

S.5 notes P.1

PROTEINS FOODS

MEAT

Meat is considered to be the most important protein food of all.

As it is fast becoming a luxury item, some knowledge of the various cuts of meat and methods of cooking and storing them is essential if one is to get good value for money.

The term meat covers carcass meat;

- Beef
- Mutton
- Lamb
- Bacon
- Poultry i.e. chicken, turkey, duck and goose.
- Veal
- Pork

Structure and composition

- ❖ Lean meat is composed of the muscles that move the body in an animal.
- ❖ Muscles are composed of cells in form of long slender fibers. These muscle fibres are made of two main proteins i.e. **myosin and actin**.
- ❖ The size of the muscle fibre affects the tenderness of cooked meat:
Slender, small fibres are associated with tender meat.
Large long fibres are associated with tougher meat.
- ❖ Muscle fibres increase in size as the animal gets older so the older the animal, the tougher the meat from it.
- ❖ The parts of the animal's body that do the most physical work i.e. neck, shin, and forearm, have the largest muscle fibres and so make tougher meat.
- ❖ Individual muscle fibres are formed into bundles surrounded by substance called **connective tissue**.

- ❖ The bundles are then formed into groups which are also surrounded by connective tissue.
- ❖ Whole muscles are attached to bones by **tendons**.
- ❖ Connective tissue is made of two proteins i.e. **collagen and elastin**. Collagen is the main component of tendons and the connective tissue surrounds muscles particularly those that do most work.
- ❖ Collagen is less flexible than elastin and when heated in the presence of moisture, it is converted into soluble gelatin which greatly increases the tenderness of connective tissue and therefore of meat.
- ❖ Traditionally tough cuts of meat were cooked by slow, moist methods such as stewing to allow this conversion to gelatin to take place.
- ❖ However if tough cuts of meat are roasted slowly there is sufficient moisture within the meat to convert the collagen and make the meat tender.
- ❖ Elastin is a main component of ligaments (in between bones) and has the ability to stretch and return to its original shape. It is an insoluble and tough protein but there is less elastin than collagen in muscles so it does not have major influence on the toughness of meat.

NB.

- a) Connective tissue is a fibrous protein which is insoluble in cold water.
- b) Collagen changes to gelatin when subjected to moist heat this dissolves in water making meat tender.
- c) Elastin contracts with heat, squeezing out some meat juices and causing meat to shrink.

Fat in meat is found in the following places;

- ✓ Under the skin in adipose tissue.
- ✓ Around vital organs e.g. kidneys (suet).
- ✓ Between bundles of muscle fibres (invisible fat)
- The fat under the skin may be yellowish in colour because of the presence of carotenes from plants, depending on what the animals were fed on.
- The fat between the bundles of muscle fibres gives the meat a **marbled effect**.
- **Marbling** in lean meat is an important requirement when the meat is graded and large amounts of feeds are required to produce it. This is one of reasons why lean meat is so expensive.
- The fat content of meat helps to give flavor, moisture and texture to the cooked meat.

NB

- Fat cells are distributed between the fibres, there are more of them in some meats than others. e.g. pork contains many more than chicken.
- Good quality beef contains visible amounts of fat among the muscle fibres and this fat is called marbling
- As the animal ages, there is a buildup of fat. This is why it is un economical to buy meat from an old animal.

TENDER VERSUS TOUGH MEAT

(i)Age

- ✓ Meat from an old animal is generally tough because there is a greater amount of connective tissue and there are larger muscle fibres and more gristle.
- ✓ Meat from a young animal has short, fine fibres which have less connective tissue holding them together and little gristle.

(ii) Activity

- ✓ When the muscle is very active, the fibres become longer and thicker and connective tissue builds up to hold these large fibres together.
- ✓ When a muscle is rarely used, the fibres stay short and little connective tissue is present.
- ✓ This explains why in the same animal's neck or leg, beef is always tough whereas fillet is very tender.

(iii)Hanging

- ✓ Correct hanging can do much to improve the tenderness of meat.
- ✓ After slaughter the protein myosin sets in rigor mortis making the meat very tough.
- ✓ Gradually muscle glycogen is converted into lactic acid (glycolysis) which softens the meat assisted by proteolytic (protein- splitting) enzymes present in the meat.
- ✓ Before slaughter it is essential that animals are rested and they should not struggle during slaughter as this will use up the stores of glycogen present making the meat tough and reducing its keeping qualities.

TENDERIZING

This can be done:

(a) Before slaughter, by injecting tenderizing enzymes into the live animal.

(b) Mechanically

- ✓ Processed meat and meat for caterers is sometimes tenderized with a machine which pierces the meat with thin knives or needles. These break the fibres but release nutrients and flavor.
- ✓ Smaller quantities of meat can be tenderized if they are pounded with a heavy object such as steak hammer or rolling pin before cooking.

(c) Chemically

- ✓ By sprinkling tendering chemical over the meat or steeping the meat in a solution of them.
- ✓ Most of the chemicals contain proteolytic enzymes e.g. papain (an extract from the pawpaw tree) which help to soften the fibres and are available commercially.

(d) Cooking

- ✓ By using moist, slow methods such as stewing.

COLOUR OF MEAT

The colour of meat is mainly due to the presence of myoglobin which is a red tissue protein and hemoglobin from the blood some of which is left in the meat after slaughter.

NUTRITIVE VALUE OF MEAT

(i) Protein

- ❖ Meat is rich in high biological value protein.
- ❖ The main protein is **myosin** but **albumin** and **globulin** are also present and the connective tissue contains the proteins **Collagen** and **elastin**.

(ii) Fat

- ❖ All meat even the leanest cuts contain some fat.

- ❖ The amount of fat present in meat depend partly on the animal (chicken for instance has relatively little fat) and partly on the type of cut (streaky bacon will have a high percentage of fat than gammon).

(iii) Carbohydrate

- ❖ There are no carbohydrates in carcass meat.
- ❖ There is some glycogen in liver but this changes to lactic acid after slaughter.

(iv) Vitamins

- ❖ Meat is a good source of B group vitamins i.e. thiamine, riboflavin and niacin. Liver, kidney and pork are particularly good sources.
- ❖ Liver is rich in vitamin A and suet contains some vitamin D.
- ❖ Vitamin C is lacking in all meat although there are traces in fresh liver.

(v) Mineral element

- ❖ Meat contains iron. Liver and kidney are a good source of this.
- ❖ There are small amounts of Sulphur in most meats and offal is rich in phosphorous.
- ❖ Calcium is lacking in all meat except tripe which is a good source owing to the use of lime in its preparation.

(vi) Water

- ❖ Most meat is about 70% water. Although the proportion in fatty cuts is less.

EXTRACTIVES

- ❖ These are natural flavorings present in the tissue of meat which dissolve into the cooking liquid or fat and give meat its characteristic succulent flavor.
- ❖ They stimulate the flow of digestive juices and are said to increase the metabolic rate.

DIETETIC VALUE (THE VALUE OF MEAT IN THE DIET)

- It's food value; the amount of meat required per day is less than that of carbohydrate containing foods as it's a more concentrated source of nourishment and forms the core of the meal.
- Offal (the internal organs of the animal i.e. liver, kidneys, tripe, heart etc.) has very concentrated food value. It is usually easily digested providing that it is not over cooked

- It provides an important addition to the variety of flavors in the diet and left over gravies and meat stock can often be used to supplement the more insipid vegetable soups and sauces.
- Leftover meat may be used to make attractive and satisfying reshuffle dishes.
- It may be cooked in a variety of ways.
- It is satisfying because it takes a fairly long time to digest and hunger is not felt until three or four hours after eating a meal containing meat.

DIGESTIBILITY

- ✓ Meat can be digested raw but it is usually eaten cooked so that pathogenic organisms are destroyed and the appearance and flavor are improved.
- ✓ Cooking develops flavours which increases the secretion of digestive juices and also makes the tough connective tissue digestible. Stewed meat is particularly easy to digest.

MEAT PRODUCTION

PROCESSING

(i) Vacuum packing

- ✓ Much of the meat sold goes to meat plants where it is vacuum packed in bone less cuts for the whole sale or export market.
- ✓ These keep about three weeks stored at 0⁰c.

(ii) Freezing

- ✓ Some meat is boned, trimmed, packed and blast frozen -30⁰c.
- ✓ Ready prepared meals such as hamburgers, curries and meat slices in gravy are also frozen and packed in boxes for retail sale.
- ✓ Meat freezes well if quickly frozen and few nutrients are lost although there is some loss of B group vitamins and juices during thawing.

(iii) Canning

- ✓ Corned beef, ham, tongue and stewed meat are available canned. Some B group vitamins are lost through heat processing and the texture often becomes soft and stringy.

(iv) Drying

- ✓ Once the only method of preserving meat. It is rarely used now except when meat is accelerated freeze dried [AFD]
- ✓ Meat is chopped and used in AFD soups and ready prepared packed meals. Once reconstituted, it must be used up quickly.

(v) Curing

- ✓ Before refrigeration came into use, meat was heavily salted in order to preserve it.
- ✓ It is now possible to use milder cures which are less salty and have a better flavor.
- ✓ Bacon is the cured flesh of a specially bred pig.
- Sides of the carcass are injected with a solution of preserving salts such as sodium nitrate and potassium nitrate and subsequently soaked in a solution of brine for about four days.
- They are then hung in a chilled room to mature for about six days.
- If smoked bacon is required, the meat is subjected to smoke fumes for two to three days. Smoked meat include; bacon, ham and sausages.

HAM

- ❖ The best hind legs from bacon sides are used to make ham.
- ❖ They are cut off before curing and the rest of the side is cured separately.
- ❖ Ham cures vary i.e. Many are dry salted for one day per 400g and a 4kg ham will remain in salt for ten days. The ham is then hung to mature for few weeks, it may be smoked before maturing. Mild favoured hams are cured like bacon. Most ham must be steeped overnight before cooking.

CORNED BEEF

- ❖ This is fresh beef which has been soaked in brine in much the same way as bacon.
- ❖ The potassium nitrate (salt petre) used gives it's flesh a bright pink colour when cooked.
- ❖ Usual cuts are brisket, tail end or silverside.

SPICED BEEF

- ❖ Brisket or silverside is steeped in a dry marinade of salt, saltpetre, brown sugar, spices and herbs which are rubbed into the joint each day for ten days.

N.B:

Smoking and salting preserve the meat by slowing down enzyme action and preventing the multiplication of bacteria. This is why cured meats keep longer than fresh meat.

SAUSAGES

- ❖ The food value of sausages varies. They can contain 4-14% protein and 20-30% fat.
- ❖ Sausages may be made from the lean and fat of beef or pork.
- ❖ After these have been minced, cereals such as bread, flavorings, herbs and spices are added.
- ❖ The mixture is then encased in specially prepared intestines or edible synthetic casings.

MEAT HYGIENE

Meat of all types is particularly susceptible to bacterial contamination therefore Care should be taken at every stage of handling to eliminate the risk of food poisoning.

During production

- The animal should be tested for diseases before slaughter.
- After slaughter the carcass should be checked for infection from parasites and pathogenic bacteria.
- Strict hygiene must be observed at all stages of production as one infected animal could contaminate several carcasses.
- All machinery, knives and surfaces should be disinfected regularly and workers should keep their hands clean and wear protective clothing.
- Raw and cooked meat must never be prepared together because of the risk of salmonella poisoning.
- Temperatures should be low enough to prevent multiplication of bacteria.

At the butcher

- The shop should be clean and hygienic

- Assistants should not handle both meat and money. This is all more dangerous if the meat is already cooked as there will be no further process to destroy bacteria.
- Raw and cooked meat should not be sold, handled or prepared together.

At home

- Remove wrapping, keep fresh meat covered, but not air tight, in a cool place e.g. directly under the ice box in a refrigerator. Bacon should be stored in an air tight container. The length of time meat should be stored depends on how fresh it was when purchased and the storage facilities available. Most fresh meat should and offal should be eaten on the day of purchase.
- Meat should be removed from the refrigerator at least half an hour before cooking to bring it to room temperature. Cooked meat should also be at room temperature before it is eaten.
- Cook meat thoroughly especially pork and mince meats. Bacteria may reach the surface of meat during handling but normal cooking will destroy them. When meat is minced or chopped, however, the bacteria are spread all through it. This means it must be cooked long enough for the heat to penetrate to the very Centre of the dish and destroy all bacteria.
- Avoid keeping meat dishes warm, germs thrive in warm environment. Avoid cooling boiled meat in its own liquor. Cool left overs quickly, keep in refrigerator and use as soon as possible.

FROZEN MEAT

- Thaw large joints before cooking.
- Thaw all poultry completely, chicken for 12-24 hours; turkeys for 24-48 hours. If partly frozen meat is cooked for the normal time, the inside (often a source of salmonella bacteria) will not reach a sufficiently high temperature for the bacteria to be destroyed. Eating badly contaminated meat could be fatal.
- Never refreeze frozen meat or poultry which has thawed out unless it has been cooked in the meantime.
- Frozen meat should be used quickly after thawing as any bacteria present before freezing will start to multiply again.

CHOICE OF MEAT

- i. Buy meat from a butcher who sells fresh but well hung meat.
- ii. The shop should be kept in a hygienic condition with refrigerated storage.
- iii. Know the cuts meat and choose one suitable to the proposed method of cooking. Do not forget that the cheaper cuts are just as nutritious as expensive cuts and the flavor is equally good.
- iv. Choose meat with a small proportion of bones, fat and gristle.
- v. The meat should not have an unpleasant smell, should be moist and should have a good characteristic colour.
- vi. Ask for bones and suet to make stock and dripping.

EFFECTS OF HEAT ON MEAT

- i. Protein coagulates: it toughens if cooked too quickly.
- ii. Elastin contracts and water evaporates causing meat to shrink and juices to escape.
- iii. Collagen changes to soluble gelatin upon moist cooking.
- iv. Hemoglobin turns brown giving a cooked appearance.
- v. Fat decomposes and melts away.
- vi. Bacteria and parasites are destroyed at high temperatures and decomposition is delayed.
- vii. Meat becomes tender and digestible.
- viii. Extractives are released producing appetizing odours and flavours and some B vitamins and minerals pass into meat juice.

OFFAL

This term includes all the edible internal organs of an animal.

Structure and nutritive value vary but most organs are a good source of protein, iron and B – Vitamins.

Offal is not hung and should be eaten fresh preferably on the day of purchase.

The fresh should be firm with no unpleasant smell.

Wash well in tepid water and cut away vessels and tough parts. Dry in kitchen paper.

The following internal organs of an animal count as offal:

- Liver
- Kidney

- Heart
- Brain
- Tongue
- Sweet breads (pancreas and thymus glands)
- Tripe (stomach of an ox or sheep)
- Chitterlings (pigs intestines, often used as sausage casings)

The following parts of the body are also offal:

- Tail (e.g. ox tail)
- Feet (e.g. pigs trotters)
- Ears
- Eyes

The term is derived from two words “off fall” because the parts are removed from the carcass.

LIVER

- It's rich in protein, iron, and vitamin A with some vitamin C and a little fat.
- Lamb's liver is the tenderest.
- Pigs and calves liver have a stronger flavor
- Ox- liver is the most nourishing but tends to be strong flavoured and coarse textured.

KIDNEY

- It contains protein, iron, vitamin A and B.
- It should be very fresh, firm and plump.
- Lambs or sheep's kidney should be surround by suet.
- Remove white core and membrane before washing and cooking.
- Ox kidney is strong flavoured and much larger than sheep's kidney.

HEART

- A strong muscular organ with little fat.
- It is inclined to be tough unless cooked very carefully.

- Rich in protein and B vitamins.
- Trim well, cut central division, wash, and soak for 2-4 hours.

TONGUE

- It contains protein and fat in equal amounts.
- Rich in calcium and vitamin B.
- May be fresh or salted.

SWEET BREADS

- Usually the pancreas and thymus gland of animals.
- They are whitish, easily digested and therefore very useful in the diet of invalids and convalescents. They are sold in pairs and must be very fresh.
- Ox-sweet breads are cheapest but not as tender as those from lambs.
- Soak in cold water before use and blanch them, then remove fat.

BRAINS

- Contains very little protein and considerable amounts of fat.
- Freshness is essential.
- Calves' and lambs' are most suitable for cooking and are usually deep fried.

TRIPLE

- The lining of the stomach of an ox, cleaned and partially cooked by the butcher man.
- It is rich in the protein collagen which changes to gelatin during cooking and calcium from the salts used in its preparation.
- It's easy to digest but needs thorough cooking in a well flavoured sauce.

OX- TAIL

- Very bony.
- Good flavor.
- Used for soups and stews.

FEET

- Calves, feet used for invalid jelly.
- Pig's feet should be boiled.

CHOOSING OFFAL

- All offal, particularly the kidneys, liver and heart should be bought very fresh.
- It should be eaten within 24 hours of purchase and carefully washed and prepared before eating.
- Thorough cooking is necessary to prevent food poisoning and to tenderize the offal.
- Some types e.g. tripe and tongue are prepared at the butcher before purchase. Tripe is cleaned and boiled for 12 hours and tongue is soaked and salted (except lamb and calf tongue).

STORAGE

- Offal should be kept in a cold place and used as soon as possible after purchase.
- It can be frozen for long term storage.

METHODS OF COOKING MEAT

Most methods of cooking can be used for one or other cuts of meat but general rules are as follows, bearing in mind that the objective of cooking is to remove the raw appearance without over-coagulating the proteins or losing the minerals and extractives.

Roasting

It is suitable for good quality, tender, thick cuts, or for rolled and stuffed thin cuts.

Boiling

This is suitable for salted meats.

Grilling

This is suitable for thinly cut pieces of good quality.

Frying.

Also used for thinly cut pieces of good quality.

Stewing.

This is suitable for inferior quality meat which require long, slow cooking to make them tender and need the added flavor of vegetables to improve the characteristic insipidity.

GENERAL RULES FOR COOKING MEAT

- Wipe carefully
- Trim off fat, remove bones if necessary. Make use of all scraps.
 - a. Render down fat by heating slowly at the bottom of the oven when other cooking is being carried out, strain off liquid fat.
 - b. Use meat scraps and bones for making stock
- Cut meat which is to be stewed into cubes to expose as large an area as possible. Tie or skewer meat to be roasted into a good shape.
- Follow general rules for methods of cooking being used.
- Serve with suitable accompaniments and vegetables.

Bacon

Bacon is the flesh of pigs especially bred to produce animals with long backs and less subcutaneous fat than is found in pigs used for pork.

Curing

Brine is injected into the flesh at interval and the sides of the bacon – pork are steeped in brine –filled tanks.

Maturing

The sides are then removed from the tanks and are kept in cool rooms for 7 to 10 days to allow the flavor to develop.

Smoking

This is done to improve the flavor, appearance and increases the keeping qualities of bacon.

NOTE

Ham-This is cured by dry salting and it may be smoked or un smoked.

The “ham” itself is the hind leg of a prime pig.

Gammon- this is the hind leg of a bacon pig but is curved while still on the carcass with the rest of the side.

Green bacon, this is curved but not smoked. The flesh is pale and the rind almost white.

CHOOSING BACON

- The rind should be thin, smooth and not cracked.
- The fat should be white and firm with no yellowish or greenish tinge.
- Lean should be of a good pink colour with no traces of brown discolouration, moist and with no evidence of salt crystals.
- The smell should be fresh and pleasant.

COOKING BACON

- Joints of bacon should be soaked before cooking to remove excess salt.
- Allow boiled hams and gammons to cool in the water in which they have been cooked. This improves the flavor and prevents the bacon from crumbling easily on the outside/
- When frying rashers of bacon:
 - Remove rinds and fry them with the rashers. Dry and use for flavouring soups.
 - Lay rashers in a cold frying pan and cook slowly or rapidly according to whether soft or crisp rashers are required.
 - Let bacon cook in its own fat only.
 - Lay rashers with lean parts over fat ones when several are being cooked together.
- When grilling rashers:
 - Remove the rind and snip the edges of the fat to prevent rashers from curling.
 - Lay fat parts over lean one when cooking several rashers.

STORING BACON

- Bacon should be bought as fresh as possible and kept as cool as possible (3-4⁰c) in a larder.
- It should be wrapped in muslin or grease proof paper to protect it from flies.
- If kept in a refrigerator, it should be wrapped in foil or film or placed in a plastic or glass container and stored away from the freezing unit.

If bacon is left uncovered, the moisture will evaporate, leaving the meat dry and unappetizing.

FOOD VALUE OF BACON

- The average cut of bacon is made up of 45% fat, 41% water and 14% protein.
- Bacon is more easily digested than uncured meat.
- It is an important source of vitamin B.

MEAT PRODUCTS

- i. Brawn-chopped cooked meat from head, feet, etc. set in jelly made from reduced stock and gelatine.
- ii. Pate-a puree of liver, salt meat, flavouring and fat.
- iii. Terrine- a cooked loaf of Savoury minced meat.
- iv. Meat pies- meat and vegetables cooked in pastry and served hot or cold.
- v. Sausages and hamburger

GELATINE

Gelatine is a protein food obtained from the collagen of animals.

It is;

- ❖ transparent
- ❖ Tasteless
- ❖ Odourless
- ❖ As it sets liquids, it is used to make jelly, ice cream and other sweets.

Note

- Powdered gelatine is manufactured from bones, skin and hooves of animals.
- The collagen is converted to gelatine by simmering it in water. This is an example of hydrolysis.
- After purifying, the gelatine is concentrated and dried in granular form.
- Gelatine forms agel at low temperatures and dissolves at higher temperatures but it must never be boiled as this reduces its setting properties.

Types of gelatine

- i. Powdered-available in 15g envelopes

- ii. Leaf gelatine- sold in sheets. It is not easily available now nor is it as convenient as powdered gelatine.
- iii. Isinglass- Obtained from the sturgeon and is expensive, it is sometimes used in wine making.
- iv. Agar agar- obtained from sea wood and not true gelatine. It is useful in vegetarian cooking and is used in laboratory for the culture of micro-organisms.
- v. Aspic jelly-a form of gelatine made from meat stock and used in Savoury dishes.

NUTRITIVE VALUE

- ❖ A protein gelatine is of little nutritive value because it lacks many essential amino acids particularly tryptophan.
- ❖ As it is used in very small quantities, it forms an insignificant percentage of total protein intake.
- ❖ Never theless, if used in conjunction with cereals or high protein foods it forms a useful supplement to the diet.
- ❖ Gelatine is useful in invalid and convalescent diets as it is very easily digested.

RULES FOR USING GELATINE

- (i) Use in correct proportion: 15g to 500ml of liquid is the usual combination but more gelatine may be necessary in hot weather or when a quick set is required. Too much gives unpleasant flavor and too stiff a consistency while too little fails to set.
- (ii) Soak gelatine in little of the cold measured liquid for 10 minutes before use, then dissolve it by placing the bowl in a saucepan of hot water and stirring.
- (iii) Use at once .pour gradually, in a thin stream, into the prepared ingredients stirring all the time. If it is added too quickly, the gelatine will set in lumps.
- (iv) When it is cold and starting to thicken, pour into a wet mould. To speed up setting, place the mould on ice cubes or in cold water.
- (v) Allow to set in a cold place over night or in a refrigerator for 1-2 hours. Prolonged refrigeration will make the food dry and leathery.

TEXTURED VEGETABLE PROTEIN (SYNTHETIC MEAT)

Soya beans containing 40% protein and 20% fat are now being processed into synthetic meat which is called textured vegetable protein (TVP) or textured soya protein (TSP).

Manufacture

- ✓ Following harvesting, the oil is extracted from soya bean and the bean ground into soya flour.
- ✓ The carbohydrate is removed by washing and a protein powder is left.
- ✓ Other ingredients such as vegetable oil, seasonings and Flavourings are added.
- ✓ Flavour and colour can be used to give it a beef or chicken like appearance.
- ✓ It is then pulped and extruded or spun in much the same way as synthetic fibres are produced.
- ✓ The resulting fibres can be chopped to give a minced like appearance, cut in chunks or woven into large pieces of meat.

The most suitable dishes for TVP are;

- ❖ Stews
- ❖ Curries
- ❖ Pies
- ❖ Hamburgers

This is used in recipes where small pieces of meat are required.

TVP can be used as;

- Meat extender that is to increase the volume of fresh meat usually by one quarter
- Meat substitute.

It is sold in dried, canned and frozen form.

TVP has a shelf life of up to one year but once reconstituted, it must be used up quickly as fresh meat.

Advantages of TVP

- ❖ Slightly cheaper than meat
- ❖ Keeps well
- ❖ Contains almost as much protein as meat
- ❖ Useful to make meat go further
- ❖ Little preparation required

- ❖ No shrinkage or waste
- ❖ Ideal for vegetarians
- ❖ Assist in reducing world food shortage
- ❖ Soya beans are 100% usable, easy to grow in all climates and ideal for feeding people in under developed countries.

Disadvantages of TVP

- ❖ Many people dislike the taste, texture and smell.
- ❖ It is not yet available in large pieces
- ❖ Many ingredients are required to flavour it and make it taste.

Nutritional value of TVP

- ❖ Although TVP contains only slightly less protein than meat, as a vegetable protein food, it lacks one essential amino acid methionine.
- ❖ Vitamin B group and iron are added.
- ❖ TVP contain more calcium than meat.
- ❖ It contains less fat and therefore has a lower energy value.

Using TVP

- ❖ Reconstitute by steeping in twice its volume of cold water for 30 minutes or hot water for a shorter time.
- ❖ Use on its own or with meat in a normal way in stews, hamburgers, meat sauces etc.
- ❖ Soya protein should be used as a meat extender rather than a meat substitute
- ❖ If it is used in the ratio of 25% or less TVP to 75% meat, it can almost be indistinguishable from meat.
- ❖ If more than 25% soya is used, however, the difference in flavour and texture becomes more obvious.
- ❖ As a strong bean flavour and smell are disliked by many people, seasonings and Flavourings should be used to hide them. Frying also helps to improve the flavour.

POULTRY

Poultry is the name given to birds eaten for food and includes,

- Chicken
- Turkey
- Goose
- Pigeon
- duck

STRUCTURE AND COMPOSITION

Poultry meat has the same basic structure as other meat except that there is less connective tissue so the meat is tenderer.

The legs and wings muscles which do the most work are generally tougher and darker in colour, because of the presence of myoglobin.

With the exception of goose and duck there is less fat in the meat of poultry so it is drier when cooked. The flavor of poultry is generally not strong and develops during cooking in similar way to that of other meat.

NUTRITIVE VALUE

Chicken is an easily digested form of protein as it has little fat or connective tissue.

Duck and geese have higher percentage of fat.

Fowl provide some B-vitamins, calcium and a little iron.

COMPOSITION OF CHICKEN

- | | |
|-------------------------------|-----------|
| - Protein | 25% |
| - Fats | 7% |
| - Carbohydrates | nil |
| - Vitamins. | B1 and B2 |
| - Minerals | 1% |
| - Water | 65% |
| - Kilo calories(kc) | |
| Or kilo joules (kJ) (per100g) | 184/770 |

DIETETIC VALUE

Chicken is particularly suitable for invalid and convalescent diets because it is easy to digest.

It is suitable for infants and old people because it is easy to chew.

TYPES OF POULTRY

i. A POUSSIN

This is a very small chicken suitable for one portion [600g]

ii. A BROILER

This is a young chicken specially bred and quickly fattened to produce a good- Sized bird in a short time.

It is suitable for all methods of cooking including broiling [grilling].

iii. BOILING FOWL

Usually tough older birds which have completed a laying season.

They need to be gently stewed or braised rather than boiled.

CHOOSING POULTRY

Poultry should be chosen according to the following factors.

- (i) Appearance-Poultry meat [except for pigeon which is darker] should be pink/ white with darker meat on the wings and legs.

It should be plump and springy to the touch.

It should have a fresh smell.

- (ii) Intended use-Poussins are very young birds that are cooked and served whole or in half.

Turkeys are available in a lot of sizes particularly. Medium sized birds tend to be tenderer than larger ones.

- (iii) Nutritive value-The protein of poultry is easily digested and of high biological value.

With the exception of goose and duck. Poultry contains less fat than red meat.

There is also less iron, thiamine, riboflavin and nicotinic acid than in red meat.

BUYING POULTRY

Poultry can be purchased undrawn or drawn. It may be prepared in one of the following ways.

- (a) Trussed and packed in a plastic bags usually with the giblets inside the cavity of the bird. It is essential to keep this sort of bird under refrigeration and to remove the plastic wrapper soon after purchase to allow the free circulation of air.
- (b) Trussed, packed without giblets in a plastic bag and frozen. It is essential to thaw frozen poultry completely before cooking.
- (c) Giblets-These are the edible internal organs of the bird. They usually include the neck, gizzard, heart and liver. A quantity of liver can be used to make pate. The other giblets can be used for stock and chicken bones should also be served for stock.

METHODS OF COOKING CHICKEN

- Whole roasting chicken, may be stuffed and roasted in the oven or on a rotisserie or boiled.
- If the chicken is to be eaten cold in a salad for example, it is preferable to boil it as this way the flesh remains moist and plump. As the skin when boiled is pale and rubbery, it is best to remove it.
- Whole chickens may also be jointed and casseroled, grilled or fried.

TURKEYS

- Turkeys have large bodies in proportion to their overall size.
- The breast should be plump and the flesh firm and white.
- Frozen turkeys should be thawed for 24-48 hours until no ice at all remains inside.

USES OF POULTRY IN FOOD PREPARATION

- Chicken- Whole or joints – roast, braise, boil, casserole.
- Joints- coat in egg and bread crumbs and fry: grill, casserole. Cooked chicken can be eaten cold, in salads, snacks and picnic meals.
- Turkey- can be cooked in a similar way to chicken. Boneless turkey rolls can be roasted to provide three to four servings.

- Duck and goose-are usually roasted.To reduce the fattiness of the meat, they can be placed on a rack during cooking and pricked with a knife at regular intervals to release the fat. They are often served with a sharp acidic sauce e.g. orange sauce to counteract the greasiness.
- Bones can be boiled to produce stock for use in soups, stews and sauces.

POULTRY PRODUCTS

A variety of poultry products are available including:-

- Chicken nuggets and nibbles
- Chicken wing nuggets
- Poultry burgers
- Poultry sausages
- Chicken Kiev
- Rissoles

They are often made from poultry pieces pressed together or from mechanically recovered meat.

This is a slurry made by sucking tiny scraps of flesh under high pressure from the carcasses and the technique is used in processing poultry and other meat.

STORAGE OF POULTRY

- Freshly killed birds should be hung in a cool, dry place with all the internal organs in place. This is to ensure that the meat becomes tender before it is cooked.
Chickens are normally hung for one day, turkey for up to five days, geese and ducks for up to two days.
- Fresh poultry should be kept in a cold place after the giblets (internal organs- neck, gizzard and liver) and other organs have been removed. It should be eaten soon after purchase two to three days if kept in the refrigerator.
- Frozen poultry should be allowed to thaw completely before being cooked and then thoroughly cooked to avoid salmonella food poisoning.

be eaten within two days but mince