# POULTRY

# INTRODUCTION

- Poultry is the category of domesticated birds kept for meat, eggs and feathers.
- Examples of types of poultry:
  - Chicken
  - Duck
  - Goose
  - Turkey
  - Quail
  - Pigeons
  - Etc.

# Poultry Meat

- Meat from chickens and turkeys provides a high-quality proteins and low fat.
- Fat content is higher in the skin.
- The protein is an excellent source of essential amino acids.
- Poultry meat is also a good sources of phosphorus, iron, chopper, zinc, and vitamins $B_{12}$ and $B_6$.
- Poultry meat can be sold as whole carcasses or as cut portions.

# Meat Chicken Composition

| Species | Composition (%) | | | |
|---|---|---|---|---|
| | Water | Protein | Lipid | Ash |
| Beef | 70-73 | 20-22 | 4-8 | 1 |
| Pork | 68-70 | 19-20 | 9-11 | 1.4 |
| Chicken | **73.7** | **20-23** | **4.7** | **1** |
| Lamb | 73 | 20 | 5-6 | 1.6 |
| Cod | 81.2 | 17.6 | 0.3 | 1.2 |
| Salmon | 64 | 20-22 | 13-15 | 1.3 |

# Processing Steps

- Pre-slaughter inspection
- Suspension and shackling
- Stunning
- Bleeding
- Scalding to loosen the feathers
- Picking off the feathers by machine
- Removing of the pinfeathers
- Eviscerating (removing the internal organs)
- Chilling
- Post-mortem inspection
- Grading
- Packaging

- Poultry is slaughtered at an appropriate age to get the eviscerated weight desired by the customer.
- E.g. chickens are slaughtered at 42 - 49 days of age (with average live weight about 4.0-4.8 pounds).

| Type | Live Weight (lbs.) | Eviscerated weight (lbs.) |
|---|---|---|
| Broiler | 4.0 – 6.3 | 2.8 – 4.4 |
| Roaster | 7.4 – 10.0 | 5.0 – 7.0 |

Source: Parker (2003)

# QUALITY PARAMETERS - COLOR

- Color of cooked / raw poultry meat is important --- associated with the product's freshness.
- Poultry has white muscles (breast) and dark muscles (thigh and leg).
- Color of meat depends on the presence of myoglobin and haemoglobin.
- Poultry meat color is influenced by bird age, sex, strain, diet, intramuscular fat, moisture content, pre-slaughter conditions and processing variables.

# QUALITY PARAMETERS - COLOR

- Discoloration of poultry can be related to:
  - The amount of myoglobin & haemoglobin
  - The chemical states of those pigments
  - The way in which light is reflected off the meat
- The discoloration can occur in an entire muscle or it can be limited in a specific area (e.g. breast muscle).
- Discoloration of meat can occur due to:
  - extreme environmental temperatures
  - Stress due to live handling (pre-slaughter)
  - Bruises

# QUALITY PARAMETERS - TENDERNESS

- The tenderness of meat depends upon the rate and the extent of the chemical and physical changes occurring in the muscle as it becomes meat (post mortem changes).
- Meat will become stiffen when rigor mortis is completed.
- Eventually, muscle become soft again/ more tender when cooked.

# QUALITY PARAMETERS - TENDERNESS

- Anything that interferes with the formation of rigor mortis will affect meat tenderness, including:
  - Birds struggle before slaughtering.
  - Exposure to environmental stress (hot / cold temperature) before slaughter.
  - High pre-slaughter stunning temperature
  - High scalding temperature
  - Longer scalding times

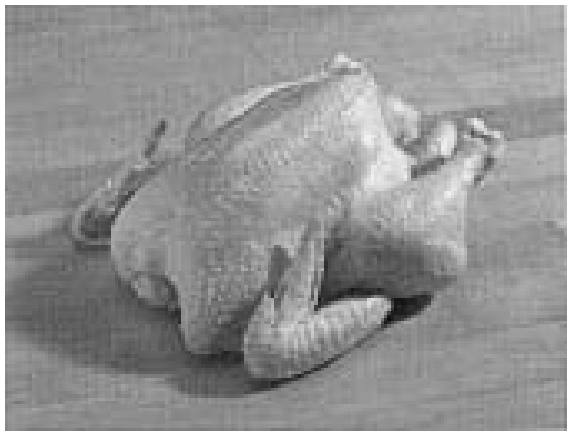
# QUALITY PARAMETERS - TENDERNESS

- Tenderness of boneless/ portioned cuts of poultry is influenced by the time between post-mortem and the deboning.
- Deboning during early post-mortem result in tougher meat since the muscle still have energy available for contraction. When the muscle is removed from the carcass, they contract and become tough --- ageing is necessary!
- Electric stimulation can hasten the development of rigor mortis.

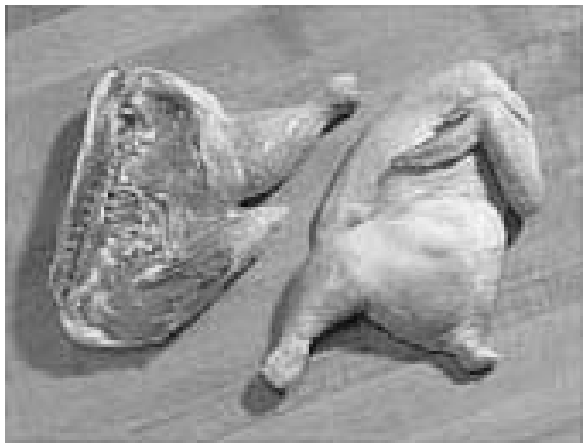
# QUALITY PARAMETERS - FLAVOR

- Both taste and odor contribute to the flavor of poultry.
- When poultry is cooked, flavor develops from:
  - Sugar and amino acid interactions
  - Lipid oxidation
  - Thiamin degradation
- Age, bird strain, diet, environmental conditions, scalding temperatures, chilling, product packaging and storage can affect the flavor of meat.

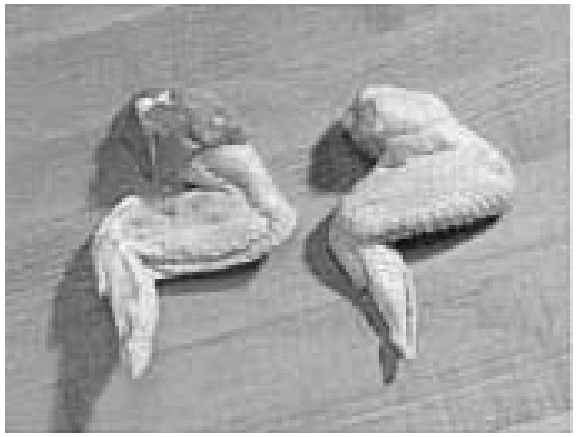
# Chicken Carcass & Portion Cuts



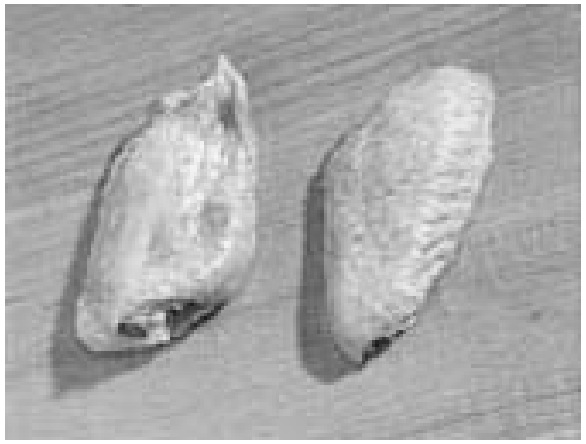
Whole carcass



Half



Wing



Wing drumette