

Eimeria tenella

Coccidiosis

- Structure
- Classification
- Life history
- Pathogenecity
- Control measurs

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Systematic Position:

- General characters of Porifera
- Sycon (Scypha):
- Morphology,
- Different types of cells in sycon,
- canal system in Porifera.

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Causative Agent: *Eimeria tenella*

- *Eimeria* belongs to the order Eucoccidiosis is the parasites of various vertebrates & invertebrates.
- They are intracellular parasites of epithelial lining of host's alimentary canal.
- Among several species of *Eimeria* *E.tenella* is discussed here as representative species which causes severe damage to poultry.

Systematic Position

Phylum- Protozoa

Class- Coccidia

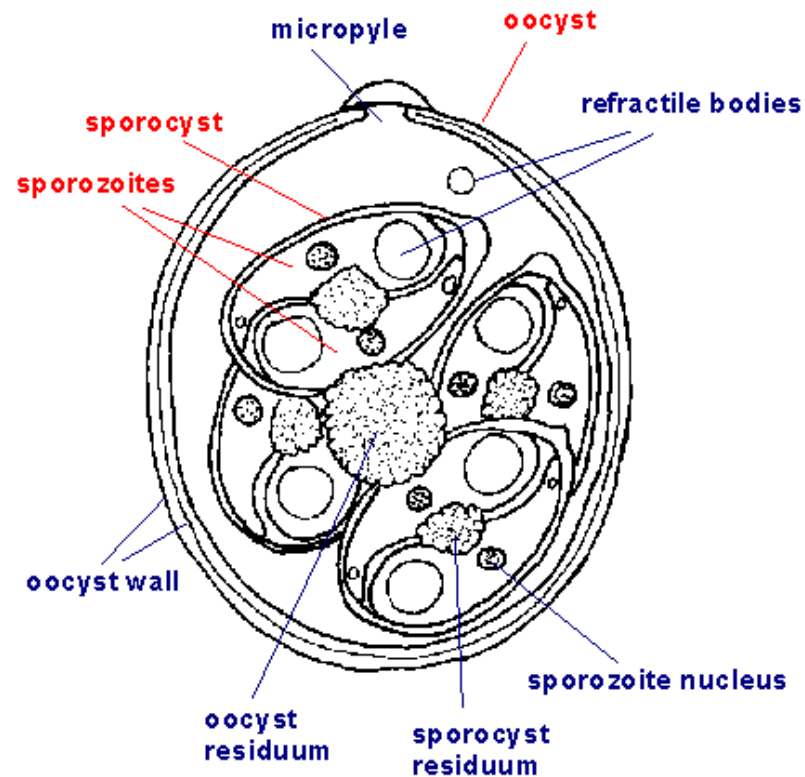
Order- Eucoccidia

Family- Eimeridae

Genus- ***Eimer***

Species-

Sporulated oocyst of *Eimeria*



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- Host: Chickens.
 - Habitat: Caeca of Chickens.
 - Distribution: Worldwide.

Morphology of *E. tenella*

Oocysts are generally ovoid to ellipsoid in shape, range from 10-40 μ m in length by 10-30 μ m in width, and may contain specialized structures, such as polar caps, micropyles, residual and crystalline bodies.

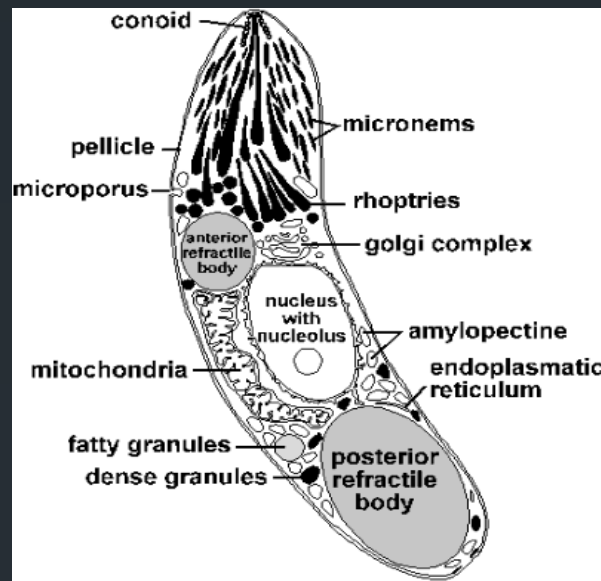
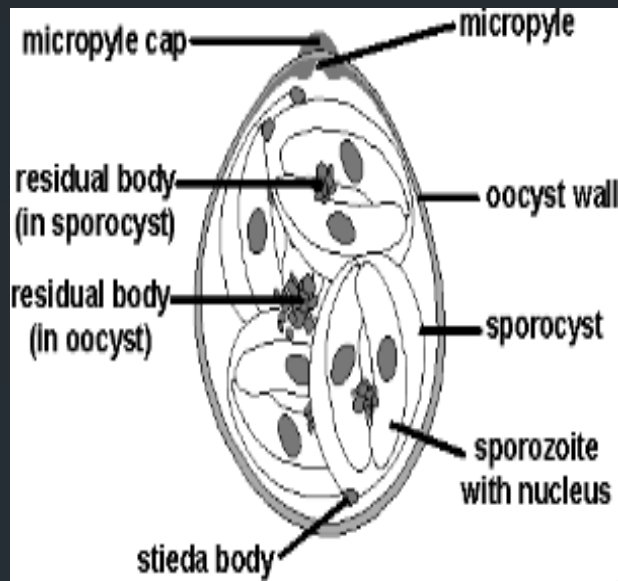


Fig: Different morphological stages of *E. tenella*

Fig.1: Oocyst

Fig.2: Sporozoite

Fig.3: Merozoites



Morphology:

Coccidian parasites form three developmental stages:

schizonts, gamonts and oocysts.

Schizonts range in size depending on parasite species, location in the host and stage of maturity.

The meronts form numerous daughter merozoites by endogenous division of the nucleus followed by cytokinesis. Mature schizonts appear as membrane-bound clusters



Individual schizonts usually range in diameter from 10-100µm but some species form enormous megaloschizonts (up to 1mm in diameter).

Gamonts ---with microgamonts (♂) small basophil biflagellated microgametes; and
macrogamonts (♀) evident as uninucleate eosinophilic cells with a single ovoid nucleus.

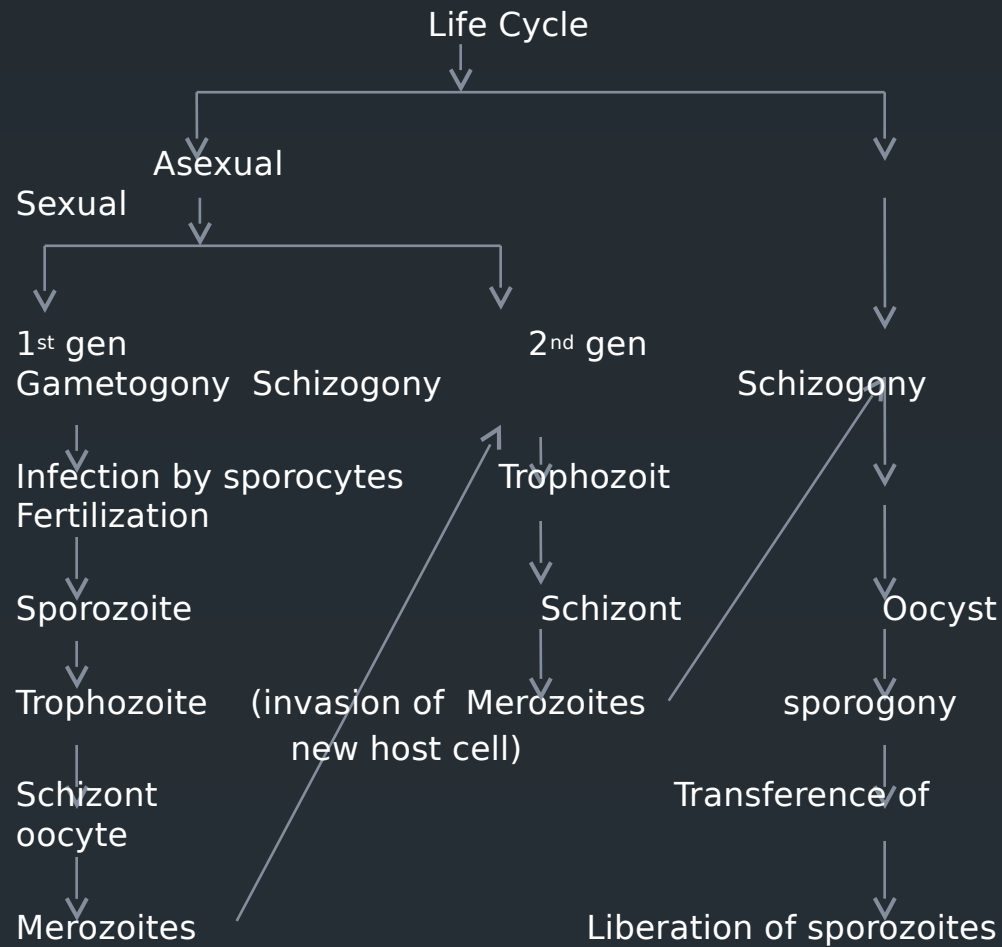


Unsporulated oocysts contain a developing sporoblast which eventually undergoes sporulation forming sporocysts which contain the infective sporozoites.

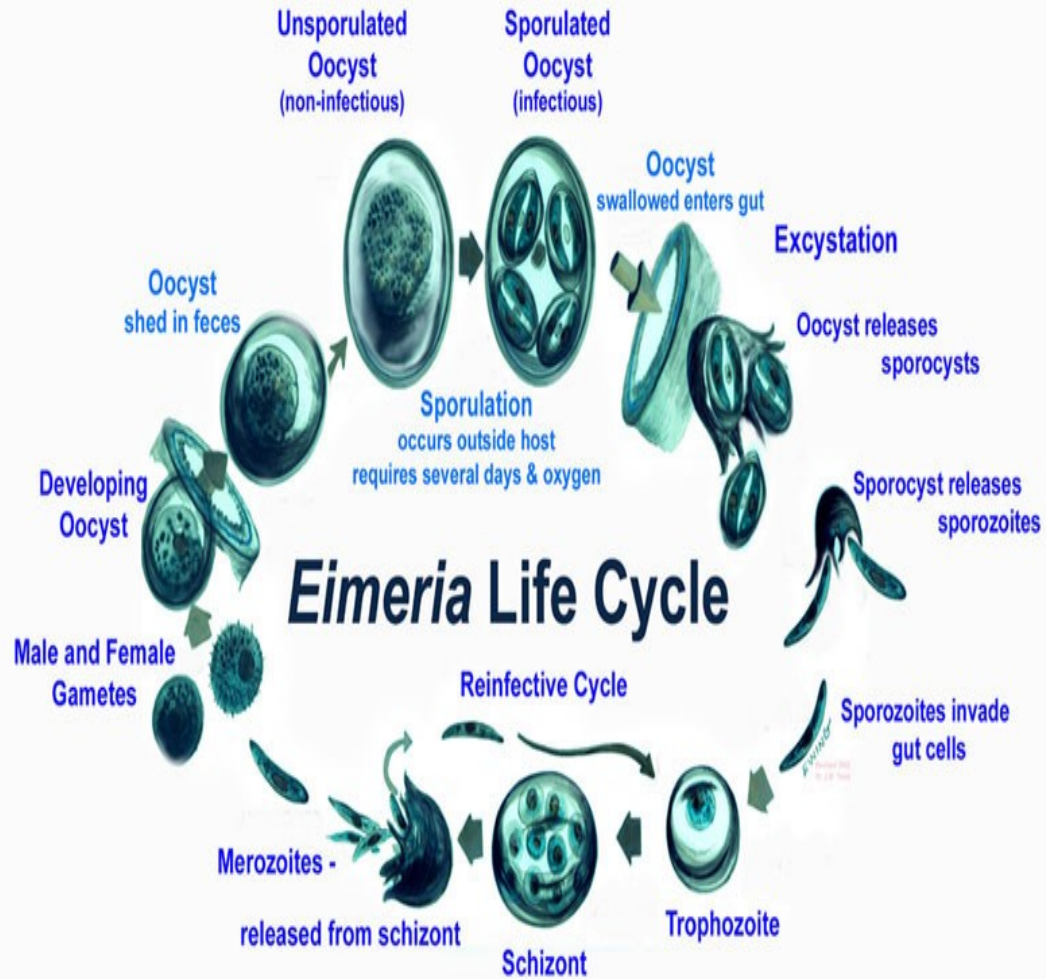
Eimeria oocysts exhibit a characteristic 1:4:2 configuration, that is, each oocyst contains 4 sporocysts each containing 2 sporozoites.

Distribution: Throughout the world in most vertebrate species, mammals, birds, reptiles and fish.

Twelve *Eimeria* spp. have been described from cattle, 11 species from sheep, 9 from goats and 7 from chickens. In general, the



Life Cycle





Pathogenesis

E. Tenella Causes coccidiosis to chicken.

Symptoms of the disease include-

- Bloody droppings, pale face & shanks.
- Bloody vent & enlarged caeca distended with blood or yellowish-grey cheese-like ceres.
- In advanced stages the infected birds show restlessness, drooping wings, shuffled feathers & unsteady gait.

Histopathological Effects

- Inflammatory cells influxes into the submucosa.
- Thickened mucosal & submucosal layer with slightly congestion of blood vessels.
- Necrotized epithelial cells denuded from the mucosal layer.
- Several hemorrhage in the lamina propia.

Mode of transmission:

Oocysts excreted with host faeces contaminate the external environment, but they must undergo internal sporulation (sporozoite formation) before they become infective.

New hosts are infected when they ingest sporulated oocysts.

ingested oocysts and sporocysts excyst in the intestines releasing their contained sporozoites which invade host cells to begin merogony. Excystation stimuli include appropriate post-gastric physico-chemical conditions, such as oxygen levels pH bile salts pancreatic enzymes



Prevention

Infection of chickens may be prevented through-

- Proper hygienic conditions.
- Floors of the poultry houses and yards must be cleaned regularly.
- All equipments used for the purpose of birds rearing should also be cleaned.
- Hot Lye solution can be used for cleaning.



Treatment:

- Treated with sulpha drugs.
- **Sulphamezathene** and **Sulphaquinoxaline** take at the rate of 0.5% with drinking water for about a week.
- Generally **Sulphaquinoxaline** is recommended by physician due to its low toxicity.



THANK YOU