

# MEDICAL PARASITOLOGY

Definitions and Concepts

## **Medical parasitology**

**2023-2024**

**LAB(9)**

# Helminths

## - Nematodes

### - *Ascaris lumbricoides*

Disease produced by this parasite is known as **ascariasis**.

#### - **Common names :**

The common round worm.

#### - **Habitat :**

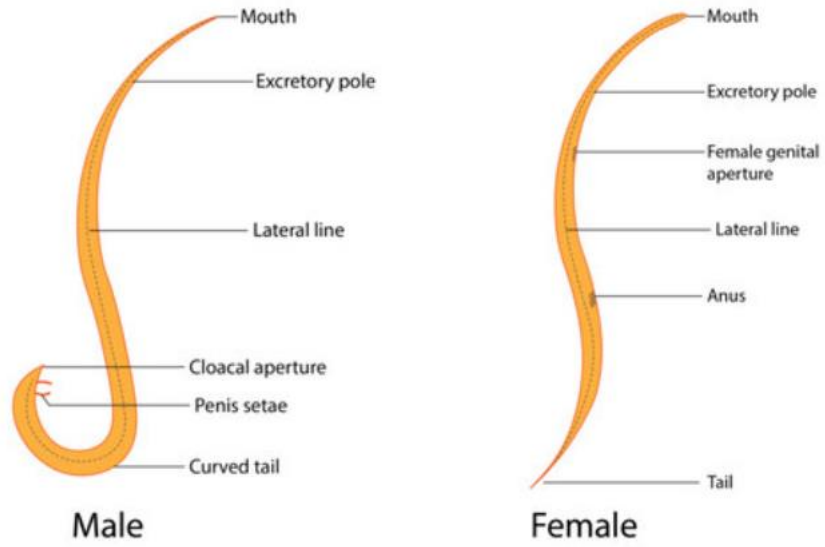
Adult worms reside in the small intestine, particularly the jejunum of man.

#### - **Morphology :**

The body of *A. lumbricoides* is cylindrical, tapering gradually at the anterior end and somewhat less so at the posterior end. Pinkish body of the parasite, the mouth opens at the anterior end. It possesses three finely toothed lips (one dorsal and two ventral). The sexes are separate, the posterior end of male is curved ventrally to form a hook. The ejaculatory duct along with the anus open into the cloaca from which arises a pair of copulatory spicules of equal size.

Female is longer than the male worm, the tail is straight and conical. A mature female *A. lumbricoides* lays enormous number of eggs which are passed in the faeces.

# ASCARIS LUMBRICOIDIS



## Eggs are of two types :-

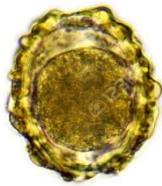
### 1. Fertilized eggs :-

Round or oval in shape, brown in color, they are surrounded by a thick, transparent shell consisting of vitelline membrane, a thick transparent middle layer and an outermost coarsely albuminoid layer.

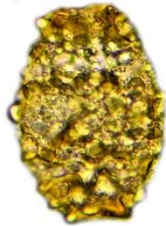
### 1. Unfertilized eggs :-

In the absence of a male worm, the female produces unfertilized (infertile) eggs. These are narrower and longer, brown in color, they have a small atrophied ovum and a thin shell within an irregular coating of albumin. The innermost vitelline membrane is absent.

#### *Ascaris lumbricoides* (Eggs)

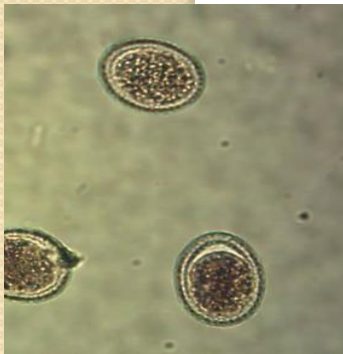
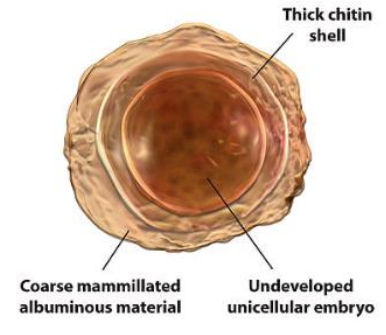
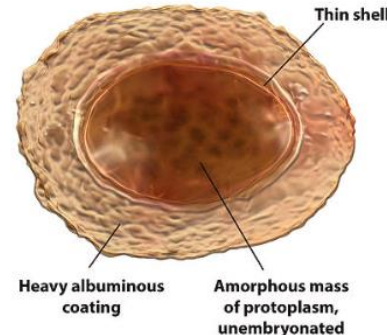


Fertilised egg



Unfertilised egg

#### *Ascaris lumbricoides* eggs



- **Life cycle:-**

The life cycle of *A. lumbricoides* is passed in only one host, man. No intermediate host is required. Man acquires infection by ingestion of food, water or raw vegetables contaminated with embryonated eggs.

## Trichuris trichiura

□ Trichuris trichiura commonly called the whipworm because of its characteristic whip-like shape.

It causes **Trichuriasis** in human which is an intestinal infection caused by invasion of the colon by the adult worm.

Habitat:

The adult worm lives in the large intestine (caecum) of human .

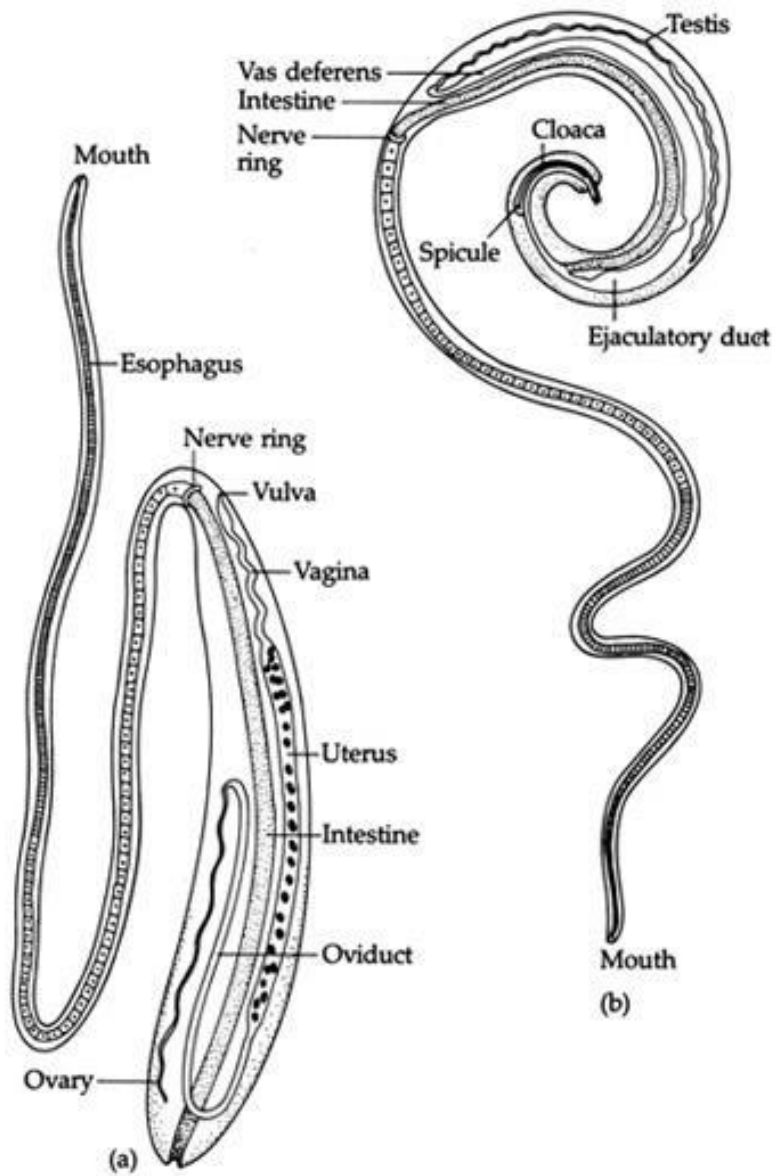
Morphology

The adult worms resemble the whip. The anterior  $\frac{3}{5}$ th of the end is very thin hair like and the posterior  $\frac{2}{5}$ th is thick and stout resembling the handle of a whip.

The anterior ends penetrate the mucosa layer and remain deeply embedded. Adult worms are pinkish in color. The anterior end consists of a long oesophagus which is a minute channel while the posterior end contains the intestine and sex organs.

Male worm: The adult males are 3-4 cm in length and are recognized by their characteristic coiled posterior end. Female worm: Female worms are longer than males measuring 4-5 cm in length.





## Eggs

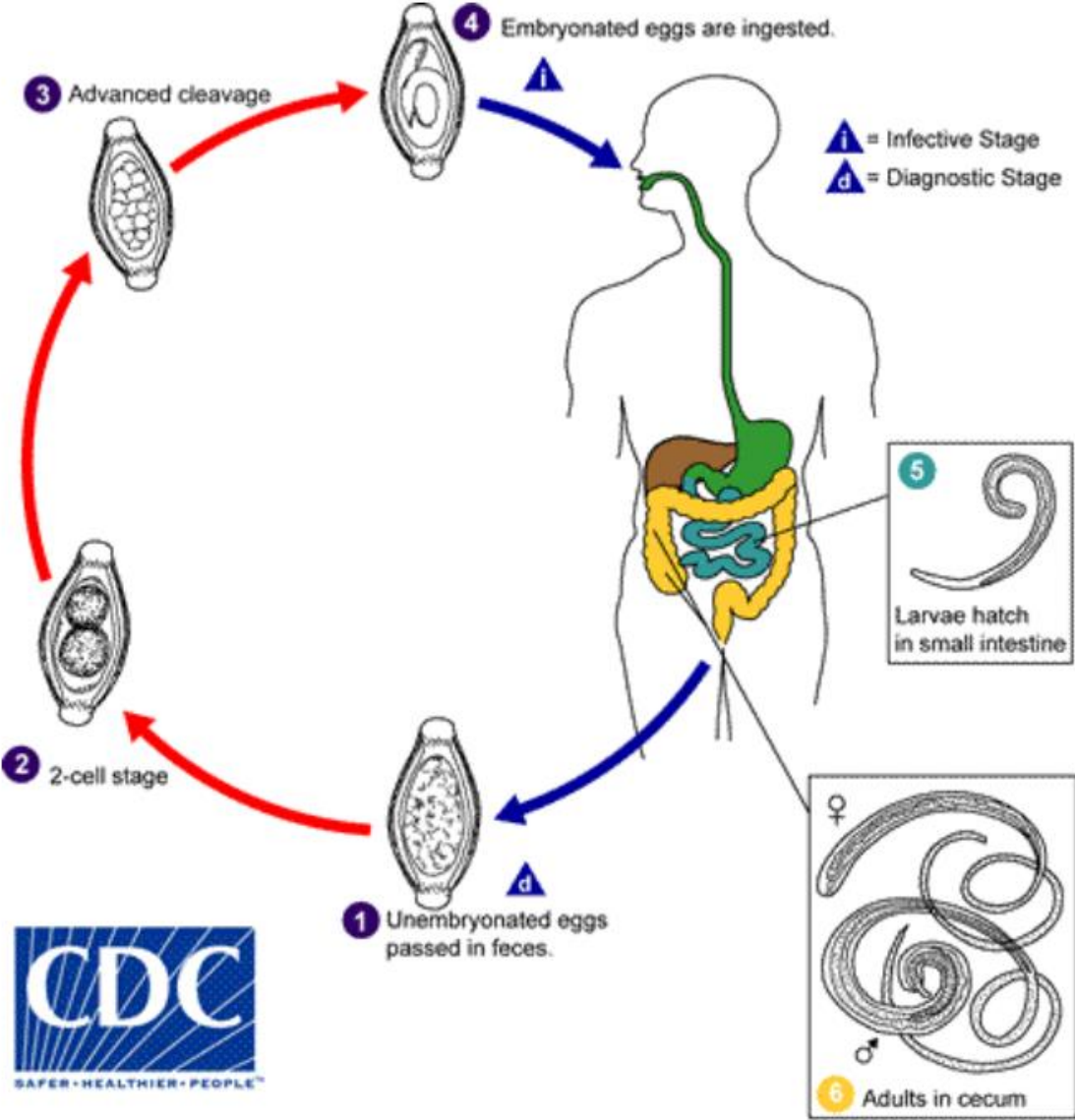
Egg of *Trichuris trichiura* has diagnostic value. Egg is barrel shaped with a mucous plug at each end. It is brown colored (bile-stained) and has a double shell. The egg measures 50-54  $\mu\text{m}$  in length and 22-23  $\mu\text{m}$  in breadth. Eggs contain an un-segmented ovum when it leaves the human hosts. The freshly passed eggs are non-infective to human. Eggs float in saturated NaCl solution.

*Trichuris trichiura* (Eggs)





# Life cycle of *Trichuris trichiura*:



## **Mode of transmission:**

1. The food, water and soil contaminated with embryonated eggs are the chief sources of infection.
2. Ingestion of embryonated eggs in the contaminated food and water
3. Contaminated fingers during soil works

## **Diagnosis**

- Specimen: stool, blood
- Microscopy: Finding of characteristic barrel-shaped eggs in the faeces on light microscopy.
- Stool concentration methods may be required to detect light infection
- Adult worms may occasionally be present in the stool.
- Blood test: shows eosinophilia



THANK  
YOU