



# Veterinary Public Health & Epidemiology

## Bihar Veterinary College, Patna

### Lecture on Rigor Mortis in Carcass

By  
Dr. P. Kaushik

# Definition

- ▶ The phenomenon of meat/ muscle changes characterized by a hardening and contraction of all voluntary muscles by a loss in transparency of the surface of a muscle and stiffening of joints

# Onset of RM

- ▶ Stiffening of all joints and hardening of carcass.
- ▶ Loss of transparency in the muscle.
- ▶ Muscle becomes dull.
- ▶ Slight rise in temperature of carcass by  $1.5^{\circ}\text{C}$  which gradually drops to atmospheric temperature.
- ▶ It first affects the most active and nourished muscle and starts from head and neck and extends backward region

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- ▶ RM affects heart very early within an hour of slaughter.
  - ▶ RM in skeletal muscle does not appear for 9-12 hrs after slaughter and reaches maximum rigidity in 20-24 hrs and gradually declines.

Slaughter of animal  
Cesation of blood supply  
Oxygen supply stops

Reduction  
in ATP

Onset of RM  
pH 5.5-5.8

Glycolysis  
(glycogen → Lactic acid)

Loss of integrity of  
protein

Protein  
denaturation

Autolysis (activation of  
proteases and cathepsins)

Release of  
 $\text{Ca}^{++}$

Passing of  
Rigor mortis

# RM is affected by

- ▶ Atmospheric temperature: High Temp favours its onset where as low temp. retards it
- ▶ Health of animal: febrile a condition prevent RM
- ▶ Species of animal
- ▶ Amount of energy stored as ATP or Glycogen: Most important factor

# Benefits of RM

- ▶ Decline of pH
- ▶ It results in inhibition of growth of bacteria
- ▶ Lactic acid produced brings about conversion of connective tissue in gelatin
- ▶ Meat becomes more juicy and tender