**Bleeding**

* The object of bleeding is to remove the blood as completely rapidly as possible from the carcass, because blood produce an ideal medium for the multiplication of micro-organisms and their distribution through the carcass.
* Accordingly, the blood retained in the carcass after slaughtering play an important role in the keeping quality of the meat.
* The total quantity of the blood is approximately 1/ 13 of the body weight, but bleeding does not lead to evacuation of the whole amount of blood, nearly 1/3 of which remain in the tissues and organs and called residual blood.
* The quantity of blood withdrawn from cattle about 15-25 liters and varies according to the age, sex, body weight, physical condition of the animal and the method of slaughtering.
* Blood is only retained in noticeable amount in the animal body in case of disease conditions especially those affecting the respiratory and circulatory systems.

**Muscular hemorrhage or meat splashing:**

**Definition:** presence of dark spots or streaks on muscle resembling brush marks due to slight rupture of blood vessels and escape of blood from associated capillaries.

**Site:** in the muscular portion of the diaphragm or inner side of thorax & abdomen, or deep muscles of shoulders and neck.

**Cause:** electrical stunning is the common cause of blood splash in meat.

1. Delayed slaughter after stunning.
2. Violent muscular contraction during straggling of animals after slaughter.

Stunning of an animal by any means 🡪 🡩 blood pressure of the arterial capillary and venous system, this is accompanied by transitory 🡩 in the heart rate 🡪 🡩 bleeding.

If an undue interval is allowed to elapse between stunning and bleeding the carcass may be imperfectly bled🡪 blood splashing or muscular hemorrhages which may be seen in various location as:

**Sheep:** large intestine

**Cattle:**

* Endocardium, Beneath the capsule of the spleen.

But the most important to the meat inspector are those which occur in the skeletal muscles, in cattle are particularly common in the:

* muscles of the neck and longismus dorsi, and also may be seen on
* the inner aspects of the thoracic and abdominal wall.

**In veal:** shoulder &fascia of loin.

**In pigs**: the splashing may be found in any muscle but the frequently one is seen in:

* the hip joint and thigh, moreover in
* the muscles of the lion, diaphragm and shoulder, quadriceps & gracilis.
* The lymph nodes draining tissues affected with splashing are suffused with blood.

**P.M finding:**

Its presence in a whole carcass can be determined by inspection of skirt( diaphragm & thin flank) used as indicator.

The splashing consists of dark colored streaks resembling brush marks often aligned with the direction of muscle fibers, or as collection of dark spots varying in size from those scarcely visible to 6.3-13 mm in the length.

**Mechanism of blood splashing:**

Stunning🡪 🡩 B.P due to vasoconstriction of the arterioles, but this vasoconstriction does not occur in the capillaries which are virtually passive tubes & contain little blood.

When the stimulant of vasoconstriction is removed 🡪 immediately arterial vasodilatation🡪 blood rush into the capillaries which are weakened by anoxia "lack of oxygen"🡪 rapture of the capillary wall 🡪 permit the passage of blood ' diapedesis" into the surrounding tissues.

**Judgment:**

* Blood splash gives flesh meat an abnormal appearance which is rejected by consumers 🡪 Trimming or removal of the affected parts because when fried or grilled meat would turn into blackish or brownish colour.
* Such meat is harmless and fit for consumption so it can be used in manufacture of minced meat and sausage.

**How to reduce blood splash:**

1. keep the interval between stunning and slaughter to a minimum to reduce the period during which blood can leak through the ruptured vessels.
2. Use captive bolt stunning instead of electrical stunning🡪 reduce muscular spasms severity.
3. In lambs use electrical stunning method whih induce cardiac arrest 🡪 decrease blood pressure.
4. Avoid interrupting current during stunning.
5. In pigs , use 700 V will reduce blood splash than 300V as aresult of cardiac arrest.
6. Reduce pre-slaughter stress.

**B. slaughter spleen or bloody spleen:**

**Definition:** spleen s congested and enlarged resembling bag filled with blood.

**Cause:** during pithing**,** destruction of root of great spleenic nerve🡪 vasodilatation and congestion of internal organs ( liver, kidney and spleen).

**Judgment:**

Condemnation of spleen and affected internal organs.