## Dept. of Vet .Public Health //MEAT HYGIENE Course:

### GENERAL pathological and non pathological CONDITIONS and judjment

### Fever (Pyrexia)

Fever is an abnormal elevated body temperature. It may be classified as septic and aseptic according to the presence or non presence of an infection. **In *septic fever*** the infection is caused by viruses, bacteria, bacterial toxins, protozoa and fungi.

***Aseptic* fever** may be caused by :

a) tissue necrosis as seen in muscle degradation due to intermuscular injection of necrotizing substances

b) by chemicals or surgery. In former by an administration of drugs and in latter by breakdown of tissue and blood.

c) during anaphylactic reaction of antibodies to the foreign antigens.

**Judgement :**

- Carcass is *condemned* if fever syndrome is associated with presence of bacteria or bacterial toxins in the blood and/or findings of drugs and antimicrobial substances.

- If typical signs of fevered carcass are not seen carcass should be held for 24 hours after slaughter and re-examined. In case of mild fevered syndrome detected first on postmortem inspection, the carcass may be *conditionally accepted* with heat treatment if that bacteriological and chemical test are negative.

## Abnormal odours

- Abnormal odours may result from the ingestion of:

1- certain feedstuff. 2-drugs: include turpentine, linseed oil, chloroform, ether. 3--various pathological conditions, 4- absorption of odours from strong smelling substances 5- sexual odour from some male animals.

- In cows affected with ketosis, the sweetish odour of acetone may be present in the muscles.
- If treatment was not successful in dairy cows affected with milk fever, the odour of acetone may be noted in the connective tissue, kidney fat and musculature.
- The flesh of bloated and constipated animals may give off a faecal odour.
- If the meat is kept in a room which was recently painted, the odour may pass on to the carcass. The odour is most noted in a carcass accurate after slaughter.

**Judgement:**

- The carcass having fish meal odour has **inferior meat**. Viscera and organs are also inferior.
- **Generalized drug treatment** requires condemnation of the carcass.
- If local treatment and withholding periods are observed, the carcass and viscera are accepted
- Sexual odour in a carcass can have a limited distribution according to the consumers taste.
- Extremely strong sexual odour requires **condemnation of the carcass.**

.

- A carcass which gives off a pronounced odour of medicinal, chemical or other foreign substances shall be **condemned.**
- If the odour can be removed by **trimming or chilling**, the carcass may be passed for human food after the removal of affected parts.
- Carcasses affected with sexual odour should be held in the cooler and re-tested periodically. If the odour disappears the carcass is approved. If the sexual odour is present after 48 hours, the carcass shall be **condemned.**

**Immaturity**

- Immaturity occurs mainly in **calves**. In many countries, the slaughter of calves younger than **two weeks** of age is **forbidden.**
- The muscle of immature animals is **moist, pale, flabby and poorly developed**. It is low in **protein, high in water content and contains a high proportion of bone.**
- **Immature animals should not be slaughtered for human consumption.**

**Antemortem and postmortem findings:**

1.Presence of the umbilical cord

2.Dark red kidney and edematous kidney capsule

**Judgement** : **Carcass and offal of immature animals are condemned**

**Calcification**

- Calcification is the deposition of calcium salts in **dead and degenerating tissue**.

- It may be regarded as a body reaction to some foreign agents.
- In dairy cows, calcification is noted in the heart (endocardium) and is caused by excessive dietary supplementation with **Vitamin D.**
- Calcification is also seen in parasitic infections and in many chronic infections such as **tuberculosis.**

.

- Calcification is detected on postmortem examination by a **gritty** sound upon incision with a knife.

**Judgement:**

- Carcass and viscera affected with presternal calcification are approved. Affected brisket is condemned.
- Calcified parasitic organs and heart in **dairy cows** are also condemned.

## Edema

- Edema is the accumulation **of excess fluid** in the intercellular (interstitial) tissue compartments, including body cavities.
- There are two types of edema:

  1.Inflammatory edema (exudate)

  2.Non-inflammatory (transudate)
- Inflammatory edema shows yellow, white or greenish clear or cloudy fluid in the area of inflammation.
- Non-inflammatory edema is an accumulation of fluid in **subcutaneous tissue, lungs and brain.**

- **Systemic or generalized** edema may occur secondary to **congestive heart failure** or is caused by **low protein** levels in the blood. .
- The latter may be associated with:

1. severe malnutrition
2. gastrointestinal parasitic infestation
3. chronic liver disease

**Judgement:**

- Animals affected with **generalized edema may be condemned on antemortem inspection.**
- In **less severe non-generalized cases**, animals are treated as "**suspects**"
- The presence of **localized edema** necessitates removal of the affected area. The carcass is then accepted

## Pigmentation

- Pigments are classified as exogenous and endogenous. Exogenous pigments are synthesized outside of the body and endogenous within the body itself.

- Pigments are coloured substances which accumulate in the body cells during the normal physiological process and abnormally in certain tumours and conditions.

- In anthracosis, the carbon particles are found as a black pigment in tissues. This condition is seen as black pigment of the lungs and corresponding lymph nodes in animals

raised in urban areas. **The lungs affected with anthracosis are condemned and the carcass is approved.**

- **The carotenoid pigments**: are exogenous pigments, greenish-yellow in colour.They are important in meat inspection because they cause yellowish discoloration in the fat and muscles of (Jersey and Guernsey) cattle.

- Carotenoid pigments should be differentiated from bile pigments in icterus. The bovine liver affected with this condition is enlarged and shows a bright yellow colour..

- **The endogenous pigments, except for melanin and lipofuscin are derivates of haemoglobin.**

### (A) Melanosis

- Melanosis is an accumulation of melanin in various organs including the kidneys, heart, lungs and liver and other locations such as brain membranes, spinal cord, etc. **Melanin is an endogenous brown-black pigment** randomly distributed in Melanin is also found in lymph nodes, pig skin and belly fat or mammary tissue in female pigs. This condition is called "seedy belly" or "seedy cut" since the black colour in the mammary tissue resembles round, black seeds.

  - **Judgement** : Carcasses showing extensive melanosis are *condemned.* If the condition is localized, only the *affected organ* or part of the carcass needs to be condemned.

Differential diagnosis : Haemorrhage, Melanoma (liver flukes)

**(B) Myocardial lipofuscinosis (Brown atrophy of the heart Xanthosis)**

: is a brown pigmentation of skeletal and heart muscles of cattle .The condition is seen in old animals such as "dairy cows" and in some chronic wasting diseases. It is

prevalent in Ayrshire cows and approximately 28 % of normal Ayrshire cows have this pigment in skeletal and heart muscles. Xanthosis is not dependent on the age of animals in this breed.

**(C) Icterus(Jaundice)**

Icterus is the result of an abnormal accumulation of bile pigment, bilirubin, or of haemoglobin in the blood. Yellow pigmentation is observed in the skin, internal organs ,sclerae (the white of the eye), tendons, cartilage, arteries, joint surfaces etc. Icterus is a clinical sign of a damaged liver or bile duct malfunction. Jaundice is divided into three main categories

1. Prehepatic jaundice (haemolytic icterus)
2. Hepatic jaundice (toxic icterus
3. Posthepatic jaundice (obstructive icterus

Prehepatic jaundice:

- occurs following excessive destruction of red blood cells. Tick-borne diseases such as Babesia ovis and Anaplasmosis cause this type of icterus, which is one of the main causes of carcass condemnation in Southern Africa due to prevalence of these parasites.

- Overproduced blood pigment, which cannot be metabolized in the liver, builds up in the blood (haemoglobinemia). It is excreted by the kidneys into the urine (haemoglobinuria). Normal urine colour changes and becomes bright red to dark red.

Hepatic jaundice occurs:

due to direct damage to liver cells as seen in liver cirrhosis , systemic infections, and in chemical and plant poisoning.

Liver function is impaired and the liver is unable to secrete bile pigments.

Obstructive jaundice

- occurs when the drainage of the bile pigment bilirubin is blocked from entry into the intestine. This usually occurs due to the obstruction of the hepatic ducts by a tumour, by parasites such as flukes or by gall stones. Obstruction may also occur due to an inflammation of the bile ducts.

**Judgement** : Animals suspected to have icterus should be treated as "suspects" on antemortem examination.

- On postmortem examination:, the carcass and viscera with haemolytic, toxic icterus and obstructive icterus are *condemned.*

- Less severe cases are kept in the chiller for 24 hours. Upon re-examination, the carcass may be *approved or condemned* depending on the absence or presence of pigment in the tissue.

- If the obstructive icterus disappears after 24 hours, the carcass and viscera can be *passed* for human food.
- A simple laboratory test will help to make an objective test for bile pigment icterus. Two drops of serum are mixed on a white tile with two drops of Fouchets agent. A blue/green precipitate is positive for bile icterus.

- To differentiate icterus from the normal colour of fat of certain breeds, the sclera, bone cartilage, liver, connective tissue and renal pelvis should be examined. If yellow discoloration is not noted in these tissues, icterus is not present.

.

***** Carcasses are condemned for jaundice if there:**

- **is severe yellow discoloration of the tissues;**
- **are degenerative changes in the liver, kidney, or spleen;**

- **are other systemic changes in the body.**