

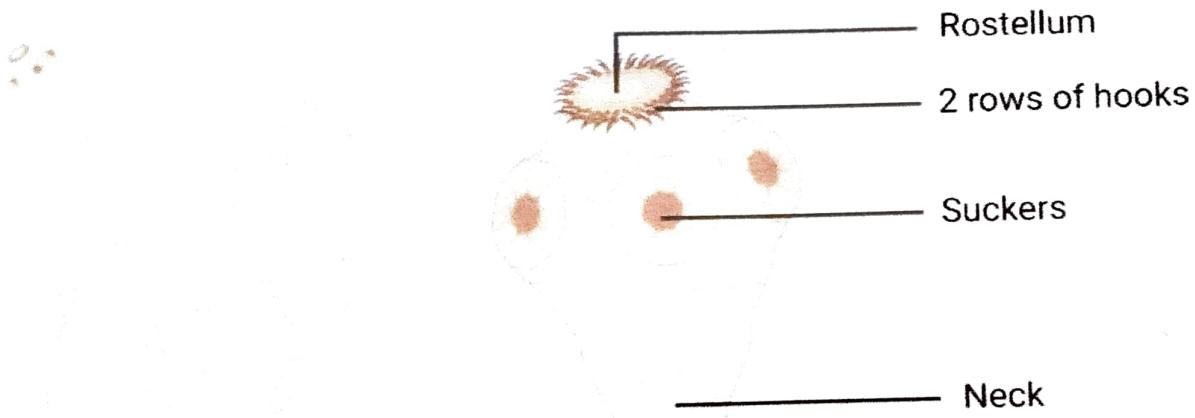
# NANDA NATH SAIKIA COLLEGE

Department of Zoology

Session : 2022-2023

A Project On

## Life Cycle of *Taenia Solium*



Adult *Taenia solium*

Scolex

Submitted for Partial fulfilment of B.Sc 1<sup>st</sup> Sem Zoology honours  
curriculum of DU.

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## CERTIFICATE

This is to certify that the project report submitted "Life cycle of Taenia solium" submitted for Bachelor of Science, degree course in Zoology to fulfill the curriculum under D.U. by Tinamoni Koch, Roll no. 69 under my supervision and guidance, I found her sincerity during the entire period of her experiment. I wish her bright future.

Dr. C. Mitali Chetia  
25/11/2021

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## INTRODUCTION

Taenia solium or pork tapeworm is an endoparasite of man. The life cycle Taenia solium is indirect. It passes through pigs, as intermediate hosts, into human as definitive host. Disease due to the tape worm Taenia 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 meocysticercosis, the most severe form of the disease.

AIM: To study the life cycle of *Taenia solium*.

MATERIALS :- Notebook, Pen, Pencil and scale, text book.

## TAENIA SOLIUM IS PLATYHELMINTHIS :-

Taenia solium is a tapeworm species of class cestoda of phylum Platyhelminthes, it is commonly called Pork tapeworm. The organisms belonging to phylum platyhelminthis have a dorso ventrally flattened body, hence are called flatworms. Flatworms are bilaterally symmetrical, triploblastic and acelomate animal with organ level of organization. For example, Taenia (Tapeworm), Fasciola (Liver fluke). Platyhelminthis are acelomate that are characterized by having three germ layers (ectoderm, mesoderm & endoderm). They are found in marine, fresh water and even damp terrestrial environments. So, Taenia solium is Platyhelminthis.

### Features of Phylum Platyhelminthis —

- Firstly, they are parasites and free living.
- The symmetry of the organism in this phylum is bilateral.
- They have three germ layers and are known as triploblastic organisms.
- As they don't have cavities in them so recognized as acelomates.
- They lack cilia and have a soft covering over their body.

- Platyhelminthes lack segmentation so no segments can be seen in them and are dorsoventrally flattened.

## TAENIA SOLIUM :-

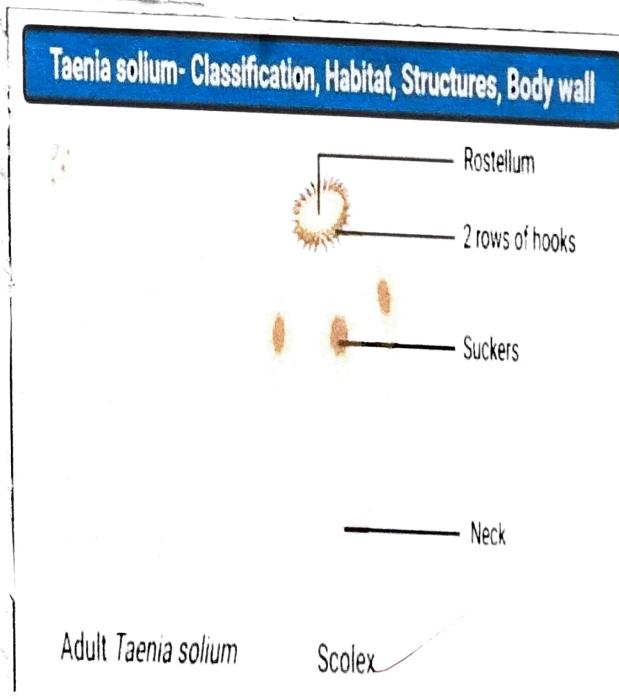
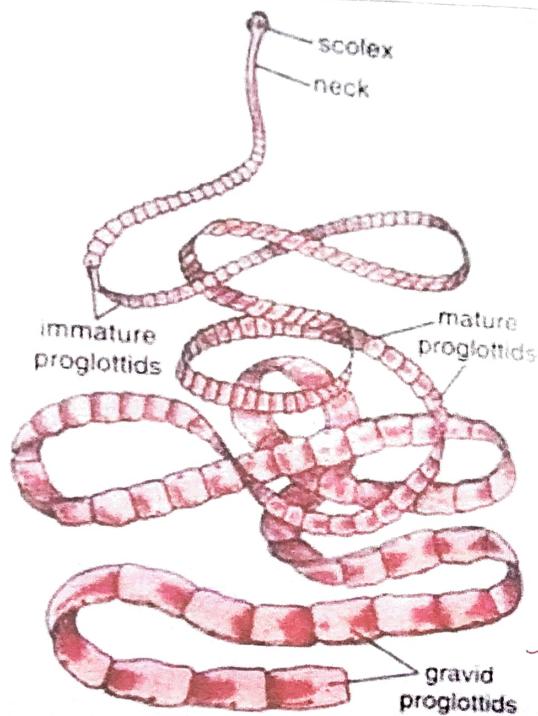


Fig: Taenia solium

## TANIA SOLIUM CLASSIFICATION:-

Phylum —— Platyhelminthes  
 Class —— Cestoda.  
 Sub-class — Eucestoda.  
 Order — Taeniaidea.  
 Family — Taenidae.  
 Genus — Taenia  
 Species — sodium.

## HABITAT:-

Taenia sodium is found nearly world-wide. Because pigs are intermediate hosts of the parasite, completion of the life cycle occurs in regions where humans live in close contact with pigs and eat under-cooked pork.

## STRUCTURE:-

Taenia sodium cysticerci are fluid-filled cystic structures consisting of a thin bladder wall and parenchymatous portion containing a single invaginated scolex surrounded by a convoluted spiral canal. The hooks of the armed scolex may be visible in tissue sections.

## BODY WALL:-

The body wall of Taenia sodium consists of outer tegument and inner basement membrane. Basement membrane includes both the muscular

and the packing material called parenchyma. Taenia consists of two types of muscles namely longitudinal and circular muscles.

### CHARACTERISTIC :-

- i) Taenia solium is better known as the pork tapeworm. It is usually opaque white in colour but creamish, yellowish or grayish colouration is also common.
- ii) Body is 1 to 5 meters long and flattened like a ribbon or tape.
- iii) It has a 1 to 2 mm size head.
- iv) Scolex has two rows of hooks and rounded mobile cone that is the rostellum.
- v) The neck of the tape worm is short and thin and unsegmented.
- vi) Near the neck the proglottid contain the male sexual organ. In the middle of the tapeworms length the proglottids contain the female sexual organ in the terminal position.

### TAENIA SOLIUM ARE PARASITIC :-

It is a tapeworm that uses humans as its definitive host and pigs as the intermediate or secondary host. It is transmitted to pigs through human faeces that contain the parasite eggs and contaminate their fodder. Humans can become infected with these tapeworms by eating

Raw or undercooked beef (*T. saginata*) or pork. People with taeniasis may not know they have a tapeworm infection because symptoms are usually mild or non-existent.

*Taenia solium* tapeworm infections can lead to cysticercosis, which is a disease that can cause seizures, so it is important to seek treatment.

Human :-

*Taenia solium* completes its life cycle in humans are the definitive or primary host. *Taenia solium* cysticercosis results from humans acting as accidental intermediate hosts for the parasite.

Pig :- *Taenia solium* is found nearly world wide because pigs are intermediate hosts of the parasite, completion of the life cycle occurs in regions where humans live in close contact with pig and eat undercooked pork.



## TAENIA SOLIUM EGGS :-

### Taenia species

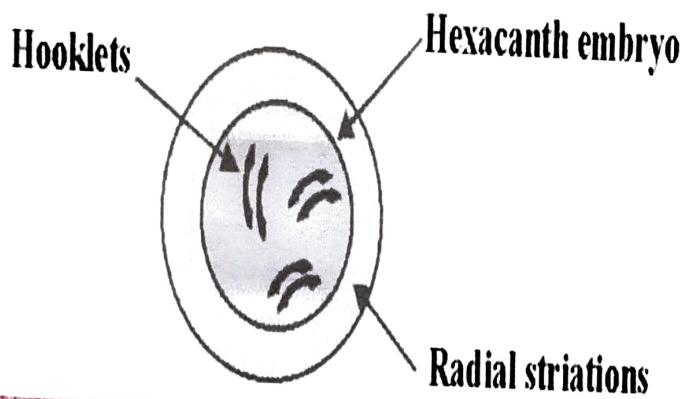
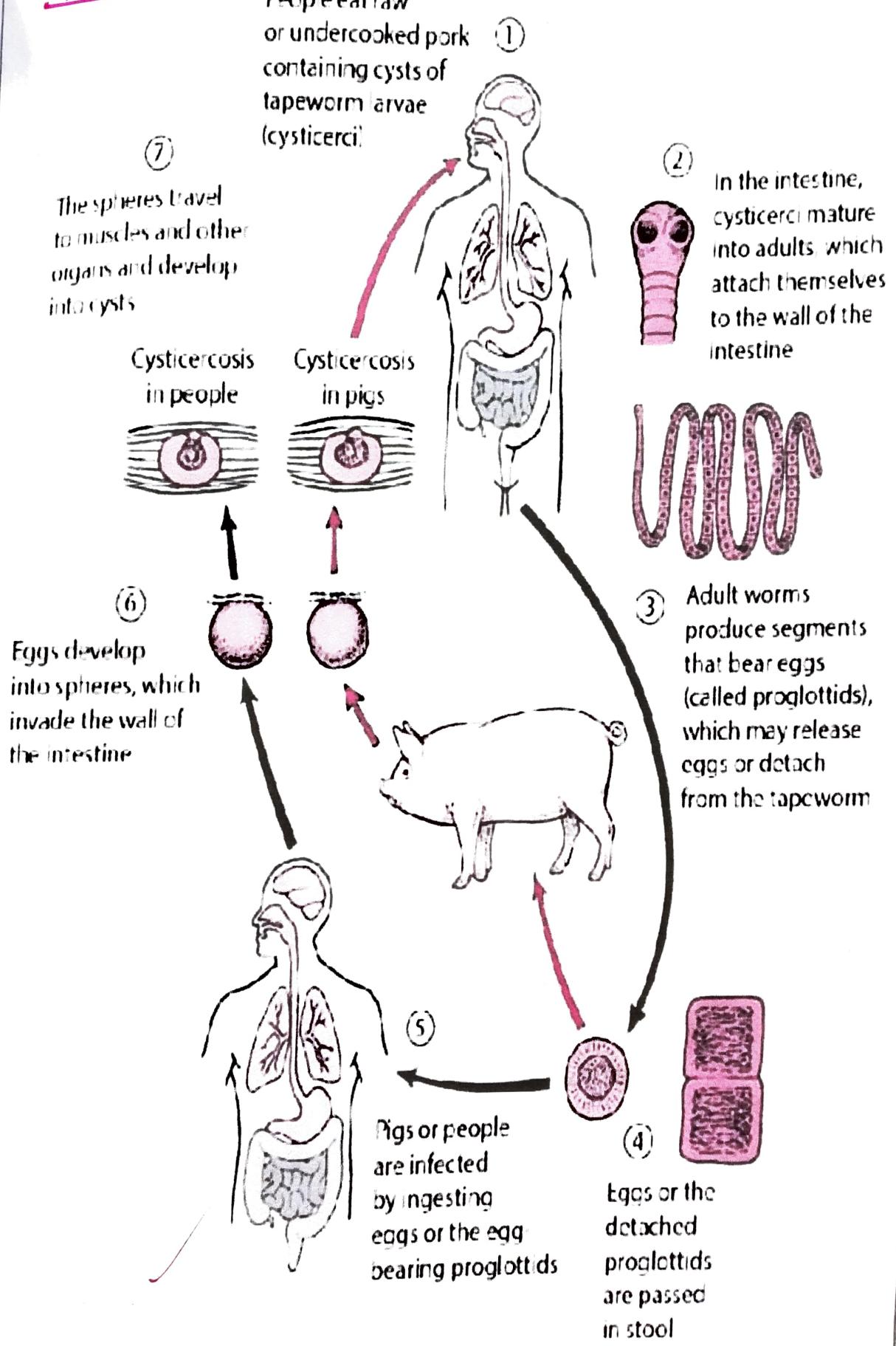


Fig: Taenia solium Eggs

Tapeworm eggs passed in the faeces with the tapeworm carrier are infective for pigs. Each egg is round, brown in colour, measure 40-50 μm in diameter. Each egg consists of two shells. The outer shell is thin, transparent and represents the remnant of yolk mass. Eggs may also infect human if they are ingested by a person, causing infection with the larval parasite in the tissues.

## TAENIA SOLIUM LIFE CYCLE :-



## Life cycle of Taenia solium:-

Infected humans excrete eggs or gravid proglottids in their faecal matter in the parasite from the gastro intestinal tract to nearly vegetation in the form of eggs or gravid proglottids. Pathogenicity of *Taenia solium* in human tapeworm infection may occur in the intestine by the adult tape worm intestinal taeniasis or the infection may occur in the tissue with the tape worm large cysticercosis. *Taeniasis* if acquired by human by ingestion of cysticerci. Larva <sup>is</sup> under cook pork. The larva resides in the intestine mature and releases a bearing segments which are release along with fishes.

*Taeniasis* is usually a symptomatic. A symptomatic when the tapeworm are fully develop in the intestine. It may leads to abdominal discomfort anemia indigestion diarrhoea or constipation. Cysticercosis develops when the proglottids <sup>cor AIDS</sup> are ingested and developing larva migrate to different parts of body and form cysts in tissues. This happens in pig but can also affect humans. Humans are infected with tapeworm by ingestion of under do cook meat of an infected

intermediate hosts or by drinking contaminated water and eating under cook vegetables infected with tapeworm eggs.

## 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 year after infection.

### Diagnosis :-

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

## PREVENTION & CONTROL :-

1. Avoidance of eating raw or insufficiently cooked pork.
2. Infection of pork for cysticercosis.
3. Proper sanitation facilities.
4. Proper hand hygiene.
5. Treatment of infected person.
6. Avoidance of food contaminated with eggs of *Taenia solium*.

## CONCLUSION

This survey points to a focal distribution of taeniasis/cysticercosis and suggests that human cysticercosis is rather acquired due to close contact with Taenia Solium carrier and self infection, than through infection from the environment.

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