



GENUS-HAEMONCHUS

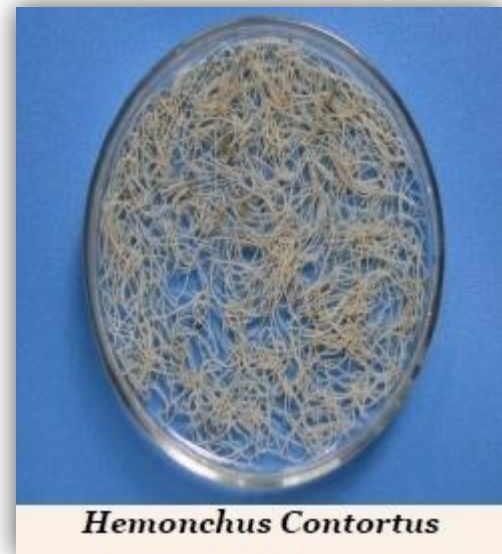
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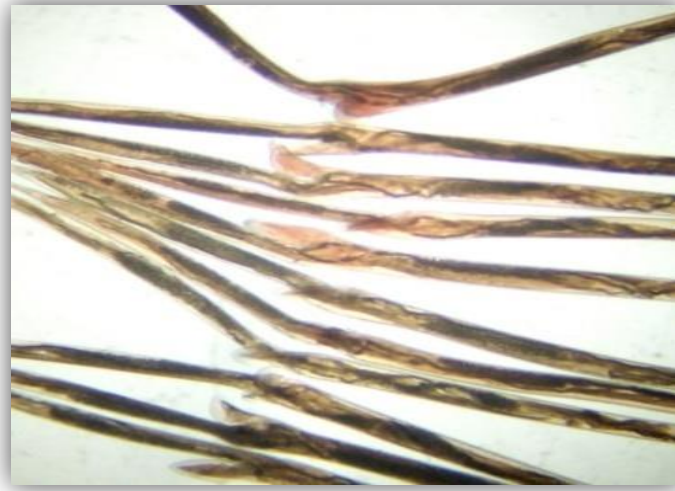
Dr. Robin Singh

Haemonchus contortus

- ◉ **Common name** - Stomach worm
Barber's pole worm
Twisted worm
Wire worm of ruminants
- ◉ **Host** - Sheep, goat and cattle
- ◉ **Location** - Abomasum
- ◉ Blood sucking parasite
- ◉ Infective stage - L3 larvae
- ◉ It is a most pathogenic parasite of sheep

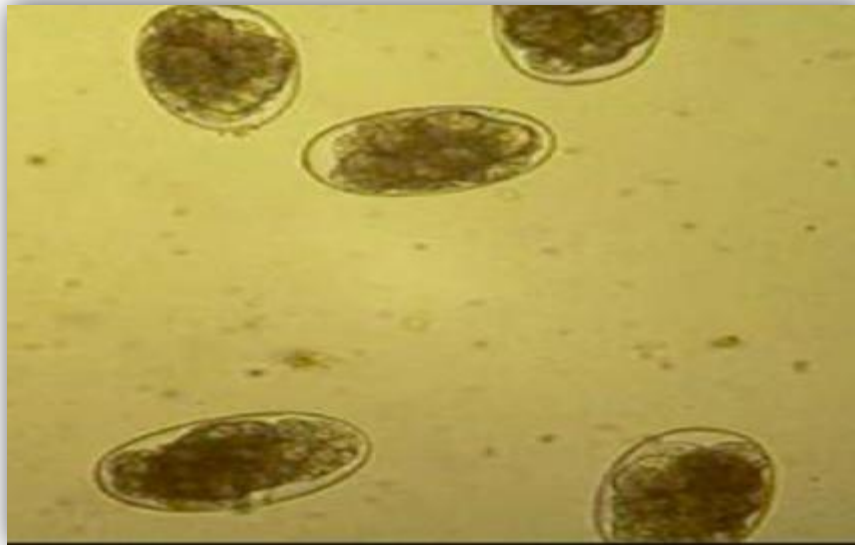


MORPHOLOGY



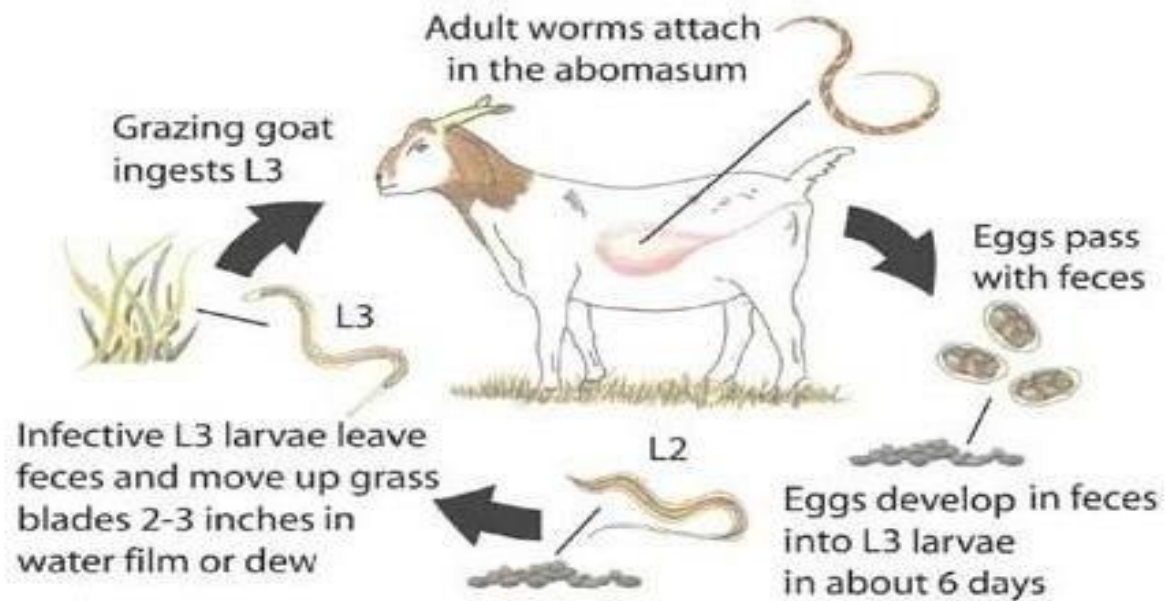
- ◉ Male are 10-20 mm in length.
- ◉ Females are 18- 30 mm long.
- ◉ Male are reddish in colour.
- ◉ It has prominent cervical papillae.
- ◉ Cuticle is transversely striated.
- ◉ Longitudinal indistinct striations are also present.
- ◉ They have small buccal cavity with small dorsal lancet or teeth.
- ◉ Male bursa has well developed lateral lobe and asymmetrical dorsal lobe supported by inverted 'y' shaped dorsal ray.
- ◉ Spicules are 400-440 micrometre in length.

- ⦿ In female, vulva is situated at the posterior extremity and is covered by vulval knob or vulval flap.
- ⦿ In living female worms the white ovaries are seen spirally coiled around blood-filled red intestine (twisted) giving the appearance of barber's pole.
- ⦿ Egg are oval, yellowish. They are in 16-32 cell stage when laid.



LIFE CYCLE

- ⊙ Direct life cycle.
- ⊙ L3 is reached in about 4 - 6 days.
- ⊙ Infection of D/H is by ingestion of infective stage along with herbage.
- ⊙ Following ingestion exsheathment occurs in rumen, then L3 migrate to abomasum and penetrate between the gastric epithelial cells.
- ⊙ Where L3 moult to become L4 and L4 moult to become L5.
- ⊙ Finally, L5 comes to the surface of abomasum and reach maturity.
- ⊙ Prepatent period - 15 days



Life cycle of *Haemonchus contortus*

PATHOGENESIS & CLINICAL SIGNS

- ⊙ Adult male, female and L4 larvae are blood suckers.
- ⊙ Each worm remove 0.05 ml per day.
- ⊙ Important clinical feature is anaemia in haemonchosis.
- ⊙ Worms are frequently changing the site of attachment, so numerous biting wound may be seen.
- ⊙ From the wound, haemorrhage occurs into the abomasum.
- ⊙ Anaemia occurs in 3 stages
 - ❖ Hyperacute haemonchosis
 - ❖ Acute haemonchosis
 - ❖ Chronic haemonchosis



→ Pale conjunctival mucosa

Clinical signs
☐ Visible mucous membrane will be pale

Conjunctiva pale - Anemia - Goat



Pale oral mucous membrane



Pale ocular mucous membrane



Icteric mucous membrane

❖ **Hyper acute haemonchosis**

- ⊙ It occurs when animals are exposed to sudden massive infection.
- ⊙ It causes rapidly developing severe anaemia and death due to acute blood loss.
- ⊙ Faeces is dark black coloured.
- ⊙ Haemorrhagic gastritis occurs.

❖ **Acute haemonchosis**

- ⊙ It occurs when young animals are exposed to heavy infection.
- ⊙ Causes anaemia accompanied by hypoproteinaemia and edema (bottle jaw condition).
- ⊙ Death may occur within prepatent period.

❖ **Chronic haemonchosis**

- ⊙ It is very common and causes heavy economic loss.
- ⊙ Morbidity 100% but mortality is low.
- ⊙ Affected animals are weak and emaciated.
- ⊙ Hypoproteinaemia and edema (bottle jaw condition)
- ⊙ Hyperplastic gastritis and chronic expansion of the bone marrow will be seen.

PM LESIONS

- ◉ Mucous membrane, skin and internal organs pale in colour.
- ◉ Blood is watery in nature.
- ◉ Liver is light brown in colour and shows fatty changes.
- ◉ The fat is replaced by gelatinous tissue.
- ◉ Abomasum contains brownish fluid ingesta in which the worms swim actively.
- ◉ Abomasal mucous membrane is swollen and covered with biting red marks.



DIAGNOSIS

- ⊙ Clinical signs
- ⊙ Faecal examination- faecal egg count to assess for presence of haemonchus eggs should be performed.
- ⊙ **FAMACHA technique (FAffa MAlan CHArt)**
 - ✓ FAMACHA is a colour chart tools useful for diagnosis of blood sucking nematode like *Haemonchus contortus*.
 - ✓ The FAMACHA[©] card is a tool that matches the color of the eye mucous membranes of small ruminants with a laminated color chart showing five color categories corresponding to different levels of anemia.



FAMACHA[®]

Anaemia guide
 Guide sur l'anémie
 Guia de anemia
 مرشد فقر الدم
 एनिमिया संवधि निर्देश
 貧血症檢測卡

FAMACHA[®]
ANAEMIA GUIDE

	✓ OPTIMAL - (NO DOSE)
	✓ ACCEPTABLE - (NO DOSE)
	? BORDERLINE - DOSE?
	! DANGEROUS - DOSE!
	! FATAL - DOSE!!!

TREATMENT

- ⦿ Thiabendazole @ 66 mg/kg body weight in cattle & 44 mg/kg in sheep
- ⦿ Fenbendazole @ 5-7.5 mg/kg body weight
- ⦿ Ivermectin @ 0.2 mg/kg body weight S/C
- ⦿ Albendazole @ 5-7.5 mg/kg body weight orally

❖ *Haemonchus similis*

- ⊙ It is smaller than *H. Contortus* and terminal processes of dorsal ray are longer.
- ⊙ Male worms are 8-13 mm in length & female are 12- 17 mm in length.
- ⊙ Spicules are 180- 334 micrometre long.
- ⊙ Genital opening, situated on a conical projection, is 2-3.2 mm from the posterior end.

❖ *Haemonchus placei*

- ⊙ Morphological details are similar to *H.contortus*.
- ⊙ Spicules are 454-470 micrometre long.
- ⊙ Vulvar flap in female is rounded or knob- like.

❖ *Haemonchus bubalis*

- ⊙ Fresh worms look reddish – white in colour.
- ⊙ The cuticle is transversely striated.
- ⊙ Male worms are 10 – 11 mm & female are 14-20 mm in length.
- ⊙ The spicules have distinct branching.

❖ *Haemonchus longistipes*

- ⊙ It occurs in the abomasum of camel.
- ⊙ Male worms are 18-28 mm in length.
- ⊙ Spicules are 534-664 micrometre long.
- ⊙ The vulvar opening, without a linguiform flap, is situated at 5- 7.2 mm from the posterior end.

Thank you ...

