

Meat Quality

- Quality is the degree of acceptance of something.
- It is defined as the sum of characteristics of a given food item that influence the acceptability and preference of that food by consumer.

Classification of meat quality

- **Organoleptic quality:** Organoleptic properties are the traits that influence the consumer to regularly purchase and eat meat.
- **Technological quality:** refers to the suitability of meat for further processing and are primarily determined by treatment after slaughtering.
- **Nutritive quality:** concerns with chemical composition of the meat and its suitability for human consumption.
- **Hygienic characteristics or food safety aspects:** implies freedom from harmful microorganisms and residues.

Factors contributing to the eating quality of meat

Appearance

Appearance include

- Water holding capacity
- Color
- Marbling

Water holding capacity

- ❖ The capacity of the meat to retain its water during the application of physical forces is known as water holding capacity.
- ❖ This property of meat is significant because it contribute the juiciness of cooked meat.
- ❖ Fresh meat with a good water holding capacity is less prone to shrinkage during processing
- ❖ Water holding capacity can be checked by looking the water at the bottom of package.

Marbling

- ❖ Marbling is streak of fat within the muscles.
- ❖ It refers to the intramuscular fat which can be visibly detected when the muscle surface is cut.
- ❖ It increases the juiciness and tenderness of meat.

Color

- ❖ Color of meat should be uniform throughout the entire cut.
- ❖ Color of meat depends upon the quantity of myoglobin and its chemical state.
- ❖ Color of meat varies from uncooked to cooked meat.

In un-cooked meat, there are three pigments responsible for color:

1. Myoglobin (Purple red or Pinkish color)
2. Oxy myoglobin (Bright red color)
3. Met myoglobin (Brown color)

In cooked meat, two types of pigments are responsible for color:

1. Globinmyohaemochromogen (Dull red)
2. Globinmyohaemichromogen (Brown)

Juiciness

- ❖ Juiciness of meat depends upon water holding capacity and presence of lipid contents.
- ❖ More water holding capacity is associated with increased juiciness of meat.
- ❖ Presence of lipids prevents the evaporation of moisture, thus increasing the juiciness of meat.

Flavor

- ❖ Flavor of cooked meat depends on water soluble components present in the meat.
- ❖ The animals with different uses and different diets have different flavors.
- ❖ Different cooking methods also produce different flavors.

Tenderness

Tenderness is sensory property related to the extent to which a product is tender. It can be measured using tenderometer.

Tenderness depends on the following attributes.

- 1. Age of animal:** More age, more connective tissues, more tough meat.
- 2. Sex of animal:** Male animal have more muscles and connective tissues, so their meat is tough as compared to female animal, which have more fatty tissues.
- 3. Muscle location:** Muscles which are used more have tough meat.
- 4. Temperature during onset of rigor mortis:** The optimum temperature requirement for rigor mortis is 14-21°C. If the temperature is more than the optimum temperature, rigor mortis will achieve early, muscles will shrink resulting meat will be hard and tough. This condition is known as **Heat Rigor**. If optimum temperature is less than the optimum temperature, rigor mortis will be late, then muscles will shrink, meat become tough and hard, this condition is called as **cold rigor**.
- 5. Ageing:** Ageing is holding of meat at refrigeration temperature for 2-4 weeks which allow enzymes within meat to break down the muscles and connective tissues which make the meat more tender.

Factors affecting meat quality

1. Pre-slaughter factors
2. Post-slaughter factors

Pre-slaughter factors

- ❖ Stress
- ❖ Heredity 30% color and firmness, 60% tenderness
- ❖ Age
- ❖ Sex
- ❖ Muscle location
- ❖ Diet Grasses----- beta-carotene-----yellow fat
Carbohydrate or starch food before slaughtering can help in development of normal postmortem pH.

Post-slaughter factors

- ❖ Post mortem pH decline
 - Pale, soft and exudative
 - Dark, firm and dry
- ❖ Temperature (14-21oC)
 - Heat rigor
 - Cold rigor
- ❖ Processing: Immediate processing after slaughtering improves the juiciness and flavor.
- ❖ Ageing: improves tenderness of meat.