aromatic, best used roasted and ground. Not so hot as white or black peppercorns.

### **TAMARIND**

The brown, sticky pulp of the bean-like seed pod of the tamarind tree. Used in Indian, Thai and Indonesian cooking.

## **THAI FISH SAUCE – NAM PLA**

The most common flavouring in Thai food, in the same way soy sauce is used in Chinese dishes. It is made from salted anchovies and has a strong, salty flavour.

## **THAI NAM PRIK SAUCE**

This is the most famous of the Thai sauces, it can be served on its own or used as a dip. Brown sugar, lemon juice, fish sauce, fresh red chillies, dried prawns, blanchan, cooked prawns, garlic fresh coriander.

## **THAI PARSLEY**

Similar in appearance to spring onion but without the bulb.

## **THAI RED CURRY PASTE**

Krueng gueng phed is the Thai name. used for meat, poultry and vegetable dishes. Red chillies, groundnut oil, red onion, blanchan, lemon grass, salt, cumin seeds, citrus peel, garlic, galangal, green chillies, white onion, fresh coriander, coriander seeds.

## **TOEY LEAVES**

Also known as pandanus leaves, these are long, flat blades bright green in colour.

## **TOFU**

Pureed, pressed soya beans. Also known as bean curd, rich in protein.

## **WASABI**

Edible root used in Japanese cooking, to make a condiment with a sharp, pungent and fiery flavour. Similar to horseradish.

## **WATER CHESTNUTS**

Walnut-sized bulbs from an Asian water plant that looks like sweet chestnuts.

## **WONTON WRAPPERS**

Small, paper-thin squares of wheat flour and egg dough.

## **YARD LONG BEANS**

Long thin beans similar to French beans but three or four times longer.

## **YELLOW BEAN SAUCE**

A thick paste made from salted, fermented yellow soya beans crushed with flour and sugar.

## **ZEDOURY**

A member of the ginger and turmeric family, bright yellow in colour. Has a musky aroma with a hint of camphor.

## **CONDIMENTS**

### **FOOD VALUE**

Salt (sodium chloride) is essential for stabilising body fluids and preventing muscular cramp.

### **STORAGE**

Salt must be stored in a cool, dry store as it readily absorbs moisture. It should be kept in airtight packets, drums or bins.

### **USE**

Salt is used for curing fish such as herrings and haddocks and for cheese and butter making. Salt is also used for the pickling of foods, in the cooking of many dishes and as a condiment on the table.

### **PEPPER**

Pepper is obtained from black peppercorns, which are the berries of a tropical shrub. White peppercorns are obtained by removing the skin from the black peppercorn. White pepper is less pungent than black, and both may be obtained in ground form.

Green peppercorns are fresh unripe pepper berries, milder than dried peppercorns, available frozen or in tins. Pink peppercorns are after and milder than green peppercorns, available in preserved in vinegar.

### **CAYENNE PEPPER**

Cayenne is a red pepper used on savoury dishes and cheese straws. It is a hot pepper which is obtained from grinding chillies and capsicums.

### **PAPRIKA**

Paprika is a bright red mild pepper used in goulash.

### **MUSTARD**

Mustard is obtained from the seed of the mustard plant. It is sold in powder form and is diluted with water, milk or vinegar for table use or sold ready mixed in jars.

A large variety of continental mustards are sold as a paste in jars, having been mixed with herbs and wine vinegar.

### **VINEGAR**

Malt vinegar is made from malt, which is produced from barley.

Artificial non-brewed, pure or imitation vinegars are chemically produced solutions of acetic acid in water. They are cheaper and inferior to malt vinegar, having a pungent odour and a sharp flavour.

Spirit vinegars are produced from potatoes, grain or starchy vegetables, but they do not have the same flavour as malt vinegar.

Red or white vinegar are made from grapes and are more expensive and have a more delicate flavour than the other vinegars.

All vinegars can be distilled; this removes the colour. The colour of vinegar is no indication of its strength as burnt sugar is added to give colour.

Balsamic vinegar is especially mature vinegar from Italy with a distinctive flavour which varies in strength according to the age of the vinegar which can be up to 30 days.

Other vinegars include chilli, sherry, cider, rice, herb (especially tarragon) thyme, oregano, sage, rosemary and fruit such as raspberry and strawberry.

## **USES**

Vinegar is used as a preservative for pickles, rollmops and cocktail onions; and as a condiment on its own or with oil as a salad dressing; it is used for flavouring sauces such as mayonnaise and in reductions for sharp sauces (sauce piquante, sauce diable).

## **GROCERY, DELICATESSEN**

Delicatessen literally means 'provision store', but the name is commonly used to cover the place where a wide range of table delicacies may be bought.

### **Agar Agar**

This is obtained from the dried purified stems of a seaweed; also known as vegetable gelatine, and is used in vegetarian cookery.

### **Anchovy essence**

This is a strong, highly seasoned commodity used for flavouring certain fish sauces and fish preparations such as anchovy of fish cakes.

### **Aspic**

Aspic jelly is a clear savoury jelly which may be the flavour of meat, game or fish. It may be produced from fresh ingredients (see advanced cookery) or obtained in a dried form. It is used for cold larder work, mainly for coating, mainly for coating chaud-froid dishes, and may also be chopped or cut into neat shapes to decorate finished dishes.

### **Bresaola**

A cured beef specialina, in Lombardy, Italy.

## **Coppa**

Salted and dried sausage made from the neck and shoulder of pork.

## **Caviar**

Caviar is the uncooked roe of the sturgeon which is prepared by careful separating the eggs from the membrane of the roe and gently rubbing them through sieves of coarse hemp. It is then cooked in a brine solution, sieved and packed.

Sturgeon fishing takes place in the estuans of rivers which run into the Caspian or Black Sea, therefore caviar is Russian or Iranian in origin. The types normally obtainable in Britain are Beluba, Osetrova and Sevruga. These names refer to the type of sturgeons from which the caviar is taken.

Caviar is extremely expensive and needs to be handled with great care and understanding. Caviar should be kept at a temperature of 0°C (32°F) but no lower otherwise the extreme cold will break the eggs down. Caviar must never be deep frozen.

A red caviar (keta) is obtained from the roe of salmon. From the lumpfish a mock caviar is obtained. These are considerably cheaper than genuine caviar.

## **Continental sausages**

A large variety of these are important from Europe countries, e.g. Salami, Cervelat, Chorizo, Mortadelle, Luganege, Zampone e.t.c.

## **Extracts (meat and vegetable)**

Extracts are highly concentrated forms of flavouring used in some kitchens to strengthen stocks and sauces (Bovril, Marmite, Jardox).

## **Foie Gras**

This expensive delicacy is obtained from the livers of specially fattened geese and is produced mainly in Strasbourg.

## **Galantine**



This is cooked meat preparation made from well-seasoned finely minced chicken, veal or other white meat.

### **Galatine**

Galatine is obtained from the bones and connective tissue, collagen, of certain animals; it is manufactured in leaf or powdered form and used in varying sweets such as bavarois.

### **Haggis**

This traditional Scottish dish is made from the heart, lungs (lights) and liver of the sheep, mixed with suet, onion and oatmeal and sewn up in a stomach bag. It is boiled and served with mashed potatoes.

### **Hams**

A ham is the hind of a pig cured by a special process which varies according to the type of ham. One of the most famous English hams is the York ham weighing 6-7 kg (13-15 lb) which is cured by salting, drying and sometimes smoking. The Bradenham ham is of coal-black colour and is a sweet-cured ham from Chippenham in Wiltshire. Hams are also imported from Northern Ireland and Denmark.

Continental raw hams, Bayonne and Ardenne from France, parma from Italy and Serrano from Spain, are cut in thin slices and served raw.

### **Horseradish**

Horseradish is a plant of which only the roots is used. The root is washed, peeled, grated and used for horseradish sauce and horseradish cream.

### **Pate maison**

Pate is a wellseasoned cooked mixture of various combinations of meat, poultry, game, fish or vegetables, usually served cold as a first course. There are numerous recipes, one of which can be found in practical cookery.

### **Panettone**

An Italian light mixed textured yeast bread containing sultanas and candied fruit.

### **Pickles**

These are vegetables and /or fruits preserved in vinegar or sauce and include:

- Red cabbage, gherkins, olives, onions, walnuts, capers.
- Mango chutney is sweet chutney which is served as an accompaniment to curried dishes.

### **Smoked herring fillets and Anchovy**

These are preserved in oil and used as hors-d'oeuvre

### **Smoked salmon**

British, Scandinavian or Canadian salmon weighing between 6-8 kg (13-18 lb) are used for smoking. A good quality side of smoked salmon should have a bright deep colour and be moist when lightly pressed with the finger tip at the thickest part of the flesh. A perfectly smoked side of salmon will remain in good condition for not more than seven days when stored at a temperature of 18°C (64°F). This versatile food is used for canapés, hors-oeuvre, sandwiches, and as a fish course for lunch, dinner or supper.

### **Snails**

These edible snails are raised on the foliage of the vine. They are obtainable in boxes which include the tinned snails and the cleansed shells. The snails are replaced in the shells with a mixture of butter, garlic, lemon juice and parsley, then heated in the oven and served in special dishes as a fish course. Snails are now farmed in Britain.

### **Activities**

- Analyze the various types of herbs and spices
- Discuss different ways of using herbs and spices for different dishes
- Discuss nutritive and medicinal value of herbs and spices

## **Assignment**

Write notes on the following:

- Sauces
- Stocks
- Condiments
- Flavorings

## UNIT10 : PREPARING AND COOKING FOOD

### Introduction

This unit discusses the different types of heat transfer and various methods of cooking food

### Learning Outcomes

As you study through this unit, you are expected to:

- Define what preparation and cooking is.
- Explain the meaning of **Heat and temperature**
- Discuss the **three fundamental modes of heat transfer**
- Discuss the two main classes of methods of cooking and their examples.
- Discuss different types of measurement of heat on the stove.
- **Food preparation** would be things such as marinating your chicken, slicing, dicing, julienning (is that a word?) anything that does not involve actually **cooking** the **food**. **Cooking** techniques would be something such as roasting, searing, poaching, anything that relates to actually **cooking** the **food** **Preparing**” is any act other than washing with water and may include peeling, cutting, dicing, or cooking of a **food** item. **Prepared foods** are **foods** that are typically produced for immediate consumption. “
- **Prepared foods** are **foods** that are typically produced for immediate consumption. “
- **Cooking is preparing food by heat**
- - the act of preparing something (as food) by the application of heat; ”

### How is heat transferred in cooking?

- Understanding how heat transfer can affect your cooking can be important in deciding the method used in cooking. Most food is cooked using one of several methods: baking, frying, boiling, steaming. Although new methods allow for combinations e.g., combi ovens.
- **What is Heat?**
- All matter is made up of molecules and atoms that are always in different types of motion (translation, rotational, vibrational). It is this motion of atoms and molecules that creates heat or

thermal energy. The more motion the atoms or molecules have the more heat or thermal energy they will have.

- **What is temperature?**
- Temperature is an average value of energy for all the atoms and molecules in a given system. Temperature is independent of how much matter there is in the system. It is simply an average of the total energy in the system.
- **What are the differences between temperature and heat?**
- The units of temperature is degrees (Centigrade or Fahrenheit). Another primary difference is that energy can be transferred without the temperature of a substance changing. An example would be latent heat -- where ice water remains at the freezing point even as more energy is brought into the system to melt the remaining ice. In general however as heat energy increases, the temperature will increase. The more massive a body is the more heat must be added to increase it's temperature.
- **How is heat transferred?**
- Heat can travel from one place to another in three ways: Conduction, Convection and Radiation. Both conduction and convection require matter to transfer heat. As long as there is a temperature difference between two systems heat will always find a way to transfer from the higher to lower system.
- **What are the three fundamental modes of heat transfer?**

## **CONDUCTION**

- Conduction is the transfer of heat between substances that are in direct contact with each other. The better the conductor, the more rapidly heat will be transferred. Metal is a good conduction of heat. Conduction occurs when a substance is heated, particles will gain more energy, and vibrate more. These molecules then bump into nearby particles and transfer some of their energy to them. This then continues and passes the energy from the hot end down to the colder end of the substance. Conduction occurs when we put a steak onto a very hot cast iron pan. The better the pan is in holding the

## **CONVECTION**

- Convection occurs when warmer areas of a liquid or gas rise to cooler areas in the liquid or gas. Cooler liquid or gas then takes the place of the warmer areas which have risen higher. This results in a continuous circulation pattern. Water boiling in a pan is a good example of these convection currents.
- A convection oven is an oven that has fans to circulate around the air. Conventional ovens, which do not have fans, rely primarily on radiation from the oven walls, and to a lesser extent, on natural convection caused by temperature differences. The fans in convection ovens allow more heat to be transferred via convective heat transfer.

## **RADIATION**

- Radiation is a method of heat transfer that does not rely upon any contact between the heat source and the heated object as is the case with conduction and convection. Heat can be transmitted through empty space by thermal radiation often called infrared radiation. Examples of radiation is the heat from the sun, or heat released from the filament of a light bulb. In traditional ovens transfer of heat is via radiation.

## **HOW IS HEAT FOR COOKING FOOD MEASURED**

### **Top stove temperature**

- **Oven temperature**

Very hot – 230<sup>0</sup>c and above

Hot – 205<sup>0</sup>c to 220<sup>0</sup>c

Moderate Hot – 190<sup>0</sup>c to 205<sup>0</sup>c

Moderate – 175<sup>0</sup>c to 190<sup>0</sup>c

Slow moderate – 150<sup>0</sup>c to 175<sup>0</sup>c

Slow oven – 120<sup>0</sup>c to 150<sup>0</sup>c

Very slow – below 120<sup>0</sup>c

## **METHODS OF COOKING FOOD**

**There are two main classes of methods of cooking food and these are:**

- **Moist/Wet method of cooking-** food is cooked by liquid or moisture such as steam. Examples include the following: **Boiling, Stewing etc.**

- **Dry method of cooking- food is cooked by dry heat or fat. Examples include the following: Roasting, grilling etc**

### **Activities**

- Explain what preparation and cooking is.
- Explain the meaning of **Heat and temperature**
- Discuss the **three fundamental modes of heat transfer**
- Discuss the two main classes of methods of cooking and their examples.
- Discuss the merits and demerits of dry methods of cooking
- Discuss different types of measurement of heat on the stove.

## UNIT 11

### UNDERSTANDING PREPARATION AND COOKERY TERMS

#### Introduction

This unit discusses the different meanings of various types of preparation and cookery terms. Students will also practice to prepare and cook using the techniques of cookery terms.

#### Learning Outcomes

As you study through this unit, you are expected to:

- Distinguish preparation and cookery techniques
- Explain the various meanings of the preparation and cookery techniques
- Discuss the activities associated with preparation techniques
- Discuss the activities associated with cookery techniques
- Demonstrate different preparation and cookery techniques of meat cookery

#### PREPARATION TECHNIQUES

**Beat** – To blend a mixture of food quickly with the goal of making it smooth and adding as much air as possible.

**Blanch** – To submerge foods in boiling water for just a few seconds, remove from the water, and refresh under cold water to stop the cooking process. Blanching is a gentle form of cooking used to loosen skins, firm flesh, and heighten colour and flavour.

**Bread** – Coating the surface of a food with a flour or breadcrumb mixture before cooking or frying, usually to create a crunchy surface.

**Chop** – To divide into small pieces with a knife or other sharp tool.

**Cream** – To work shortening (the general term for any fat used to make a soft dough), sometimes with sugar, against the side of a bowl until smooth. When making baked goods, creaming forces tiny air bubbles into the mixture, resulting in a fluffy end product.



**Cube** – Cutting food into smaller pieces, roughly the size of dice. This is somewhat ironic because dicing food produces smaller pieces.

**Cure** – To treat food by a variety of methods in order to preserve it over long periods of time from bacteria, mould, etc. Pickling soaks food in acid-based brine (usually vinegar). Corning soaks food in a salt-based brine with other seasonings.

**Dice** – Cutting into smaller pieces, roughly the size of 1/4 inch.

**Dredge** – Coating foods lightly with dry ingredients before cooking. The most common dredge is flour.

**Drizzle** – Pouring a liquid over a food in a thin stream to create a thread-like coating.

**Flambé** – Igniting a sauce or other liquid so that it flames. Liquors such as brandy are essential to flambé, since they ignite easily.

**Fine Dice** – A cube-shaped, cut 1/8 inch in size.

**Fold** – To incorporate dry ingredients or batter into whipped eggs, usually egg-white foam, without deflating the light and airy texture essential to the finished product. This is done with a rubber spatula by reaching reach down through the centre of the egg foam to the bottom of the bowl and lifting up some of the batter on top of the foam. As you turn your wrist to deposit the batter on top of the eggs, you turn the bowl a few degrees, repeating the process until there are no traces of egg white left.

**Glaze** – Brushing a food with sauce, icing, or other topping to create a shiny surface. Meat is often coated with sauce and browned in the oven for a couple minutes to create the glaze.

**Grate** – Shredding food, such as cheese, into small pieces with the use of a grater.

**Hull** – Removing the outer covering from fruits, nuts or seeds.

**Julienne** – Cutting food, usually vegetables into thin shaped pieces.

**Marinate** – To soak a food, usually meat, seafood, or vegetables, in a seasoned liquid mixture, the marinade, so that the food absorbs the flavours of mixture. Marinades also help to tenderize tough meat. Macerate is the term for soaking fruit in a similar manner.

**Mash** – To crush, beat or squeeze food into a soft state by using a fork or a masher.

**Match Cut** – A long thin cut,  $\frac{1}{4} \times \frac{1}{4} \times 3$  inches; alumette.

**Mince** – To cut into very fine pieces using a knife, food grinder, blender or food processor.

**Pare** – To cut off the outside covering. Pare is applied to foods such as potatoes, apples and others.

**Peel** – Stripping of the outer covering. Peel is applied to oranges, grapefruit, and others.

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**Puree** – To grind, chop, or mash a cooked food into a thick paste, usually with the help of a blender or sieve.

**Refresh** – Rinsing just-boiled vegetables under very cold water to stop their cooking.

**Resting** – Allowing a roasted meat to sit for 20 to 30 minutes after removing from the oven before serving. Roasted meats should always be loosely covered with aluminium foil during resting to keep them warm, but allow the juices to distribute fully throughout the meat.

**Roll** – To coat lightly with a powdery substance; to dredge.

**Score** – Making shallow or deep cuts in a decorative pattern with the point of a knife. Food such as a whole fish is often scored so that it will cook evenly.

**Shred** – To cut into many, very fine strips or pieces.

**Sift** – To shake through a fine sieve, often to combine dry ingredients like flour and sugar.

**Slice** – To slice is to cut into even slices, usually across the grain.

**Snip** – Cutting food into small uniform lengths using kitchen shears or a small pair of scissors

**Strain** – Pouring a liquid through a strainer, sieve, or cheesecloth to remove unwanted particles or to separate out solids.

**Wedge** – A wedge-shaped cut of food, usually a section of a round or oval product such as an apple or lemon

**Tenderisation, tenderization** - the act of making meat tender by pounding or marinating it

**Percolation** - the act of making coffee in a percolator

**Seasoning** - the act of adding a seasoning to food

## COOKERY TECHNIQUES

- **baking** - cooking by dry heat in an oven
- **toasting, browning** -  
cooking to a brown crispiness over a fire or on a grill; "proper toasting should brown both sides of a piece of bread"
- **broil, broiling, grilling** -  
cooking by direct exposure to radiant heat (as over a fire or under a grill)
- **frying, sauteing** - cooking in fat or oil in a pan or griddle
- **fusion cooking** -  
cooking that combines ingredients and techniques and seasonings from different cuisines
- **braising** - cooking slowly in fat in a closed pot with little moisture

- **poaching** - cooking in simmering liquid
- **roasting** -  
cooking (meat) by dry heat in an oven (usually with fat added); "the slow roasting took several hours"
- **simmering, stewing, boiling** - cooking in a liquid that has been brought to a boil
- **cuisine, culinary art** - the practice or manner of preparing food or the food so prepared
- **challah, hallah** -  
(Judaism) a loaf of white bread containing eggs and leavened with yeast; often formed into braided loaves and glazed with eggs before baking
- **Jewish rye, Jewish rye bread** -  
(Judaism) bread made with rye flour; usually contains caraway seeds
- **calamari, calamary, squid** - (Italian cuisine) squid prepared as food
- **curry** -  
(East Indian cookery) a pungent dish of vegetables or meats flavored with curry powder and usually eaten with rice
- **brown sauce, Chinese brown sauce** - a sauce based on soy sauce
- **caramelize, caramelize** - convert to caramel
- **caramelize, caramelize** - be converted into caramel; "The sugar caramelized"
- **alcoholise, alcoholize** - make alcoholic, as by fermenting; "alcoholize prunes"
- **alcoholise, alcoholize** -  
treat or infuse with alcohol; "alcoholize the fruit and let them sit in the refrigerator"
- **conserve** -  
preserve with sugar; "Mom always conserved the strawberries we grew in the backyard"
- **pickle** - preserve in a pickling liquid
- **salt** - preserve with salt; "people used to salt meats on ships"
- **marinade, marinate** - soak in marinade; "marinade herring"
- **can, tin, put up** - preserve in a can or tin; "tinned foods are not very tasty"
- **brine** - soak in brine
- **fortify, lace, spike** - add alcohol to (beverages); "the punch is spiked!"
- **fortify** - add nutrients to; "fortified milk"

- **boil down, concentrate, reduce** -  
cook until very little liquid is left; "The cook reduced the sauce by boiling it for a long time"
- **boil down, decoct, concentrate, reduce** -  
be cooked until very little liquid is left; "The sauce should reduce to one cup"
- **bake** - cook and make edible by putting in a hot oven; "bake the potatoes"
- **oven bake** - bake in an oven; "oven bake this chicken"
- **brown** - fry in a pan until it changes color; "brown the meat in the pan"
- **coddle** - cook in nearly boiling water; "coddle eggs"
- **fire** - bake in a kiln so as to harden; "fire pottery"
- **farce, stuff** - fill with a stuffing while cooking; "Have you stuffed the turkey yet?"
- **baste** - cover with liquid before cooking; "baste a roast"
- **souse** - cook in a marinade; "souse herring"
- **micro-cook, microwave, nuke, zap** -  
cook or heat in a microwave oven; "You can microwave the leftovers"
- **crispen, toast, crisp** - make brown and crisp by heating; "toast bread"; "crisp potatoes"
- **shirr** - bake (eggs) in their shells until they are set; "shirr the eggs"
- **parboil, blanch** - cook (vegetables) briefly; "Parboil the beans before freezing them"
- **over boil** - boil excessively; "The peas are over boiled"
- **fricassee** - make a fricassee of by cooking; "fricassee meats"
- **stew** - cook slowly and for a long time in liquid; "Stew the vegetables in wine"
- **jug** - stew in an earthenware jug; "jug the rabbit"
- **simmer** - boil slowly at low temperature; "simmer the sauce"; "simmering water"
- **roast** - cook with dry heat, usually in an oven; "roast the turkey"
- **barbecue, barbeque, cook out** -  
cook outdoors on a barbecue grill; "let's barbecue that meat"; "We cooked out in the forest"

## TYPES OF COOKING

- **BOILING** - is the method of cooking food in boiling water, or other water-based liquids such as stock or milk. Simmering is gentle boiling In poaching the cooking liquid moves but with minimal size of bubbles. Boiling relies on convection of liquids for transfer of heat.

- **BAKING-** is a method of cooking food that uses prolonged dry heat, normally in an oven, but also in hot ashes, or on hot stones. The primary source of heat is radiation. Fans within the oven will increase cooking times via convection of the air.
- **BROILING-** is cooking by exposing food directly to radiant heat. Broiling differs from roasting and baking in that the food is turned during the process so as to cook one side at a time.
- **STEAM--**Steaming works by boiling water continuously, causing it to vaporize into steam; the steam then carries heat to the nearby food, thus cooking the food. The food is kept separate from the boiling water but has direct contact with the steam, resulting in a moist texture to the food.
- **PAN FRYING-** Pan frying is a form of frying characterized by the use of minimal cooking oil or fat (compared to shallow frying or deep frying); typically using just enough oil to lubricate the pan. In pan frying or sauteing the intensity of the flame and type of pan used is critical.
- **DEEP FRY--** Cooking in oil has many advantages and is a fast method. Oil not only reaches much higher cooking temperatures than water but also it has a lower "specific heat capacity than water". This will allow it to heat up much quicker than water.
- **PRESSURE COOKING--**Pressure cooking is the process of cooking food, using water or other cooking liquid, in a sealed vessel, known as a pressure cooker. [Pressure cookers](#) are used for cooking food faster than conventional cooking methods, which also saves energy. The increased pressure under a sealed environment allows for higher temperatures.
- **MICROWAVE COOKING-**A microwave oven cooks food because the "water molecules inside it absorb the microwave radiation" and thereby heat up and heat the surrounding food.
- **COMBI OVEN--** is an oven with three functions: convection, steam and combination cooking.[Combi ovens](#) in the convection mode, the oven circulates dry heat. The steam mode injects water into the oven to keep the food moist
- **SOUS VIDE-** In [sous vide cooking](#) food is vacuum sealed in a plastic bag and then cooked in water that is a specific temperature. Heat is transferred from the water to food via conduction. Sous vide devices that have the ability to circulate the water (convection) are more effective.

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## COOKERY TECHNIQUES

**Al dente** – This Italian expression meaning "by the tooth" describes pasta cooked a shorter time so that it has just slight resistance when chewed. Fresh pasta is too soft already to be cooked al dente. The term also describes cooking vegetables until crisp by steaming, boiling, or stir-frying.

**Bake** – Cooking food in the oven. While roasting is often used as a synonym for baking, the terms are actually different. Roasting describes cooking food at a higher temperature to brown the surface of the food quickly.

**Baste**– To moisten food during cooking with pan drippings, sauce, or other liquid, Basting prevents foods from drying out.

**Boil** – To heat water until bubbling vigorously and also to cook food in water that is bubbling vigorously. Most often, foods should be poached instead of boiled, because boiling tends to dry out and break down food too much.

**Braise** – To cook in a small amount of liquid (also called stewing or pot roasting), rather than being submerged in liquid, as in boiling/poaching. Braising usually concentrates the food's flavour in the surrounding liquid for the purpose of making a sauce or coating.

**Broil** – Cooking close to a direct heat source, such as a gas flame or an electric coil. Broiling cooks food in just a couple minutes with a nice browned exterior (especially good for tender steaks).

**Caramelize** – To gently brown natural sugars and other compounds in food over low heat to produce a more intense flavour. Aromatic vegetables, especially carrots and onions, and stew meats are often caramelized in a small amount of fat.

**Deep-fry** – To cook completely submerged in hot oil. If done right, at the proper temperature, foods absorb little oil and are surprisingly light. The moisture in the food actually repels the oil, which heats the water within the food, and steams it from the inside out.

**Deglaze** – To loosen the cooked ingredients and caramelized juices that have stuck to the bottom of the pan after sautéing or roasting to release the full flavour of the meal. Usually deglazing is done with wine or stock to create a sauce.

**Degrease** – To skim off fat that forms on the tops of simmering broths, sauces, and other liquids.

**Panfry** – Panfry and sauté both mean to cook quickly in a small amount of hot oil, butter, or other fat. Strictly speaking, pan frying means to cook larger pieces, like meat, in a hot pan, turning only once or twice. Sautéing means to toss foods over high heat.

**Roast** – Cooking in an uncovered pan in the oven to produce a well-browned exterior and a moister, cooked interior. During roasting, no liquid (such as water or wine) comes into contact with the food.

**Poach** – To cook in liquid held just below boiling so it just shimmers slightly on the surface

**Parboil** – To cook partially in boiling water.

**Grill** – Cooking above a heat source, such as traditional wood coals or charcoal, in the open air.

**Reduce or Reduction** – The technique of cooking liquids down so that some of the water they contain evaporates. Reduction is used to concentrate the flavour of a broth or sauce and, at times, to help thicken the sauce by concentrating ingredients such as natural gelatine.

**Sear** – To brown food, usually meat, quickly over very high heat to seal in juices. Thus, seal is often used interchangeably with sear. Searing can be done under a broiler, in a skillet, or in a very hot oven.

**Etouffee** – The French term à l'étouffée, meaning "to smother or suffocate," refers to a method in which foods are cooked over low heat with a minimal amount of liquid in a tightly covered pan.

### **Bake**

To cook food in an oven using dry heat.

### **Baste**

To moisten food while cooking by spooning, brushing, or squirting a liquid, such as meat drippings to stock, to add flavour and prevent it from drying out.



**Beat**

To stir rapidly in a circular motion to make a smooth mixture, using a whisk, spoon, or mixer.

**Braise**

To cook first by browning the food in butter or oil, then gently simmering in a small amount of liquid over low heat for a long period of time in a covered pan until tender.

**Broil**

To expose food to direct heat on a rack or spit, often used for melting food like cheese.

**Brown**

To cook over high heat (usually on the stove-top) to brown food.

**Caramelize**

To heat sugar until it liquefies and becomes a syrup.

**Chop**

To cut vegetables into large squares, usually specified by the recipe.

**Cream**

To beat ingredients (usually sugar and a fat) until smooth and fluffy.

**Cube**

Like chopping, it is to cut food into small cubes, usually about 1/2 inch.

**Dash**

1/8 teaspoon.

**Dice**

To cut into small pieces, usually 1/4 to 1/8 chunks.

**Dollop**

A spoonful of a semi-solid food, like whipped cream or mashed potatoes, placed on top of another food.

**Dredge**

To lightly coat uncooked food with a dry mixture, usually with flour, cornmeal, or bread crumbs, to be pan fried or sautéed.

**Dress**

To coat foods with a sauce, such as salad.

**Drizzle**

To pour liquid back and forth over a dish in a fine stream, usually melted butter, oil, syrup, or melted chocolate.

**Dust**

To coat lightly with a powdery ingredients, such as confectioners' sugar or cocoa.

**Fillet**

To cut the bones from a piece of meat, poultry, or fish.

**Flambé**

To drizzle a flammable spirit over a food while its cooking, to ignite the just before serving.

**Fold**

To combine light ingredients, such as whipped cream or beaten eggs whites, with a heavier mixture, using a over-and-under motion.

**Glaze**

To coat foods with mixtures such as jellies or sauces.

**Grate**

Creates tiny pieces of food, best for things like cheese to melt quickly or a vegetable used in a sauce.

**Grease**

To coat the interior of a pan or dish with shortening, oil, or butter to prevent food from sticking during cooking.

**Julienne**

Cutting vegetables until long, thin stripes, approximately 1/4 inch thick and 1 inch long.

**Knead**

The process of mixing dough with the hands or a mixer

**Marinate**

To soak in a sauce or flavoured liquid for a long period of time, usually a meat, poultry or fish.

**Mince**

To cut as small as possible, most commonly used with garlic.

**Pan Fry**

Cook larger chunks of food over medium-heat, flipping once only.

**Parboil**

To partially cook by boiling, usually to prepare the food for cooking by another method.

**Poach**

To cook gently over very low heat, in barely simmering water just to cover.

**Pinch**

1/16 teaspoon.

**Purée**

To mash or grind food until completely smooth.

**Roast**

Like baking but concerning meat or poultry, it is to cook food in an oven using dry heat.

**Sauté**

To cook small pieces of food over a medium-high heat with oil in a pan, usually to brown food.

**Scald**

To heat liquid almost to a boil until bubbles begin forming just around the edge.

**Sear**

To brown the surface of meat by quick-cooking over high heat into order to seal in the meat's juices.

**Shred**

Done on a grater with larger holes, resulting in long, smooth stripes to cook or melt.

**Simmer**

Bring a pot to a boil, then reduce the heat until there are no bubbles.

**Skim**

To remove fat or foam from the surface a liquid.

**Slice**

To cut vertically down, thickness sometimes specified by the recipe.

**Smidgen**

1/32 teaspoon.

**Steam**

To cook food on a rack or in a steamer set over boiling or simmering water.

**Steep**

To soak a dry ingredient in a liquid just under the boiling point to extract the flavour, such as with tea.

**Stew**

To cook covered over low heat in a liquid for a substantial period of time.

**Whip**

To beat food with a whisk or mixer to incorporate air and increase volume.

**Whisk**

To beat ingredients with a fork or a whisk.

**Zest**

The outer, coloured peel of a citrus fruit.

**BAKE** - To cook in an oven

**BEAT** - To mix with a fast, regular motion, lifting the mixer over and over as with an egg beater or electric mixer **BOIL** - To cook in liquid or water in which bubbles rise continually.

**CARAMELIZE** - To heat sugar or foods containing sugar until it browns.

**CASSEROLE** - A covered bowl in which food can be baked and served.

**CREAM** - To soften a fat, like shortening or margarine, with a spoon before you add other ingredients or when adding sugar.

**CUT IN** - To mix in fat, like shortening or margarine, into dry ingredients until the mixture resembles corn meal or little pebbles.

**DASH** - Just a tiny bit, less than 1/8 teaspoon.

**DICE** - To cut into small cubes. **DOUBLE BOILER** - Two saucepans, made so that one pan may be put into the other.

**FOLD** - To combine ingredients by gently lifting ingredients from the bottom of the bowl over the ingredients on the top. **FRY** - To cook in fat, either in a saucepan with a little bit of fat, or deep-frying by cooking in a deep layer of fat

**KNEAD** - To push down, fold and stretch a dough.

**LUKEWARM** - A temperature of a liquid so that when you sprinkle the liquid on your wrist it does not feel warm or cold.

**MINCE** - To cut into very small pieces.

**PARE** - To cut off the outside covering, like peeling off apple skin.

**RECONSTITUTE** - To restore concentrated food, like frozen orange juice, to its original state by adding water. Food Preparation Terms

**SAUTE** - To brown or cook in a small amount of fat.

**SIMMER** - To cook a liquid just below boiling, where bubbles form slowly and break just below the surface.

STEW - To simmer food in a small amount of liquid. WHIP - To beat rapidly to incorporate air and increase volume.

#### Substitutions FOR SUBSTITUTE

1 tablespoon flour (used as a thickener)

1/2 tablespoon cornstarch, potato starch, arrowroot starch, OR 1 tablespoon tapioca (quick cooking)

1 cup corn syrup 1 cup sugar plus 1/4 cup liquid 1 cup honey 1 1/4 cups sugar plus 1/4 cup liquid 1 ounce chocolate 3 tablespoons carob chips plus 1 tablespoon fat 1 cup buttermilk 1 tablespoon vinegar plus Rich's or Mocha Mix non-dairy creamer to equal 1 cup

#### Activities

- Distinguish preparation and cookery techniques
- Explain the various meanings of the preparation and cookery techniques
- Discuss the activities associated with preparation techniques
- Discuss the activities associated with cookery techniques
- Demonstrate different preparation and cookery techniques of meat cookery

## **COOKERY OF VARIOUS TYPES OF MEAT AND FISH DISHES**

### **Introduction**

This unit introduces you to cookery of animal meats using the three main methods of cooking thus dry, moist and combination methods.

### **Learning Outcomes**

As you study through this unit, you are expected to:

- Explain different methods of preparation or cooking of the various meats
- Explain the preparation and cookery terms associated with meat cookery
- Demonstrate different preparation and cookery techniques of meat cookery

## **PEAPARING BEEF**

### **Preparation techniques of meat**

- **Wiping** - Wipe surface of meat with damp kitchen paper. Trim off any excess fat. Do not remove all the fats as this helps flavor and keeps the meat moist.
- **Trimming**
- **Soaking** - **Soak** salt meat for about 3 hours to remove excess salt. If possible have any special preparation such as chopping or preparing a crown roast of meat done by the butcher
- **Cutting**
- **Marina ding**

### **Boning meat**

- **How to bone meat**

Meat can be boned to make it easier to carve a more compact shape and (when the cavity is filled with stuffing) to make it more substantial. If given advance notice, the butcher will bone a piece of meat for you.

### **Some hints to consider on how to bone meat**

- Use a small sharp knife, follow round the shape of the bone closely, keeping the knife flat against the bone
- Scrape as much of the meat from the bone as possible to avoid waste.
- Roll the meat away from the bone as you free it to help you see where you are going

## HOW TO CARVE

- Carving is not difficult provided you know roughly where the bones are and have the right tools for the job.

### Some hints to consider on how to carve meat

- Use a large sharp knife and a carving fork with a guard .
- leave the joint to stand in warm place for about 10 minutes before carving. This will firm up the meat and make carving easier and more economical.
- Try to work out where the bone are, if any before you start carving.
- Carve across the grain where possible. This shortens the fibres and makes the meat more tender to cut.

## COOKING MEAT

### COOKING TEMPERATURE FOR COOKING MEAT

From a safety perspective, hotter temperatures at the center of the meat are safer. However, safe cooking temperatures vary for different types of meat. Beef has a wider safety range, but lovers of rare meat are safer sticking to steaks, roasts, and chops Safe cooking temperatures for different meats are:

- **Poultry:** 165°F (73.9°C) for whole or ground poultry. Poultry should never be eaten rare. Undercooked poultry can spread salmonella and other diseases. You should always cook it thoroughly.
- **Ground meats:** 160°F (71.1°C) for ground meats such as beef, pork, and lamb. While whole cuts of meat typically have most bacteria on their surfaces, ground meats may have bacteria mixed throughout. Therefore, they must be cooked to a higher temperature than whole cuts of meat.
- **Whole meat:** 145°F (62.8°C), and the meat should be allowed to rest for at least three minutes before eating. The resting time gives the heat more time to kill any bacteria.

Meat is cooked by the two main methods of the following:

- a. Moist method e.g boiling, stewing, braising, pot roasting
- b. Dry method e.g grilling, roasting. frying

## **DRY METHODS OF COOKING MEAT**

### **ROASTING MEAT**

- Roasting is best reserved for cooking for the top quality joints as it is a dry method of cooking. Less tender piece of meat are best cooked with some liquid, braised, pot-roasted or stewed. There are two methods of roasting, high temperature and slow roast. High temperature roasting causes the meat to shrink more than a slow roast, but some claim the meat develops a fuller flavor. Only the best cuts such as sirloin and fillet can take this method as it does nothing to tenderize the meat and may easily overcook it. The slow roast can used on method on medium grade meat such as rib roasts and leg of lamb and pork. The meat is cooked at a lower temperature for a longer time. It shrinks less and is more likely to be succulent. If you are not sure of the quality of your meat, this method is perhaps the safest one to use.
- Beef has a wider safety range, but lovers of rare meat are safer sticking to steaks, roasts, and chops.

### **GILLING MEAT**

A quick cooking method for tender cuts of meat such as steaks, chops sausages and bacon.

**Helpful hints:** prepare accompaniments before you start grilling meat. Grease the grid before adding meat to prevent it sticking. Always start the grilling under a high heat to seal the meat. Baste lean meat occasionally with fat or marinade to prevent it drying out. For thicker pieces of meat, reduce heat after sealing and cook until done to your liking.

**What to serve with grilled meat:** grills are traditionally served with fried, tomatoes, mushrooms and with sprigs of water-cress garnish. Lemon parsley butter or garlic butter are delicious on top of steaks and chops.

### **FRYING MEAT**

Only small tender quick- cooking meats should be fried. It is an idea method for chops, steaks, sausages, bacon and offal such as liver and kidney.

**Helpful hints:** all cuts for frying must be under 3cm (1in) thick. Use a large, heavy-based pan which will cook the meat evenly. Oil is best for frying as it can be heated to a high temperature



without burning. For a good flavor, half oil and half butter can be used. Have the fat really hot before adding the meat to seal it quickly, then reduce heat to complete cooking. Meat can be seared before frying to give a crisp surface which protects it from drying in the hot fat and prevents it from breaking up as it cooks.

## **MOIST METHODS OF COOKING MEAT**

### **STEWING AND CASSEROLING MEAT**

Stewing and casseroling are virtually the same the only difference is that a stew is cooked on the hob and a casserole in the oven. Stewing is a method of tendering tougher cuts of meat, such as shin of beef. The meat is cooked slowly in liquid which can be stock, wine, beer or water. There are two methods of stewing meat, the cold start where all the ingredients are placed in the pan together and brought slowly to boil, and the fry start, where the meat is first fried to seal and brown it before adding the liquid.

**Helpful hints:** stew meat gently to tenderize it cook the stew for the time stated until the meat is just tender over cooking can reduce meat to shreds or make it tough again cut meat into small pieces to help the tenderizing process use a saucepan or casserole with a well fitting- lid to prevent steam escaping and the stew drying up.

Be adventurous with flavoring, replace stock with wine or beer, and adding herbs or spices to give a variety of tastes. Do not use too much liquid. Less liquid will give a richer gravy.

**What to serve with stews:** a richly flavored stew is best served with a plain accompaniment such as boiling or steamed potatoes, rice or pasta. A crisply cooked green vegetable or salad completes the meal. Stew can be served as a meal in themselves with dumplings, sliced potato or scone topping or topped with a pie crust.

**Freezing:** cool stew, and when cold pack into a rigid container, leaving 3cm (1 in) at the top to allow for expansion. Seal label and saucepan and heat gently until heated through.

**Storing:** stew can be made a day in advance, allowed to cool and stored over night in the refrigerator.

### **BRAISING MEAT**

Braising and pot-roasting are both a combination of frying and steaming. They are suitable cooking methods for joints which are not quite tender enough to roast. Only joints are pot-roasted, whereas chops and smaller pieces of meat can be braised. Pot-roasted meat is cooked in a tightly covered pan with a small amount of liquid or sometimes with fat alone. Braised meat is also cooked in a tightly covered pan but on a bed of vegetable and with stock.

**Helpful hints:** cook the meat slowly over a low heat cover the pan with a well fitting lid, placing a piece of foil between pan and lid if necessary to make a better seal. Use root vegetable for a braise. Replace stock with wine, beer or diluted soy sauce. Add herbs or spice to the cooking liquid, then serve the meat with the strained and thickened stock.

**Using pressure cooker:** meat can be braised or pot-roasted very successfully in a pressure cooker. Do not pressure cook in fat alone, 1.5kg (3lb) in weight. Check manufacturers instructions for times and amount of liquid, although as a rough guide, reduce the normal cooking time by two-thirds. Do not add any thickening to the stock before pressure cooking.

## **BOILING MEAT**

This method is particularly suitable for salted and cured meat such as bacon and salt beef. Tongues are also cooked by boiling. Many continental sausages are cooked by gently simmering, but their cooking times vary as some are partly cooked either by boiling or smoking. Vacuum packed boiling rings of light smoked pork are quickly cooked and be served hot with vegetables or cold with salads.

The traditional pot-au-fer of France is really two dishes: a beef broth in which vegetables and meat are cooked and a piece of boiled beef which is served as a separate course. A piece of top rump silverside is usually chosen for this dish.

**Helpful hints:** do not add meat to boiling water. Cover with cold water and bring slowly to simmering point. Do not fast boil the liquid it should be barely simmering. Boil the meat slowly and gently to help tenderize it. Use a pan with a tightly fitting lid.

**Using a pressure cooker:** follow manufacturer's instructions. Do not have the pan more than one-third full with water : water does not need to cover meat in a pressure cooker. Cook for one-third normal cooking time, then reduce pressure slowly.

**Soaking:** cured meat such as salt beef, bacon and salt tongue need soaking before boiling. Cover with cold water in a basin for six hours or overnight (salt tongue needs only 2 hours). If time is

short cover with cold water in pan and bring to boil slowly. After both hot and cold soaking, discard soaking water and cook with fresh.

## **CUTS OF BEEF AND SUITABLE METHODS OF COOKING THEM**

It is important to choose the correct cut for the method of cooking. The most tender piece can be cooked by dry heat i.e grilled or roasted. The less tender although generally more flavorsome cuts, are best cooked a moist cooking method such as stewing braising or pot roasting

- **Brisket:** an economical joints sold on the bone or boned and rolled. It has high percentage of fats and needs a slow, moist cooking method but the flavor is good pot-roast or braise. Also sold pickled in which case it is best boiled.
- **Chuck and blade:** this is lean meat from the shoulder which is removed from the bone and used for braising stewing and pies. Also called shoulder.
- **Fillet:** this is the most tender cut of beef it forms parts of the sirloin and also sold separately. It is cut into steaks for grilling or frying, or cooked in a piece.
- **Flank:** often divide into flank skirt and thin skirt. This cut needs a moist cooking method it has a full flavor and benefits from braising pot- roasting and stewing thin skirt cut into long thin strips across the grain can be stir-fried
- **Neck and clod:** a rich flavored meat ideal for stews
- **Leg:** ideal for stewing cut producing a richly flavored gravy
- **Ribs:** sold as grilling or frying steaks on the bone or boned and rolled for roasts, an entrecote steak is cut from the fore and rump rib end. This, ribs are divided into different cuts. Wing ribs also called standing ribs or best chine is an expensive cut for roasting as it is next to the sirloin. Back ribs and top ribs are less expensive and best braised or pot-roasted. The rib eye is a boneless, piece from the rib fore are similar to wing ribs the main difference being the length of the bone.
- **Rump:** the perfect steak for grilling and frying it is not the most tender steak but it has a full flavor also called pope's eye
- **Shin:** excellent meat for stews and soups produces a rich flavor some stock particularly when cooked with bone.

- **Silverside:** sold fresh pickled or salted traditionally boiled but can be braised roasted or pot roasted very lean meat with no bone.
- **Sirloin:** a tender and delicious cut. Can be roasted in the piece or cut into steaks. The fillet is found on the inside of the sirloin bone and fillet and sirloin together make an excellent roasts. The sirloin from both sides of the carcass when undivided are known as baron of beef. T- bones sirloin and porterhouse (chateaubriand) steaks come from the sirloin. The joints for roasting can be bone-in or boneless.
- **Top rump:** also called thick flank leg of beef or first cutting. A lean cut, cut sold sliced and ready for frying or grilling. As a joints it needs a slow, moist cooking method. Pot-roasting is ideal.
- **Topside:** a lean cut often sold boned and rolled with layer of fat tied round it. Can be roasted but cook` it slowly and serve it under done to preserve its tenderness. Best pot-roasted or braised. Maybe called buttock steak

## VEAL

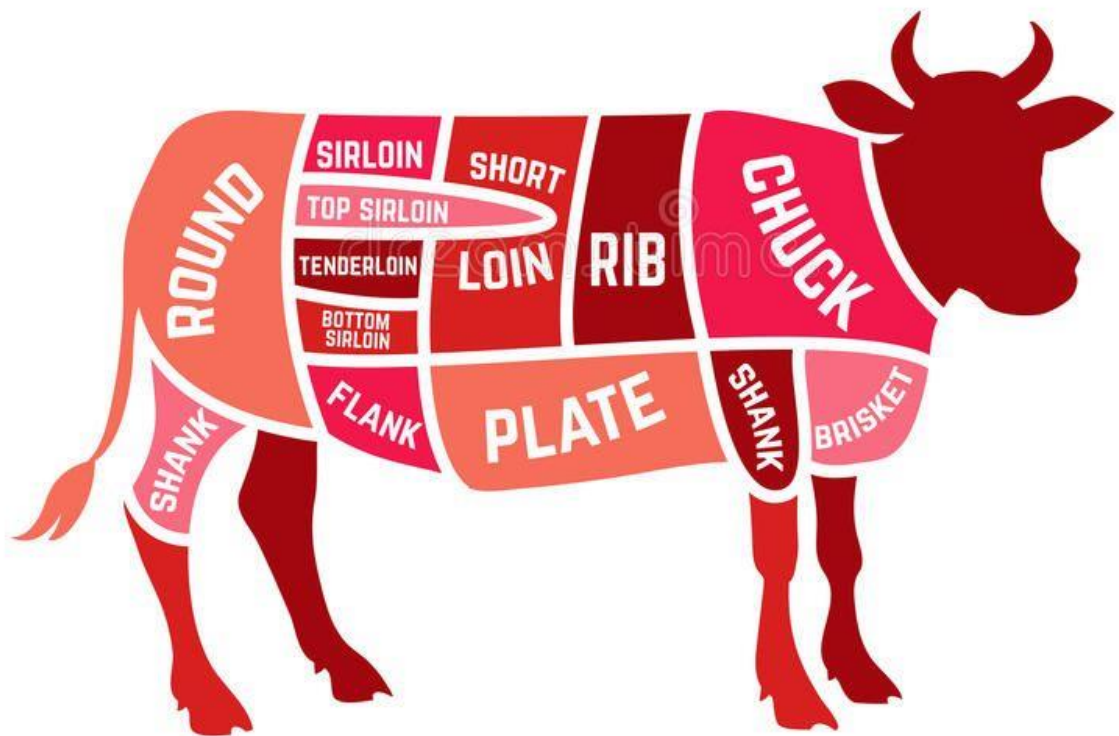
- **Best end of neck:** a roasting or braising joint
- **Breast:** usually sold boned this cheaper cut can be rolled and tied either as it is or with stuffing. It is very good pot-roasted or braised
- **Escalop (schnitzel):** these are usually cut from the topside fillet or best end of neck. Flatten than shallow fry or grill.
- **Fillet:** these are very thin slice cut from the leg. The are very lean and can be flattened and fried, cooked in a sauce or stuffed and rolled
- **Knuckle:** knuckle of veal is cut into rounds with the marrow bone in the centre. Traditionally stewed for osso bucco.
- **Loin:** a succulent roasting joint. Veal chops are also cut from the loin.
- **Neck:** a stewing cut that needs slow, moist cooking. It can be cut into piece for pies.
- **Pie veal:** small piece of shin, leg and neck for use in veal and ham pies, stew or in sauces.
- **Scrag:** a stewing or braising cut.
- **Shoulder:** a large joint usually boned rolled and tied then cut into pieces. Can be stuffed. Roast, braise or use in stews and sauces.
- **Veal:** the color of veal should be pinkish beige with no dark or discolor patches it should be very lean and moist with no juice running from it.

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# BUTCHER SHOP

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## BEEF CUTS



### LAMB AND MUTTON

### COOKING LAMB AND MUTTON

### CUTS OF LAMB AND MUTTON AND SUITABLE METHODS OF COOKING THEM

- **best end neck:** also called ribs loin. Can be roasted whole or cut into cutlets very sweet, lean meat. Cutlets which are boned and rolled are called noisettes the whole best end can be boned

stuffed and rolled there are seven joint to each best end and tied back to back they make a crown roast. Two best ends placed with the bone tips crossing are called a guard of honour.

- **Breast:** an economical, fatty cut which can be boned, stuffed and rolled for roasting, or cut into strips and cooked Chinese style instead of pork spare rib.
- **Leg:** an excellent lean roasting joint either on the bone or boned and stuffed it is often divided into fillet and shank ends. The fillet ends is the best roasting piece with a small amount of bones. The shank end can also be roasted and is very good for stews braises and kebabs also cut across the bone into steaks and chops. Leg is also known as gigot.
- **Loin:** a lean joint, skinned but with a thin covering of fats. A whole loin from both sides of the animal is called a saddle. More often divided into chump end and loin end ( or mid-loin) these pieces are then cut into loin (mid-loin) chops and chump chops for grilling and frying. Chump chops are meatier than loin chops.
- **Middle neck:** usually cut into chops for stews. Has a large bone which is sometimes removed by the butcher and the meat sold in a piece. Middle neck and shoulder are sold together as forequarter
- **Shoulder:** a very good roasting joint which is cheaper then leg. It can be boned and stuffed, which makes carving much simple. The meat can also be used for stews and kebabs. Shoulders is also cut in half to make a blade half shoulder and knuckle half shoulder, and into shoulder chop. The blade half has a higher proportion of meat to bone than the knuckle
- **Scrag or shank:** a stewing cut with a high proportion of bone and fat cut good flavor

## COOKING GOAT MEAT

- **It does have a strong flavour and aroma when cooking. “This is likely why beef is more popular because it is mild.”**
- There are many ways to cook goat meat, all requiring slow cooking and low heat, plus moisture to tenderize the meat.
- Farmed goatmeat is easy to cook and is tender, juicy and mild in flavor. Depending on the cut, similar to quality lamb and beef, it can be prepared by grilling, rotisserie, broiling roasting, sautéing, pan-frying, braising and stewing.

- Cuts of goat include cheeks, chops, legs, shoulders and legs, “Don’t treat goat like lamb and serve it rare. It should be cooked thoroughly otherwise it will be tough and unappetizing. Goat benefits from long, slow cooking in order to break down the collagen in the meat.”
- If you are looking for starter recipe ideas, consider a simple curry recipe but with goat instead of pork, beef or chicken.
- Goat meat is lower in fat content and has less marbling in its meat, it is very tender and can be prepped over low heat to preserve tenderness and juiciness.

## COOKING PORK

- Pork should always be cooked to at least the high end of medium because it can carry potentially dangerous worms and parasites.

## CUTS OF PORK AND SUITABLE METHODS OF COOKING THEM

Pork should always be cooked to at least the high end of medium because it can carry potentially dangerous worms and parasites.

**Belly:** also called spring, draft or flank. Thick end of the belly can be stuffed to make an economical roast. Sliced belly can be grilled, fried or cooked in a sauce. It can also be braised or stewed, or minced for pies and pates. Also pickled for boiling.

**Back:** prime back is sliced into rather or thick chops. It can be grilled, fried or baked. It can also be bought as one piece for boiling or braising. Long back is usually sliced into rashers for grilling or frying.

**Collar:** is cheaper joint which can be boiled or braised. It is also sliced into rashers.

**Forehock:** is a good joint for casseroles, or the meat can be removed from the bone and cubed for stews. As there is a good proportion of fat, it is good for mincing.

**Ribs:** these are rib bone with a little fat and meat. Used for Chinese-style barbecued spare ribs.

**Chump end or rump:** makes an economical small roasting joints or cut into chump (rump) chops or steaks. Very lean and a small bone. (steaks are boneless)

**Hand and spring:** also called hand and hock. This is a large joint for roasting often divided into hand and shank. The hand can be roasted and is also good boiled either fresh or pickled. The shank is good for stews.

**Head:** can be boiled and made into brawn.

**Leg:** whole or divided into knuckle end ( also called hough or shank end) and fillet end the fillet end being the most expensive as the amount of bone is smaller in proportion to the meat. They are both fairly lean and the skin makes good cracking. Also called a gigot.

**Loin:** a good roasting joint on the bone or boned, stuffed and roasted. Also divided into loin and chump chops. Loin chops are sometimes sold with the kidney attached. The chump end chops are large and meaty both can be fried, grilled or roasted.

**Shoulder:** a large roasting joint which can be boned and rolled. Often divided into blade and spare rib. Blade is an economical roasting joint and can be used for braises and stews. Spare rib is lean and economical for roasting, with little fat and skin. The meat is good for pies. Spare rib chops can be grilled fried or braised

**Tenderloin or fillet:** long round strip of boneless meat found on the inside of the loin bone. Fry stuff and roast or cook like beef fillet.

**Trotters:** used to make brawn or boiled and served hot used in pork pies.

**Gammon:** this is the best cut of bacon. As it is a large piece it is generally cut into three pieces. The middle gammon is lean and meaty. Gammon rashers and steaks are cut from this piece. It can be boiled, braised or roasted. Corner gammon is a small triangular piece. It is best boiled for serving hot or cold. Gammon hock is a good piece for feeding a crowd. It has a large bone but plenty of lean meat. It can be boiled, baked or braised.

**Ham:** ham is cooked leg or gammon of bacon, served cold. The leg of the pig is often cured and cooked separately following different traditional recipes which vary from region to region.

**Middle or through cut:** is back and streaky cut together giving a double piece with a good proportion of lean to fat. Cut into rashers, it is grilled or fried. As a joint it is very good stuffed and rolled for baking.

**Streaky is a good mixture of lean and fat. It can be brought in the :** piece for boiling and is delicious cold. Thinly sliced streaky rashers can be grilled or fried.

## **BACON**

Bacon is cured from the sides and back of pig bred specially for its lean meat. All bacon is preserved in salt and it can then be smoked, or left unsmoked. Unsmoked or green bacon has a



pale rind and pink flesh; smoke bacon has a golden brown rind and darker pink flesh. Bacon from Denmark, Holland and Britain is normally mild cured and less salty than bacon from other countries such as Poland and Russia.

**Buying:** bacon should have a pleasant smell with no stickiness. The rind should be thin and smooth and the fat firm and white. Bacon can be bought ready boned and rolled in joints and it can be film wrapped or vacuum-packed. Some joints are sold in boilable bags.

**Freezing:** cured meats do not freeze as well as fresh meat. Commercially vacuum-packed bacon freezes best, either as rashers or a joint. Bacon for freezing must be very fresh. Store for 1 to 2 months or 4 months for vacuum packs. Vacuum-packed bacon stores well for longer and is stamped with a sell-by date

**Storing:** wrap bacon joints in foil and store in the refrigerator for up to 3 days. Green bacon rashers can be stored for up to 7 days, smoked for 10. Wrap in foil or place in a covered plastic container.

**Soaking bacon:** bacon that is labeled sweetcure or mild cure needs no soaking as it will not be excessively salty. Other joints should be for smoked. To soak, place the joint in a large bowl or saucepan and cover it with cold water. After soaking for the correct time, drain off the water. Use fresh water for boiling the joint. If time is short and you have no time to soak the bacon place it in a saucepan and cover it with cold water. Bring it slowly to the boil, then drain off the water and discard it. Cook fresh water.

**Back:** prime back is sliced into rather or thick chops. It can be grilled, fried or baked. It can also be bought as one piece for boiling or braising. Long back is usually sliced into rashers for grilling or frying.

**Collar:** is cheaper joint which can be boiled or braised. It is also sliced into rashers.

**Forehock:** is a good joint for casseroles, or the meat can be removed from the bone and cubed for stews. As there is a good proportion of fat, it is good for mincing.

## OFFALS

Offal also called variety meats, is the internal organs of animals. These are extremely nutritious and tasty and generally reasonably priced. They can be served as the main meat dish added to mixed meat for a richer flavor

## COOKING OFFALS

### SUITABLE METHODS OF COOKING OF COOKING OFFALS

- **Brains:** from calves, lambs and oxen. They are delicately flavored with a soft texture. They are usually boiled then fried in butter serve 1 to 2 per person.
- **Liver:** from calves, lambs, pig, oxen or poultry. A rich source of iron and B vitamins. Liver can be fried or grilled braised, casserole, minced or finely chopped in pate. Ox liver needs long slow cooking ( e.g stew or casserole) and should not be fried or grilled.
- **Heart:** from calves, lambs, pigs, or oxen. It is very lean but needs a slow, moist cooking method to prevent it from becoming dry. Delicious stuffed with a richly flavored stuffing and braised or pot-roasted. Serve 1 lamb's heart per person ½ to 1 pig's and 150 to 200g ( 6 to 8 oz) calves' or ox.
- **Kidney:** from calves, lambs, pigs and oxen. They are similar in food value to liver and are richly flavored. All except ox kidneys can be grilled or fried. All can be sliced and used in casseroles. Serve 2 to 3 lamb's kidneys per person, 1 pig's and 100g (4 oz) calves' and ox. Ox kidney is mixed with stewing steak to make steak and kidney pie.
- **Sweetbreads:** from calves and lambs (the pancreas). They have a soft texture and delicate flavor. They must be served very fresh and can be bought frozen. They are usually boiled then coated with eggs and crumbs fried in butter. Serve 75g (3oz) per person.
- **Tongue:** from calves, lambs and oxen. The meat is very lean and is often sold salted. They are boiled very slowly, then served hot with a sauce or pressed and served cold. Serve 150g (6oz) per person.

- **Tripe:** the lining of an ox's stomach, generally sold partially cooked. It must be fresh and is often sold frozen. It needs long, slow cooking in a stew or casserole. Serve 150g (6oz) per person.

Poultry are birds which are reared for table, such as chicken, turkey, duck and geese. Game are wild birds or animals which are killed sport and food. Rabbits and pigeon are also included in this section, although they are not strictly game. Game animals are hunted only at certain times of the year as they are protected by law during their breeding season. This makes them expensive, as the supply is limited. Poultry are available all the year although larger birds such as turkey and goose are reared to be at their best at peak buying times of Christmas and Easter. Chicken is a popular, nutritious and economical food. It is also versatile as it can be served in countless ways to produce wide variety of dishes. It can be roasted, braised or casseroled. Portions can be grilled or fried and older hens are steamed or boiled to tenderize the flesh. Most chickens bought these days are broilers. This means that they have been reared by modern intensive farming methods. They weight between 1 and 2kg ( 2 to 4lb) and they are young, tender birds with little fat and a bland flavor. Most are sold frozen or chilled. Some free-range birds are available from farms but they tend to be more expensive. Both broilers and free-range birds can sometimes be bought after they have been hung for a few days to develop flavor. They are called new York dressed. They are sold without being gutted, drawn or cleaned. The chicken is displayed with all body feathers removed and once bought, the butcher will clean it for you. Those sold with the innards removed are called eviscerated. The neck, liver, gizzard and heart, known as the giblets, are packed and sold with the bird. Frozen chicken usually have the giblets packed separately inside the body cavity. They should be removed before cooking and used for gravy or stock.

POUSSINS are 4 to 6 week old chickens weighting about ½ kg (1lb)

### **Activities**

- Discuss the activities associated with preparation techniques of meat cookery
- Discuss the activities associated with cookery techniques of meat cookery
- Demonstrate different preparation and cookery techniques of meat cookery

### **Assignment**

- Make a recipe booklet of various meat cookery dishes, stocks, soups and sauces include recipes on edible insects.