

Food Material Science 2012/2013
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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 B₁₂ and B₆.
- 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

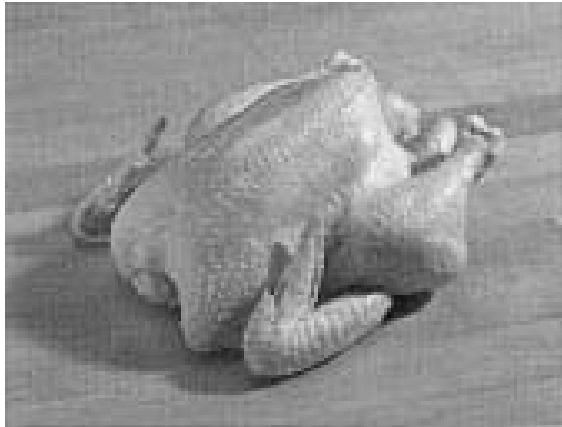
QUALITY PARAMETERS - TENDERNESS

- 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.

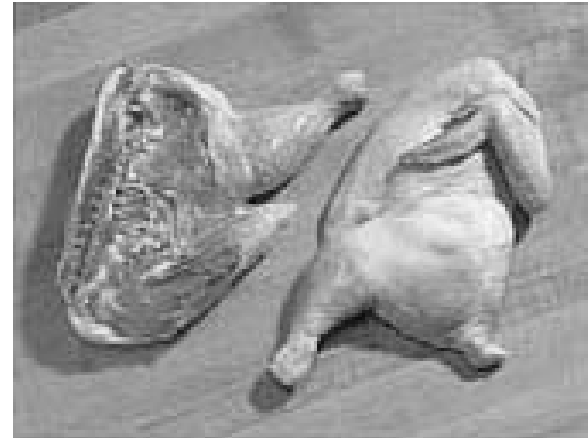
QUALITY PARAMETERS - FLAVOR

- 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



Winglet



Leg



Thigh



Drumstick



Breast



Trimmed Breast



Stripped Back



Giblet

Thank You...