

Introduction

1. Meat is defined as flesh of animal used as food.
2. In broader sense, meat is the edible post mortem component originating from the live animal.
3. Animal include domesticated cattle, sheep, goat as well as wildlife such as deer, rabbit.
4. Meat is a very nutritious food.
5. It is almost fully digestible.
6. The nutritive value of meat is attributed to its abundant high quality proteins, essential fatty acids, some important minerals and B-complex group of vitamins.

7. Carcass is the flesh after slaughtering. Edible portion of the carcass include:
 - Lean flesh (without fat)
 - Fat flesh
 - Edible gland/ organ

8. Good meat can be recognized by following characteristics:
 - A firm elastic texture
 - Being barely moist on touch
 - Clear odor/smell
 - Uniform color

Structure of muscle tissue

Animal carcass includes:

- Muscles
- Epithelial tissues
- Connective tissues
- Nervous tissue
- Adipose tissues
- Cartilages
- Bones
- Blood
- Lymph

1. Muscles

There are three types of muscles in animal body as:

Smooth muscles: Smooth muscles are less abundant in the body. They are present in walls of arteries, lymph vessels, gastrointestinal system and reproductive system.

Skeletal muscles: These are voluntary muscles. These are 35-65% of the body. These muscles allow the animal body to move on its own will. These are attached to bones, cartilages, skin etc. These muscles contain long, thin, specialized cells called as muscle fibers. These muscle fibers are of two types:

1. Red muscle fibers- These are red in color due to large quantity of myoglobin.
2. White muscle fibers- In these myoglobin is less, so they are of light color.

Color of the meat depends upon these muscle fibers. Color of different body parts depends upon proportion of red and white muscle fiber. These form microscopic transverse banding pattern which is known as striation. So, these muscles are called as striated muscles.

Cardiac muscles: They are present in heart. They have ability to contract rhythmically and they also have microscopic transverse banding pattern, which is called as striation. So, these muscles are also called as striated muscles.

2. Epithelial Tissues

Epithelial tissues are less abundant in animal body. These are present in lining on internal and external surfaces of the blood vessel, lymph vessels and edible glands or organs.

Most of them are destroyed during slaughtering and processing. Remaining portion of epithelial tissues is only in the edible glands.

3. Nervous Tissues

Nervous tissues include central nervous system (CNS) and peripheral nervous system (PNS). These are only 1% of total meat.

Function of nervous tissues immediately before and during slaughtering, affects the meat quality. If animal is in stress during or before slaughtering, then meat will be of low quality. Because, due to stress, glycogen will be converted into lactic acid, which will lower the pH of meat, so affecting the quality of meat.

4. Connective Tissues

Connective tissues are the tissues which hold the animal body together. So, we use the term “**connective tissue proper**”, which are composed of tendons and ligaments.

These tendons and ligaments are composed of three types of cells as:

1. Structure less mass (ground substances) is present as fluid between joints called as synovial fluid.
2. Embedded cells
3. Extra cellular fibers: These are collagen and elastin. In connective tissues collagen are 20-25% and elastin is 1% of total body protein.

5. Adipose Tissues

Adipose tissues are actually fat. There are two types of fat in animal body as:

1. Brown fat
2. White fat

At embryonic stage, brown fat is present around the kidneys. With the growth of animal, this brown fat is converted into white fat.

6. Cartilages

Cartilages are soft bones. They provide structural support to the animal body with bones. All the bones are cartilages at embryonic stage, but all the cartilages are not converted into bones on growth of animal.

Cartilages are present in different places in the body i.e. on the surface of bones at joints, in ears, between vertebrae, at ventral ends of ribs etc.

7. Bones

Bones give structural support to the animal body. These are also storage sites for Ca, Mg and Na ions. Red blood cells, White blood cells and platelets are produced in bone marrow.

8. Blood

Blood is 7% of total animal body weight. It consists of three types of cells as following:

1. Red blood cells: Carry oxygen to different parts of body.
2. White blood cells: fight against infection.
3. Platelets: helps to stop bleeding by clotting of blood,

Plasma is also present in blood. In plasma above three types of cells are suspended.

9. Lymph

Lymph is fluid which passes through different parts of the animal body. It carries nutrients to body tissue by diffusion through thin capillaries.

Lymph also plays an important role in body immune system.