

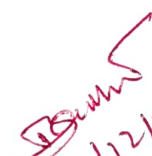
PROJECT OF ZOOLOGY

TOPIC : Life Cycle OF Taenia Solium

SUBMITTED To : Mitali Chetia

SUBMITTED BY: Sri Debarshi Chutia

Roll No : 66


14/12/22

029

Aim : To study the life cycle of *Taenia solium*

Materials : Notebook, pen, pencil and scale, text book.

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Certificate

This is to certify that. "Debasish Chutia" student of Bsc. 1st semester "zoology" A has successfully completed their zoology project on "Life cycle of Taenia Solium" under the guidance.

Date - 10/12/2022.


10/12/2022

Acknowledgement

I would like to express my special thanks, gratitude to Metali Chetia (Asstt. Prof. Dept) as well as our principal Dr. Litool Baruah, who gave me the golden opportunity to do this wonderful project on the topic Life cycle of *Taenia solium*.

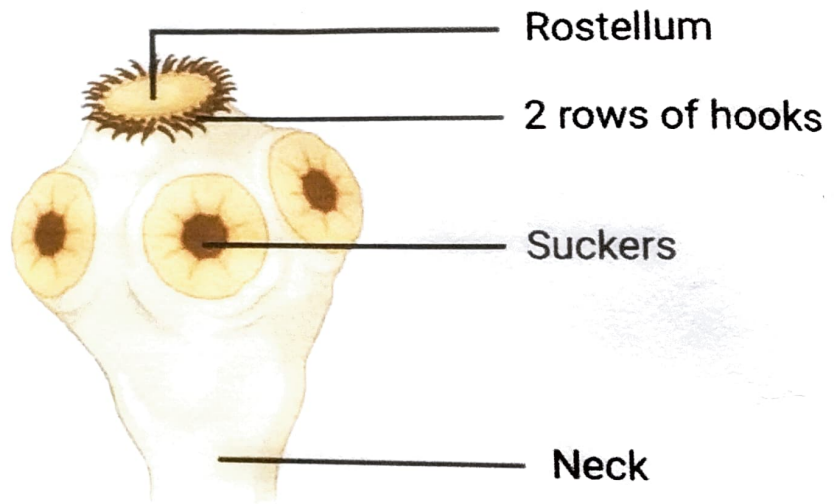
Secondly, I would like to thank my parents and friends who helped me a lot in finalizing this project within the limited time frame.

Lastly, I like to thank all my supporters who have motivated me to fulfill this project before the timeline.

Taenia solium- Classification, Habitat, Structures, Body wall



Adult *Taenia solium*



Scolex

Fig: *Taenia solium*

Introduction

Taenia solium or pork tapeworm is an endoparasite of man. The life cycle of *taenia solium* is indirect. It passes through pigs, as intermediate hosts, into human as definitive hosts. Disease due to the tapeworm

Tania solium occurs in two forms: taeniasis and cysticercosis. Taeniasis is the intestinal infection with adult tapeworms. It is a mild disease, but of significant public health importance as it plays a crucial role in the transmission of cysticercosis, a serious disease. Cysticercosis is the infection with the larval stage (*Cysticerci*) of the tapeworm. Inside the body, cysticerci can develop in a number of tissues, those that located in the central nervous system cause neurocysticercosis, the most severe form of the disease.

Classification.

Phylum ——— Platyhelmenthes .

Class ——— Cestoda .

Sub - Class ——— Eucestoda .

Order ——— Taeniida

Genus ——— Taenia

Species ——— Solium

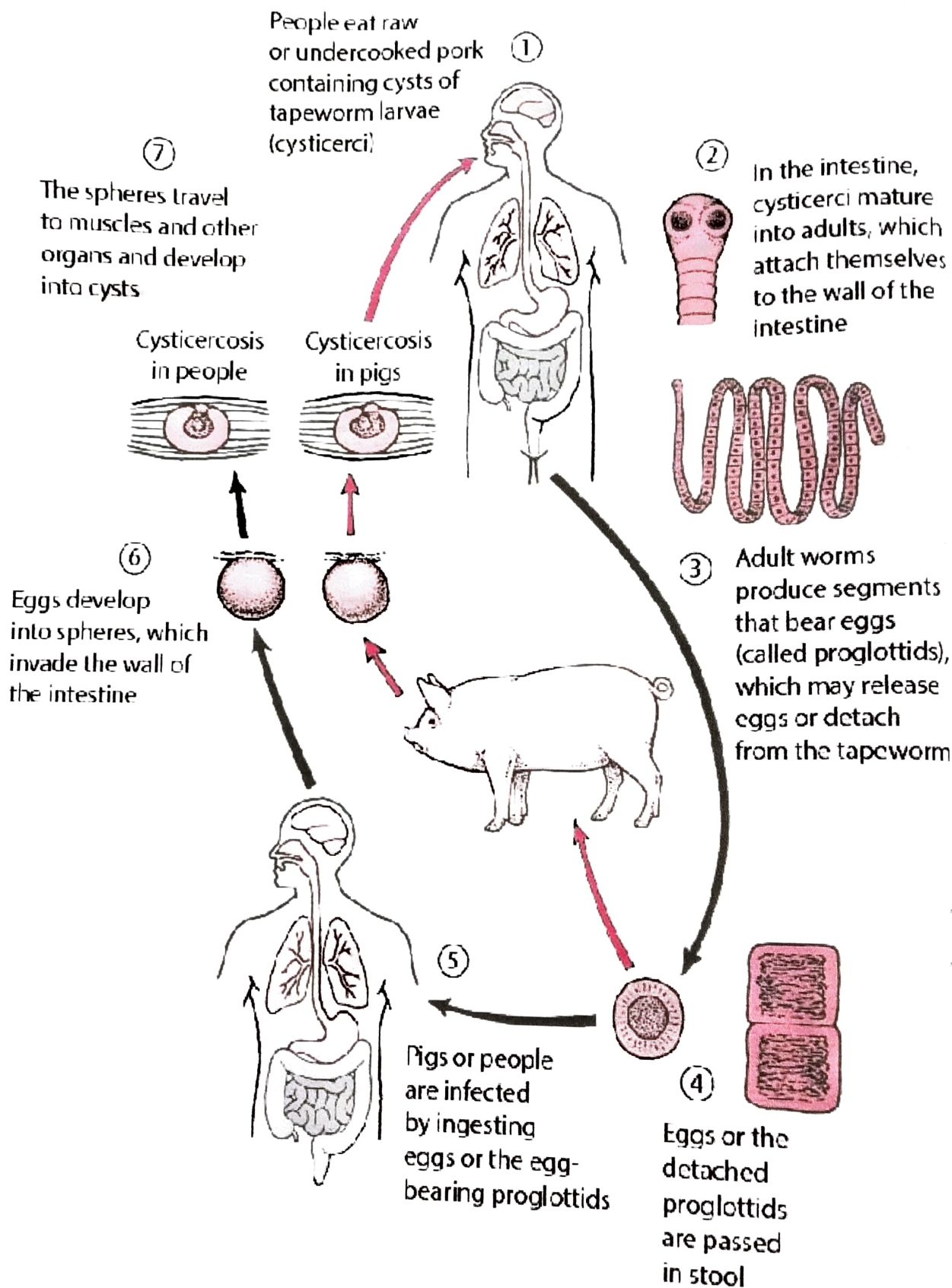


Fig : Life cycle of *Taenia solium*

Life cycle of Taenia solium :

Step(1) : Infected human (definitive host) excrete the eggs or gravid proglottides in the faeces passing the parasite from the gastrointestinal tracts out near the vegetation. In egg or gravid proglottid form, *Taenia solium* is able to remain viable anywhere from days to month. *Taenia solium* can be diagnosed at this point in the life cycle.

Step(2) : Pigs (intermediate host) acquired infection by eating and digesting the eggs or gravid proglottid along with the parasitised vegetation.

Step(3) : The eggs or gravid proglottid migrate to the pigs intestine. as oncosphere break through the intestinal wall. Then via the circulatory system they embed themselves in the muscle of the pig as developed in cysticerci (the infected form of *Taenia solium* cysticerci have the ability to persist

in the muscle for the many year.

Step (4) : Human acquire the infection by eating the under cook or raw flesh of an infected animal.

Step (5) : *Cysticerci* migrate to the small intestine of the human host and develop their adult tapeworm / *Taenia solium* form normally within two months by attaching to the intestinal wall with their scolex. This adult *Taenia solium* may persist for long periods of time even years.

Classification of platyhelminthes :

Class (1). Turbellaria.

Characters :—

- They are terrestrial or bottom fresh water or marine.
- Body covered with cilia.
- Suckers are absent.
- They measures from microscopic to more than 60 cm.

Examples - Planaria, Caplana, ipolium.

Class (2). Trematoda.

Characters :—

- They are endoparasitic flukes of vertebrates and invertebrates.
- Body is unsegmented.
- Suckers present, anus absent.
- Body covered with cuticle.
- Life cycle complete in 2 or 4 host.

Life cycle 1. Sub class - Digenea

- Endoparasite of vertebrates.
- Body covered with integument.

Example — Fasciola, Gastrodiscus, paragonimus-tomen.

2. Sub class — Aspidogastrea.

- Oral sucker is absent.
- They have single testis and 2 ovaries.
- Excretory product expelled from the body.
- Through a single nephridiopore.

Example — Aspidogaster.

Class 3. Monogenea

- Oral sucker poorly developed
- They are ectoparasitic on aquatic vertebrates, such as fishes and amphibians.

- They have usually 2 testes and single ovary and an oviduct.

Example - *Cryptodochylus*.

Class 4 : Cestodia (Cestoda)

- They have segmented body, each segment is called Proglottid.
- They are parasitic form.
- Suckers present.
- They are Hermaphroditic form.
- Epidermic and cilia is absent.
- Life cycle empty through primary and secondary hosts.

Sub class 1 - Cestodaria (Monozoal)

- Undivided or Monozoic.
- Scalex is absent.
- Reproductive organ present
- Elementary canal is absent.

Sub class 2 - Eucestoda (Urozoal)

- They have ribbon like body is divided into colen Neck and Strobila.
- Consist of a few to large no of proglottids.
- Its mature proglottids contain male and female reproductive organs.
- They have larval of 6 hooks.

Examples : Aenia, Hymenalepis, Phyllobol-
thrium,

Monophology

(A) Adult worms :

- i) Shape : They are flat and long, segmented, dorsoventrally flattened tape like worms hence also called as tapeworms. The body is ribbon like and tapers anteriorly.
- ii) Size : *Taenia Solium* is about 4 meter long, 6 mm thick when adult.
- iii) Colour : Opaque, Sometimes white.
- iv) Body structure : Adult worm consists of three parts head or scolex, neck and strobila (body or trunk).

(B) Eggs :

Eggs are released into the uterus following fertilization and fill the gravid proglottids.

- i) The egg is spherical, measuring 30-40 μ in diameter.

- ii) It has a thin hyaline embryonic membrane around it, which soon disappears after release.
- iii) The inner embryophore is radially striated and is yellow brown due to bile staining.
- iv) In the centre is a fully - developed embryo (Oncosphere) with three pairs of hook lets (hexacanth embryo).
- v) The eggs do not float in saturated salt - solution.

(c) Larva :

Embryonated eggs undergo further development to form larva. The larval stage of Taenia is called cysticercus.

Cysticercus cellulosae is the larva of Taenia Solium.

- i) It is the infective form of the parasite.

- ii) It can develop in various organs of pig as well as in man.
- iii) The *Cysticercus cellulosae* or "bladder worm" is aoid apalescent milky-white, measuring 8-10 mm in breadth and 5 mm in length.
- iv) The scolex of the larva, with its suckers, lies invaginated within the bladder and can be seen as a thick white spot.
- v) It remains viable for several months.

Taenia Solium disease :

Cysticercosis - Viable cysticerci in most organs cause minimal or no tissue reaction, but dying cysts in the central nervous system eye, or spinal cord can release antigens that elicit an intestine tissue response. Thus symptoms often do not appear for years after infection.

Diagnosis - Intestinal infection with *Taenia solium* worms can usually be diagnosed by microscopic examination of stool samples and identification of ova and proglottids. However the ova are indistinguishable from those of *Taenia saginata* and *Taenia asiatica*.

Prevention and Control :

1. Avoidance of eating raw or insufficiently cooked pork.

2. Infection of pork for cysticerci.
3. Proper sanitation facilities.
4. Proper hand hygiene.
5. Treatment of infected person.
6. Avoidance of food contaminated with eggs of *Taenia solium*.

Conclusion

Tapeworms are named after their intermediate hosts, such as *Diphyllobothrium latum* (fish tapeworm), *Taenia saginata* (beef tapeworm) and *Taenia solium* (pork tapeworm). These are all intermediate tapeworms as they are consumed by other carnivores like human beings.

Reference:

* Contributor name — Manideep Roy

* [http:// www. study and care. com](http://www.studyandcare.com)