

# Cestodes (tapeworms)

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**HYMENOLEPIS NANA**

**ECHINOCOCCUS GRANULOSUS**

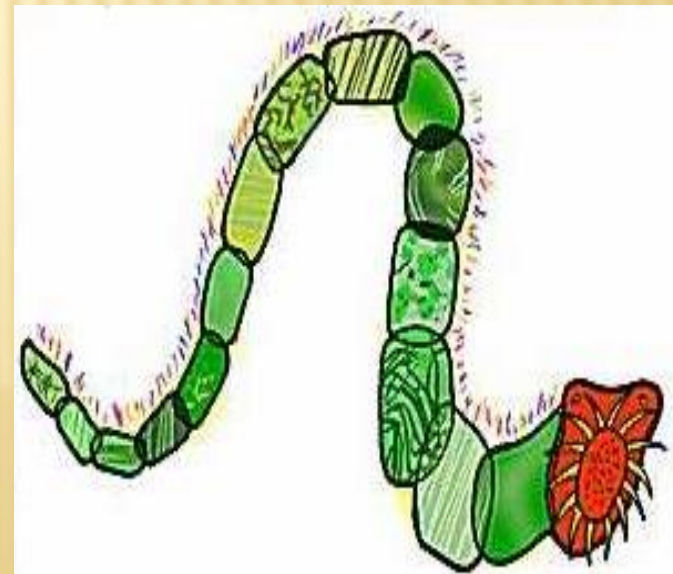
**ECHINOCOCCUS MULTILOCULARIS**

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# *(Hymenolepis nana)* Dwarf tapeworm:



Is the smallest and the most common tape worm found in human intestine especially the children. It is cosmopolitan in distribution and it unique that it completes its life cycle in one host. The disease caused by this parasite named as hymenolepiasis.



# HOSTS OF *H. NANA*

## ✘ Definitive host

- + Human
- + Mice
- + Rats

The only cestode that parasitizes humans without requiring an intermediate host.

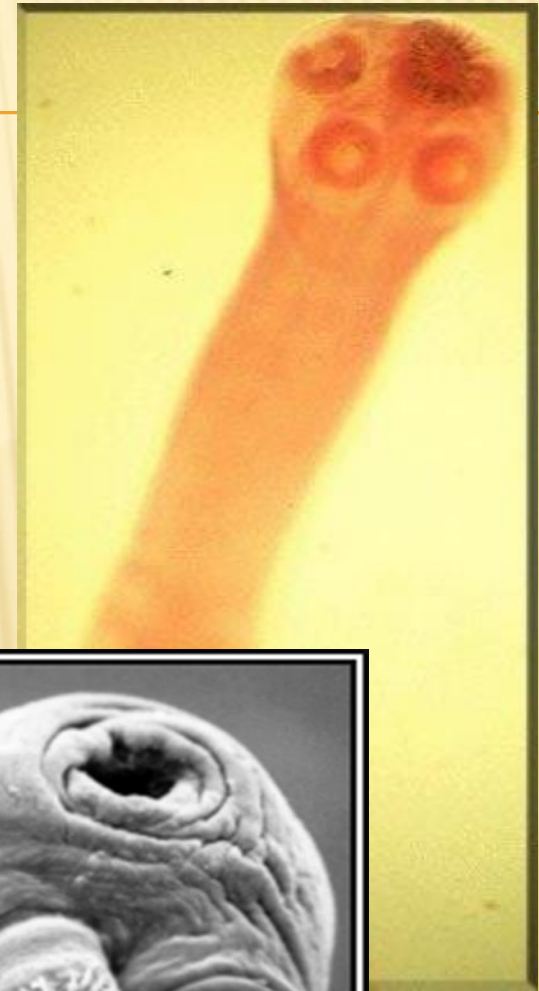
## ✘ Intermediate host (Optional)

- + Fleas
- + Beetles



# MORPHOLOGY *H. NANA*

- ✘ Adult worms are only 10-45 mm long and 0.5-1 mm wide
- ✘ Scolex bears a retractable rostellum armed with a single circle of 20-30 hooks.
- ✘ The scolex also has four suckers.



# MORPHOLOGY *H. NANA*

- ✘ Neck is long and slender
- ✘ Strobila has 100-200 segments that are wider than they are long
- ✘ Genital pores are unilateral (side of the segment)
- ✘ Each mature segment contains three testes



# Morphology *H. nana*

- ✘ Eggs generally measure between 30 to 45 microns in diameter.
- ✘ They are round to oval with thin colorless outer membrane and inner embryophore enclosing the hexacanth oncosphere (six-hooked). The space between the two membranes contains yolk granules and 4- 8 polar filaments arising from two knobs on the embryophore.



# HOW DO YOU GET INFECTED?



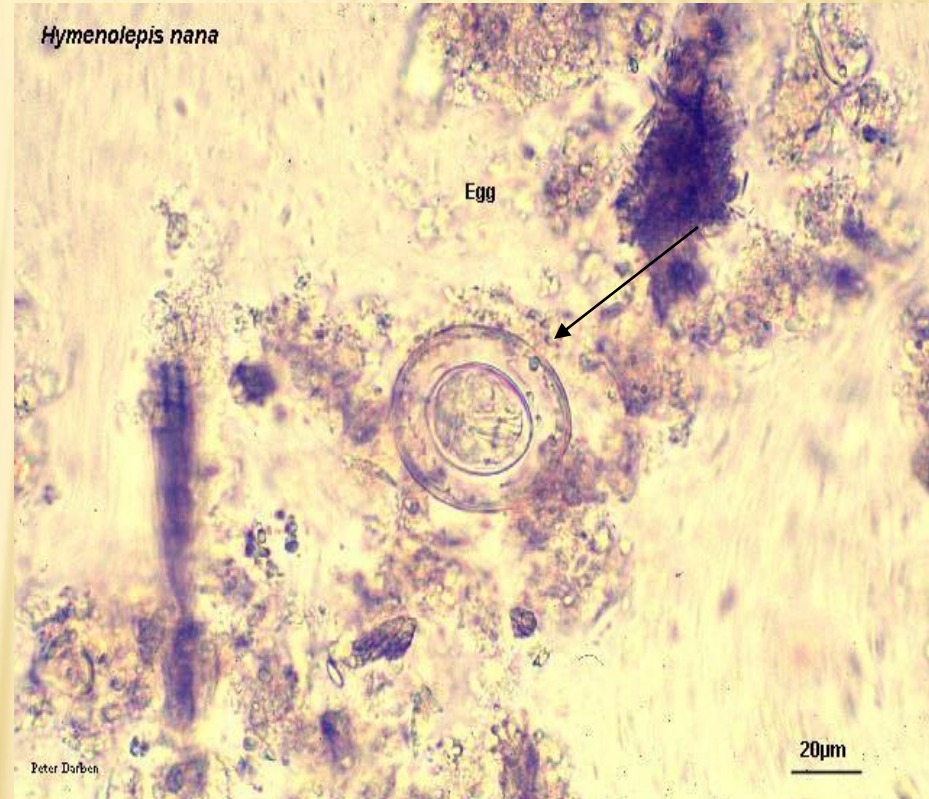
From *H. nana*.....

- ✘ **By accidentally ingesting tapeworm eggs.**
  - + by ingesting fecally contaminated foods and water
  - + by touching your mouth with contaminated fingers
  - + by ingesting contaminated soil.
  
- ✘ **Once you are infected, the dwarf tapeworm may cause auto infection where the tapeworm may reproduce inside the body and continue the infection.**

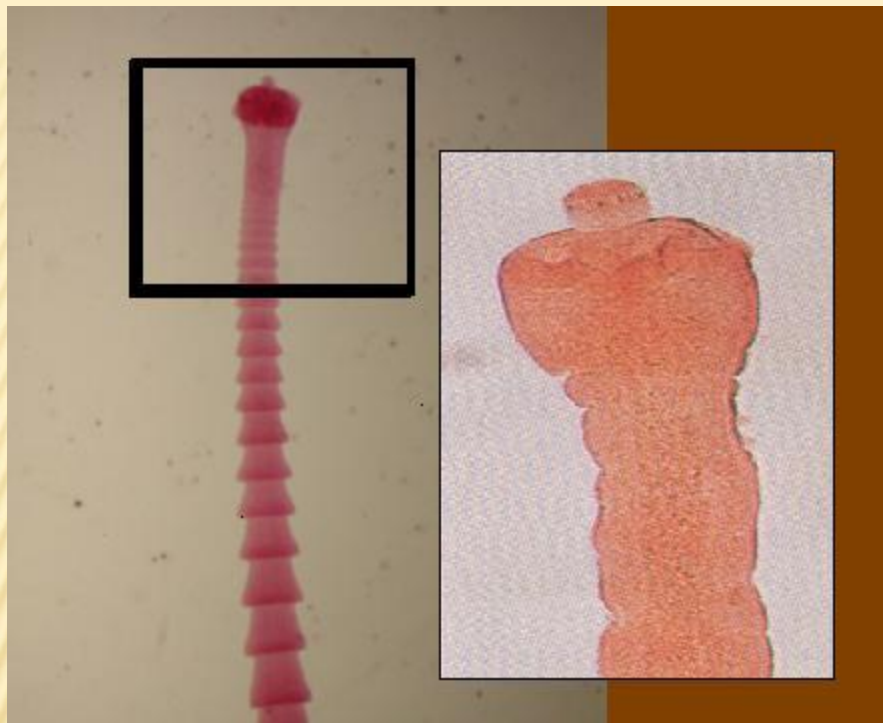


# DIAGNOSIS

- ✘ Detection of eggs in feces.
- ✘ Seeing tapeworm in intestine.



Fecal smear *H. nana*



*Hymenolepis nana*

Cysticercoid



0.1mm

# ***Echinococcus granulosus***

## **dog tapeworm or hydatid cyst worm**

**\*Human Echinococcosis is caused by the larval stages of cestodes (tapeworms) of the genus *Echinococcus*. *Echinococcus granulosus* has definitive host: dogs and other carnivores and intermediate host mammals, including humans or herbivorous species.**

**\**Echinococcus granulosus* cause unilocular echinococcus or hydatid disease.**



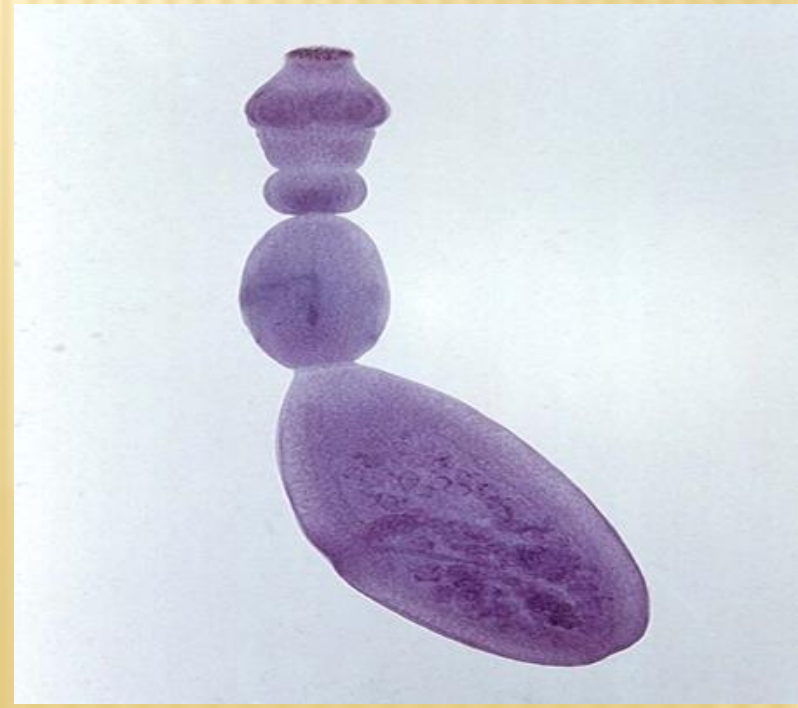
# MORPHOLOGY

The adult worm is small, measuring about 3-6 or 2.5-9 mm in length. It consists of a scolex with 4 suckers and prominent rostellum bearing two circular rows of hooklets, short neck, and the trunk called strobila composed only proglottides, the anterior immature, the middle mature and the posterior gravid proglottid.

The eggs are indistinguishable from those of *Taenia* spp.

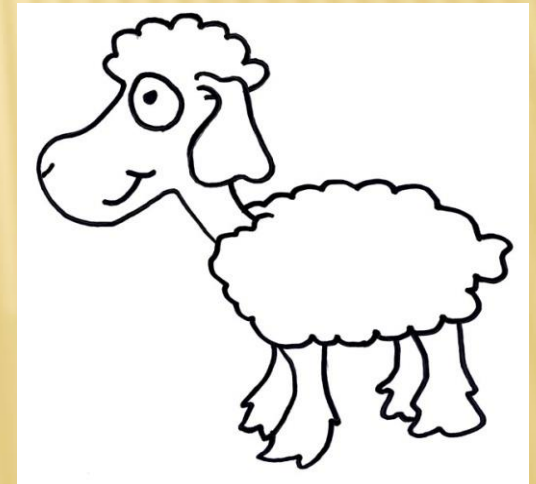
They are passed in dog feces.

Sheep and cattle ingest them while grazing



# DEFINITIVE HOST/INTERMEDIATE HOST:

- **Echinococcus granulosus:**
  - **Definitive Host: dogs and other carnivores**
  - **Intermediate Host: mammals, including humans or herbivorous species**



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✘ *E. granulosus*

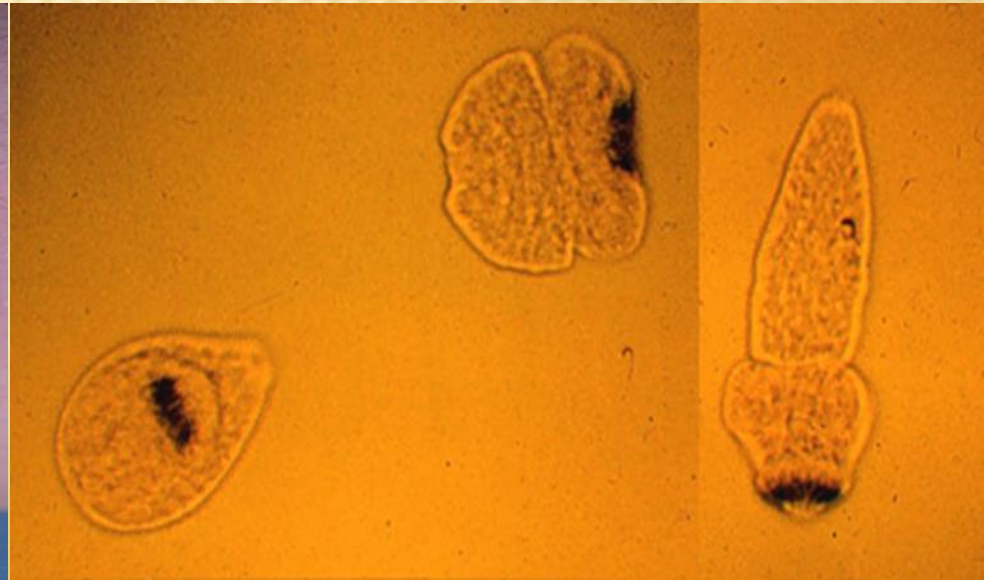
- + Hydatid cysts are large, roughly spherical, fluid filled hollow bladders containing numerous protoscolices.
- + They vary in size; those found in the liver are aprox. 20 cm in diameter, but those found in the peritoneal cavity are usually larger

# DIAGNOSIS

- 1- clinical diagnosis by hydatid thrill this is very indicating sign.**
- 2- radiological diagnosis by x- ray examination, C. T. scan and others.**
- 3- laboratory diagnosis by:**
  - Direct method by finding the protoscolices , broad capsule in the hydatid fluid by aspiration but its dangerous method.**
  - Indirect method, such as Casonis intradermal test, this done by injection of 2 ml of bacteriologically sterile hydatid fluid intradermally in one arm and equal volume of saline in the other arm as control**
    - 20- 30 minutes immediate reaction.**
    - 6- 8 hours intermediate reaction.**
    - 24- 48 hours delayed hypersensitivity reaction.**
    - false positive result.**

# DIAGNOSIS

- 4- Serological test: Detection of antigens in feces by ELISA is currently the best available technique
- 5- Newer techniques like polymerase chain reaction (PCR) is also used to identify the parasite from DNA isolated from eggs or feces





# ECHINOCOCCUS MULTILOCULARIS

- Intermediate host: mice.
- Final host: fox and wolf ( in the small intestine).
- Length 1.2- 3.7 mm.
- Composed of 4- 5 segments.
- Gravid segment without lateral uterine branches.
- The larval stage is alveolar hydatid cyst in human.
- Humans get infected by eating contaminated berries and mushrooms collected in forests populated by foxes.