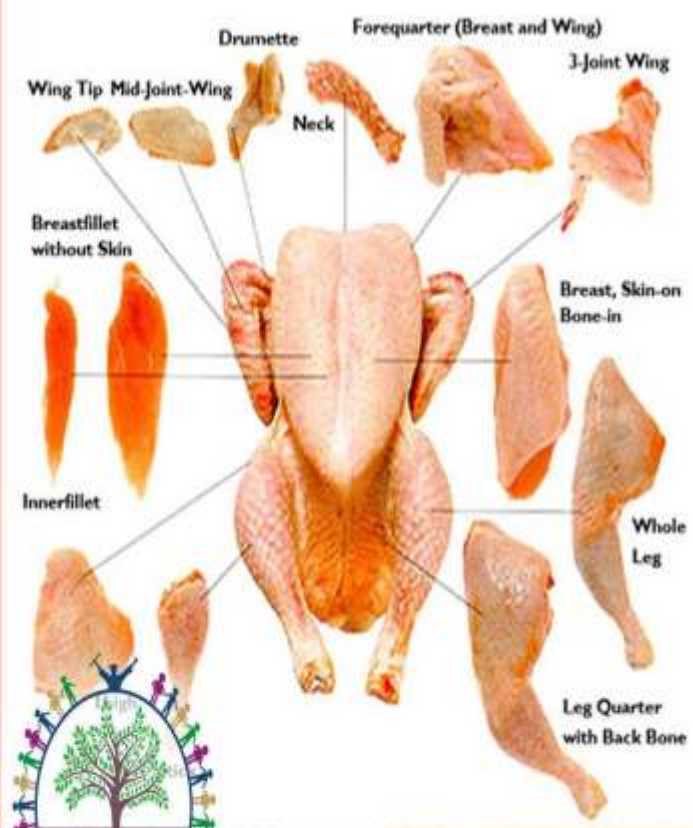




P O U L T R Y



POULTRY

- POULTRY is defined as the domestication of birds for obtaining their feathers, eggs, meat etc.
- Birds are most typically members of the super order Galloanserae , especially the order Galliformes (which includes chickens, quails and turkeys).
- The word "poultry" comes from the French word "poule", which is derived from the latin word "*pullus*" which means "*small animal*".
- It begins when people started hatching and rearing young bird wild later it is involved by eggs keeping the eggs collected from wild, later it is involved by keeping the birds permanently in captivity.
- Poultry is the second most widely eaten type of

CLASSIFICATION OF POULTRY

- POULTRY is classified on the basis of age
- The age influences the tenderness of fat and fat content which determines the cooking method.
- The classifications are as follows:
 - I. Broiler or fryer
 - II. Rooster
 - III. Stag
 - IV. Stewing chicken or fowl
 - V. cock

BROILER OR FRYER

Chicken of 8-10 weeks of age either sex having tender meat with soft pliable smooth texture skin and flexible breastbone cartilage



ROOSTER

Young chicken usually 3-5 month of age of either sex having tender meat with soft pliable smooth textured skin and with less flexible breast bone cartilage that when compared to broilers.



STAG

Male chicken usually under 10 mnths of age with coarse skin somewhat toughened and darkened flesh and a considerable hardening of the breastbone cartilage



STEWING CHICKEN or FOWL

A mature chicken usually more than 10 months of age with meat less tender than that of a rooster and inflexible breastbone tip

COCK

A mature male chicken usually over 10 months of age with coarse skin toughened and darkened meat and hardened Breast bone tip



NUTRITIONAL ASPECTS OF POULTRY

- Poultry is derived from the skeletal muscles of various birds and is a good source of protein fat and minerals in

Name of the meat	CHO	Fat	Protein	Energy	Minerals	Fe	Ca	Cholestrol
Duck	0.1	4.8	21.6	130	1.2	-	4	70
Pigeon	-	4.9	23.3	114	1.4	2.2	30	110
Hen (egg)	-	13.3	13.3	173	1.0	2.1	60	498
Duck (egg)	0.8	13.7	13.7	181	1.0	2.5	70	

SLAUGHTERING PROCEDURES

The slaughtering procedures includes:

1. Pre – slaughtering handling

2. Slaughtering which includes:

➤ *Stunning and killing*

➤ *Scalding*

➤ *Defeathering*

➤ *Removal of hands ad legs*

➤ *Evisceration and inspection*

➤ *Chilling :*

✓ Water chilling

✓ Air chilling

Pre slaughtering handling:

- When the birds have reached “harvest” time, they are generally taken off of feed and water. This allows their digestive tracts to empty and reduces the potential for contamination during processing.
- At night the birds are caught by specially trained crews and placed into plastic or wooden transport cages. The birds are then transported to the slaughterhouse.

- In the next step the birds are removed from the cages and transferred to continuously moving shackles where they are suspended by both legs.

- The transfer is often done in a dark room illuminated by a red light; the birds are not sensitive to the red light and this helps to keep them calm.



- The handling and transfer of birds at the slaughterhouse can be stressful. Stress can have negative effects on the quality of the final meat product.

SLAUGHTERING

It includes :

- *Stunning and killing*
- *Scalding*
- *Defeathering*
- *Removal of hands ad legs*
- *Evisceration and inspection*
- *Chilling :*

Stunning and killing

After the birds have been transferred to the moving shackles, they are usually stunned by running their heads through a water bath that conducts an electric current.

Stunning produces unconsciousness, but it does not kill the birds. The birds are killed either by hand or by a mechanical rotary knife that cuts the jugular veins and the carotid arteries at the neck.



Scalding

- Following bleeding, the birds go through scalding tanks. These tanks contain hot water that softens the skin so that the feathers can be removed.

- The temperature of the water is carefully controlled.

If retention of the yellow skin colour is desired, a soft-scald is used (about 50 °C, or 122 °F)

If a white bird is desired, a higher scald temperature is used, resulting in the removal of the yellow pellicle



Defeathering

The carcasses then go through the feather-picking machines, which are equipped with rubber “fingers” specifically designed to beat off the feathers.

The carcasses are moved through a sequence of machines, each optimized for removing different sets of feathers. At this point

the carcasses are usually singed by passing through a



- An extra process, called wax dipping, is often used for waterfowl,

since their feathers are more difficult to remove.

Following the mechanical feather picking, the carcasses are dipped in a melted, dark coloured wax.

The wax is allowed to harden and then is peeled away, pulling out the feathers at the same time.

The wax is reheated and the feathers are filtered out so that the wax can be reused.

This process is usually performed twice.



Removal of heads and legs

The heads of the birds go into a channel where they are pulled off mechanically the legs of the birds are removed with a rotary.



The carcasses drop off the shackle and are rehung by their hock onto the eviscerating shackle line.

By law in the United States, the scalding and defeathering steps must be separated by a wall from the evisceration steps in order to minimize cross-contamination.

Evisceration and Inspection

At this point the preen, or oil, gland is removed from the tail and the vent is opened so that the viscera (internal organs) can be removed.

Evisceration can be done either by hand (with knives) or by using complex, fully automated mechanical devices.

Automated evisceration lines can operate at a rate of about 70 birds per minute. The equipment is cleaned (with relatively high levels of chlorine) after each bird.



- The carcasses are generally inspected during the evisceration process. The inspection procedures in the poultry industry vary around the world and

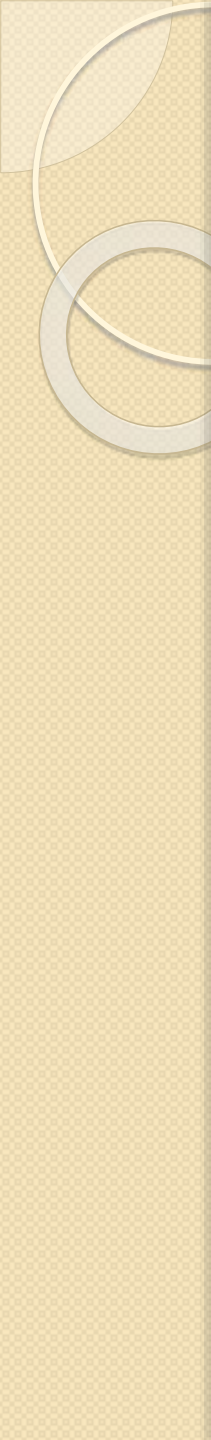
may be performed by government inspectors or Veterinarians depending on a country's laws.

- During the inspection the visceras are marked as “edible” or “inedible”

The rejected parts are

placed in a container marked “inedibles,” and the contents are generally dyed (often a blue-purple), under supervision of the inspector, in order to prevent possible mixing with edible parts



- 
- heart, stomach, and liver are all considered edible offal Stomachs are generally cut open and the inside yellow lining of the stomach along with the stomach contents are removed.
 - The lungs and kidneys are removed separately from the other visceral organs using a vacuum pipe. A final inspection is often carried out at this point, and the carcasses are then washed thoroughly.

Chilling

- After the carcasses have been washed, they are chilled to a temperature below 4 °C (40 °F).

The two main methods:

1. water chilling
2. air chilling.

❑ Water chilling

Water chilling is the countercurrent flow of cold water is used to lower the temperature of the carcasses.

The carcasses are then moved into a chiller—a large tank specifically designed to move the carcasses through in a specific amount of time.

Two tanks are used to minimize cross-contamination.



Water chilling leads to an increase in poultry weight, and the amount of water gained is carefully regulated.

❑ Air chilling

The carcasses are hung by shackles and moved through coolers with rapidly moving air. The process is less energy-efficient than water chilling and the birds lose weight because of dehydration.

Air chilling prevents cross-contamination between birds.

The final temperature of the carcasses before shipment is usually about -2 to -1 °C (28 to 30 °F), just above the freezing point for poultry.



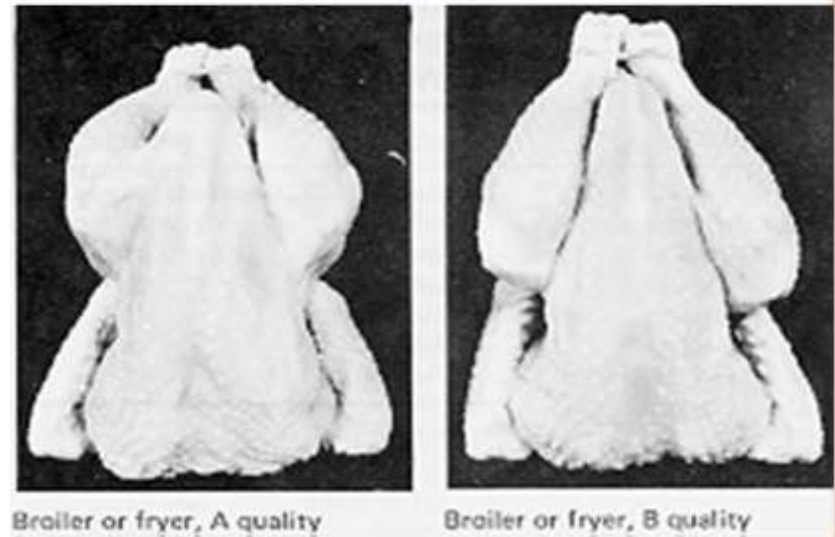
In India the dressed up chicken are graded before it is marketed. There are 2 gradings:

1. Grade 1
2. Grade 2

The grading is done according to the

- Meat
- Cuts and tears
- Defeathering
- Fat covering
- Discolouration

A VS. B GRADES, BROILER



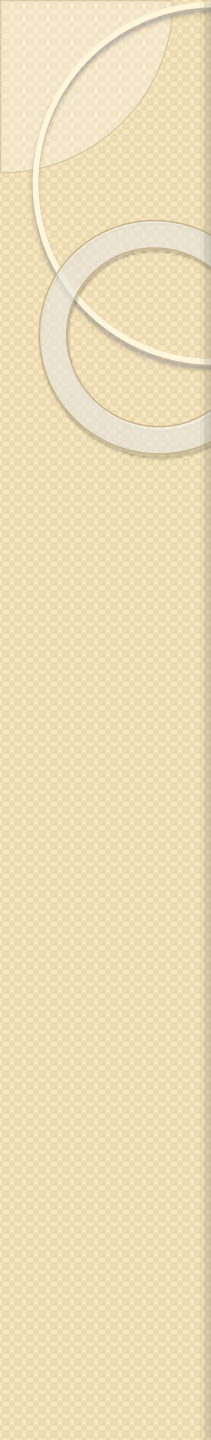
They are packed in low moisture , low oxygen transmission film. Before sealing the bags are considered to expel the air between the carcass and bag

Refrigerated poultry has a shelf life for about 6-10 days. Frozen poultry at -23 to -18 degree C can be stored upto 9months

HALAL CUTTING OF CHICKEN

- Islamic law requires that animals intended for human consumption be slain in a certain manner.
- Halal slaughter is was one of the more humane methods available to the meat industry and the only method acceptable for Muslim consumers.
- The conditions for Halal slaughter can be summarized as follows:
 - The animal to be slaughtered must be from the categories that are permitted for Muslims to eat.
 - The animal must be alive at the time of slaughter.
 - In general, all forms of stunning and unconsciousness of animals are disliked.

However, if it is necessary to use these means to

- 
- Stunning through a device with a non-penetrating round head, in a way that does not kill the animal before its slaughter, is permitted.
 - The animal must be slaughtered by the use of a sharp knife. The knife must not kill due to its weight. If it kills due to the impact the meat may not be permissible.
 - The windpipe (throat), food-tract (oesophagus) and the two jugular veins must be cut.
 - The slaughtering must be done in one stroke without lifting the knife. The knife should not be placed and lifted when slaughtering the animal.
 - Slaughtering must be done by a sane adult

- The name of Allah must be invoked (mentioned) at the time of slaughtering by saying:
Bismillah Allahu Akbar. (In the Name of Allah; Allah is the Greatest.)
- If at the time of slaughtering the name of anyone else other than Allah is invoked (i.e. animal sacrificed for him/her), then the meat becomes Haram “unlawful.”
- If a Muslim forgets to invoke the name of Allah at the time of slaughtering, the meat will remain Halal. However, if he intentionally does not invoke the name of Allah, the meat becomes Haram.

- Skinning or cutting any part of the animal is not allowed before the animal is completely dead.
- Slaughtering must be made in the neck from the front (chest) to the back.
- The slaughtering must be done manually not by a machine, as one of the conditions is the intention which is not found in a machine.
- The slaughtering should not be done on a production line where pigs are slaughtered. Any instrument used for slaughtering pigs should not be used in the Halal slaughtering.



Customary and Desirable Practices When Slaughtering

- Water should be offered to the animal before slaughter, and it should not be slaughtered when hungry.
- The knife should be hidden from the animal, and slaughtering should be done out of sight of other animals waiting to be slaughtered.
- Animals should be killed in a comfortable way. Unnecessary suffering to them must be avoided.
- The knife should be re-sharpened before slaughter.

Storage, Processing and Transport of Halal Meat

- Meat chilled or frozen for export to Muslims should be stored in separate cold stores other than those in which pork or other non-Halal meat is stored.
- Meat minced or processed for Muslims should not

Kosher slaughter

- Kosher describes what is 'fit and proper' for people of the Jewish faith to consume.
- Kosher food laws are based on interpretation of the Bible and the Torah, the Judaic scriptures, and set out a range of beverages and foods (including meat) that are acceptable to drink and eat.
- For meat to be Kosher, the animal must be slaughtered in a particular way, so the Rabbi in a Kosher abattoir is a specially trained religious slaughterer. The animal must be killed so it feels little pain. A very sharp knife is used to cut the oesophagus, the trachea, carotid arteries and jugular veins in one smooth action. There must be no pause during the action nor excessive pressure on the blade. Failure to meet these specific requirements renders the animal unkosher.
- animals must be effectively stunned (unconscious) prior to slaughter



Processing of poultry

The poultry products are processed as:

1. Raw poultry products
2. Frozen poultry
3. Fresh poultry
4. Processed products like:
 - Battering and breading*
 - Tumbling and massaging*
 - Smoked*
 - Deboned and grinded*

Raw poultry products

Whole or individual parts of birds may be packaged raw for direct sale.

Fresh poultry

The birds are generally cut into a number of pieces

, which are placed on plastic foam trays and covered with a plastic film. Fresh poultry should be used within 14 to 21 days after slaughter and generally should not be kept in the home refrigerator for more than three days.



Frozen Poultry

- it is vacuum-packed in plastic bags and then frozen in high-velocity freezers.
- The birds are kept in cold storage until needed.
- Before freezing, poultry may be injected with various salts, flavourings and oils in order to increase the juiciness of the meat. Injections are usually done with a multi-needle automatic injector, and information about the added ingredients is indicated on the package label.



Processed Poultry

- Poultry may be further processed into other products.

Battering and breading

- Some poultry products are battered (e.g., with beer batter) or battered and breaded (e.g., with cracker meal, bread crumbs, or cornmeal) for frying.

The meat may be either cooked or raw prior to coating. For battered and breaded poultry, the pieces are passed through a flour-based batter containing leavening and then through the breading ingredients



To hold the breading to the poultry, the product is deep-fried for a short time.

If the poultry is fully cooked in this process, the consumer will only have to heat the product before eating it
Eg: Chicken nuggets



Tumbling and massaging

In the manufacturing of many poultry products, the meat

is mixed with a

variety of nonmeat

ingredients, including

flavourings, spices, and

Tumbling and massaging

are gentle methods that

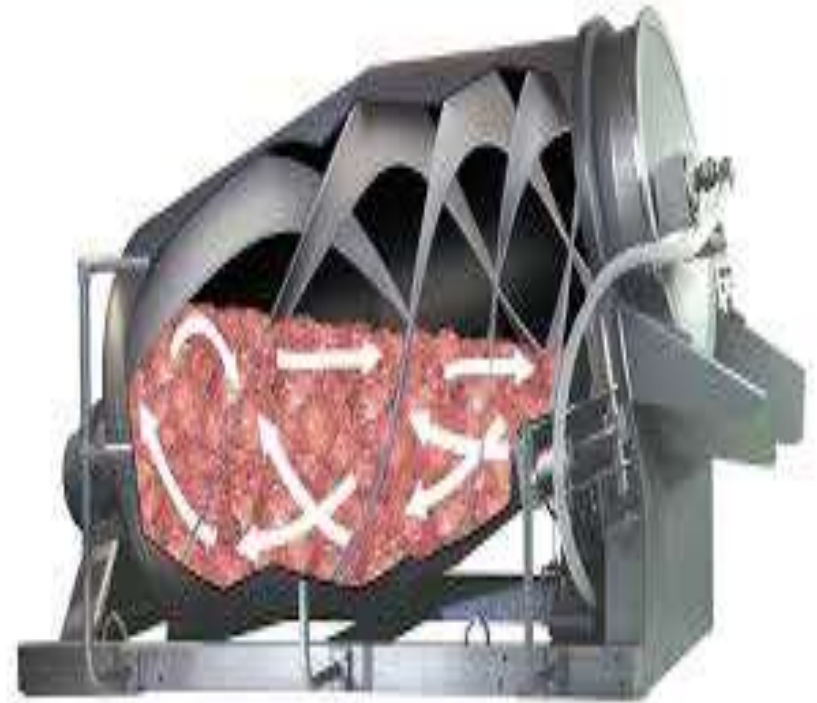
produce a uniform meat mixture. A

tumbler is a slowly rotating drum that

works the meat into a smooth mixture.



- A massager is a large mixing chamber that contains a number of internal paddles.



Smoking

Poultry may be smoked. Prior to smoking, the birds must be brined (soaked in a salt solution containing certain flavourings) and then allowed to dry. Smoking can be done using real wood shavings or a smoke flavouring.



Deboning and grinding

Further processed poultry products leave the backs, necks, and bones available for their own processing.

These materials are run through a machine called a mechanical deboner or a meat-bone separator.



In general, the crushed meat and bones are continuously pressed against a screen and the edible, soft materials pushed through the screen.



- The resulting minced product is similar in texture to ground beef and has been used for many poultry products such as frankfurters (hot dogs) and bologna.

Diseases affecting poultry

- In 2011 study by Transational Genomics Research Institute showed 47% of meat and poultry sold in US grocery was contaminated with Staphylococcus aureus 52% showed resistance to atleast 3 groups of antibiotics.
- Salmonella and campylobacter infections were also reported.
- Avian influenza is a disease of birds caused by avian influenza A virus.
- Bird flu is the other common disease which is a threat for the poultry farming.

BIBLIOGRAPHY

- Nutritive values of Indian foods.
By, C. Gopalan, B.V Rama Shastri & S C Balasubhramanian
- Food science- 6th edition by,
B Srilakshmi MSc, Med,Mphil
- Advanced Textbook of Food & Nutrition
by,
- Dr. M Swaminathan
- m.Britannica.com
- m.thepoultryguide.com
- m.wikipedia.org
- m.culinarycook.org



Thank you !
For your attention !