General Introduction

-Avian helminthoses are parasitic diseases with often insidious progression; they are responsible for considerable economic losses that are difficult to quantify.

Among parasitic diseases,

Endoparasites: These are mainly gastrointestinal and respiratory helminths and, Ectoparasites: such as lice, Argas, and fleas, mites like *Dermanyssus gallinae*, very common in traditional farming. They are either vectors of diseases or responsible for deficiencies and weakening of the subjects, predisposing them to various pathologies.

The endoparasites of poultry

Definition

Infestations by gastrointestinal worms are mainly found in poultry that have access to the outdoors.

It is imperative to control worms by performing coproscopies (fecal analyses), which will allow for the selective use of dewormers, thereby reducing the risk of residues in the eggs and minimizing the negative impact on soil and water organisms. When laying hens are infested with various endo-parasites, they become susceptible to other diseases that can be fatal or cause a decline in performance.

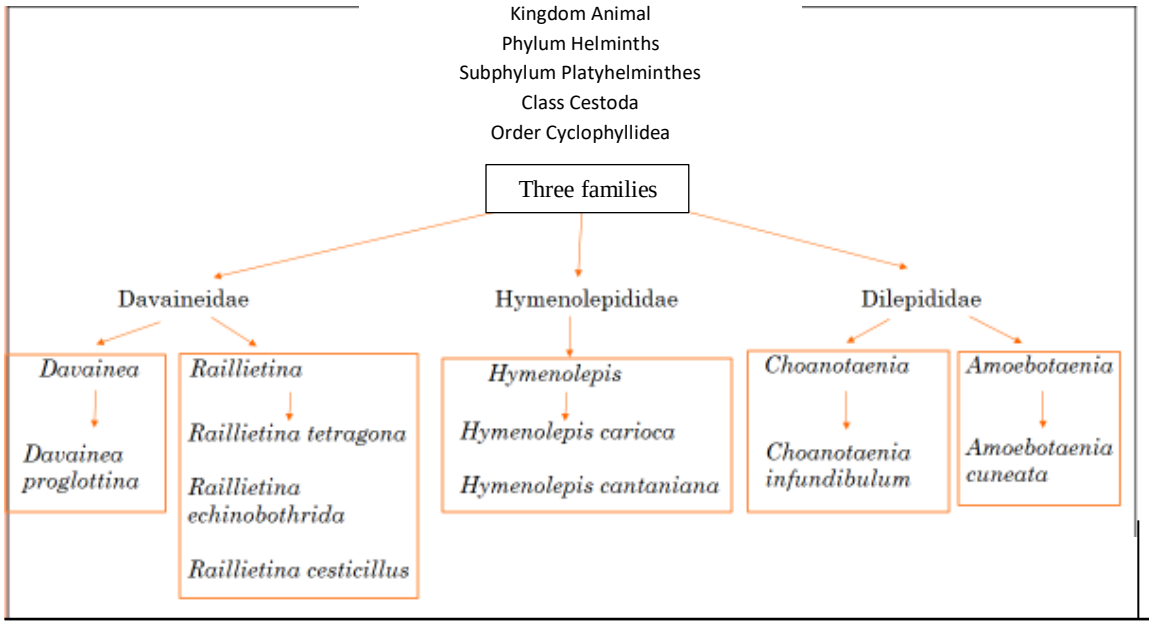
Gastrointestinal infestations include cestodoses and nematodoses.

Avian cestodoses or tapeworm infections

Teniids affect all species of domestic birds, namely: Galliformes, Anseriformes, and Columbiformes.

The importance of teniasis is significant because tapeworms are widespread among ground-raised animals, making teniasis very common. It is also worth noting that tapeworms have a wide geographical distribution. Finally, some species are more pathogenic and can cause the death of animals, and in the best cases, we observe a decrease in productivity in the parasitized subjects.

Systematics of poultry cestodes



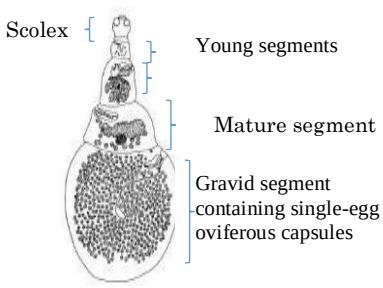
First family: Davaineidae
Size: small cestodes measure 4 to 6 mm, medium ones 15 to 30 cm
The scolex bears 4 suckers equipped with several rows of small spines.
The rostrum is armed with 2 or 3 circles of hammer-shaped hooks.
Two genera group the most widespread species in chickens: *Davainea* and *Raillietina*
Genus Davainea (small cestode of a few mm)

-*Davainea proglottina (Taenia proglottina*):
highly pathogenic
-size of 0.5 to 4 mm in length and 200 to 600µ in width
-formed only of 3 to 5 segments
-quadrangular scolex -4 suckers armed with 3 to 6 rows of small spines
-a rostrum equipped with very small hammer-shaped hooks
-alternate genital pores -ovigerous segments highly developed compared to the rest of the strobila
Cosmopolitan distribution
-Localized in the duodenal region of the small intestine, deeply embedded in its mucosa
-There, it can sometimes be found in the thousands
-The eggs measure 28 to 40 µm in diameter and are isolated in the oviferous capsule of the gravid proglottid.
-Each oviferous capsule contains a single egg
-The only proglottid released daily by this parasite is a gravid proglottid.
-Chickens can be infected by Davainea proglottina after ingesting infected slugs present in the soil.

Life cycle

-Slugs and snails host the larval stages of *Davainea proglottina*
- The gravid proglottids are found in the feces mainly in the afternoon or at nite. The gravid segments of adult tapeworms are excreted with the feces of birds (usually one gravid segment per tapeworm per day).
- The gravid segments can climb vegetation because they are mobile. The gravid segments can climb up the vegetation because they are mobile. The gravid segments are consumed by snails and slugs, and once digested, the eggs are released.
- In the body cavity of the intermediate hosts, the eggs then transform into cysticercoid larvae. In the body cavity of the intermediate hosts, the eggs then transform into cysticercoid larvae.
- More than 1,500 cysticercoid larvae developed along the digestive tract of the slugs, where they remained infectious for more than 11 months. More than 1,500 cysticercoid larvae developed along the digestive tract of the slugs, where they remained infectious for over 11 months.
-About 300 worms were found in a bird, and these tapeworms can live up to three years.
Pathogenicity
-*D. proglottina* is the most pathogenic tapeworm.
-Affects the duodenum and the upper part of the jejunum of chickens, other gallinaceous birds, and pigeons. The worms penetrate deeply between the intestinal villi, causing necrosis and hemorrhagic enteritis.
- Death can sometimes occur due to an intestinal obstruction.
- Chronic infection is characterized by stunted growth, weight loss, and weakness Chronic infection is characterized by a slowdown in growth, weight loss, and weakness.

A



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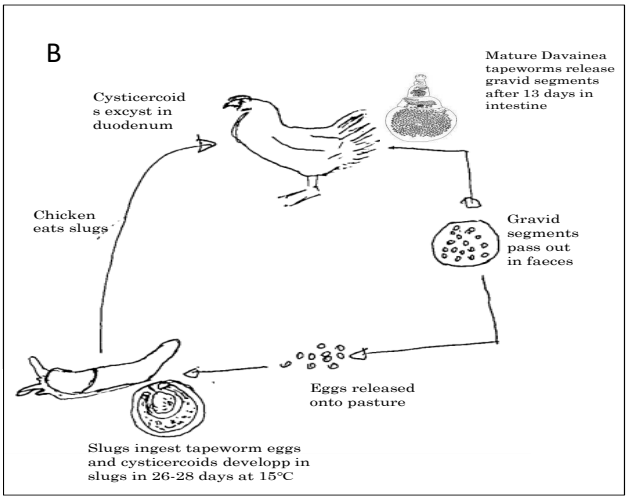
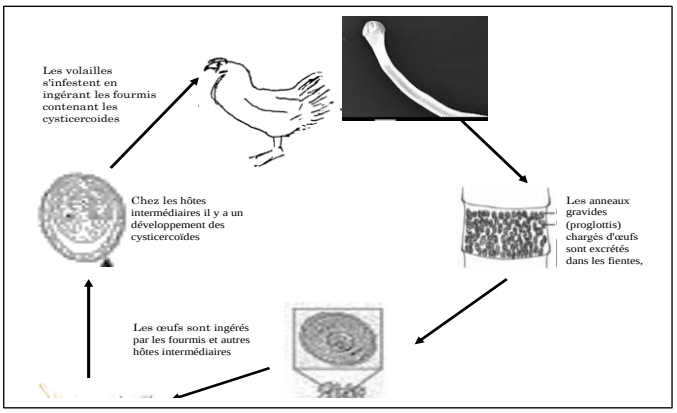


Davainea proglottina : A-Adulte, B-life cycle

Raillietina (large cestode)
-frequent
-can cause intestinal nodules
There are two subgenera:
-*Raillietina:* unilateral genital pores
-*Skrjabinia*: genital pores irregularly alternated
Raillietina tetragona (= galli)
-Worms measuring a few cm to 0.25m in length and 1 to 4 mm in width
-Small tetragonal scolex measuring 175 to 25µ on each side, equipped with 4 sub-oval suckers bordered by 8 to 10 rows of small spines
-A rostrum armed with about a hundred hooks, each 6 to 8µ long, arranged in a single crown
-unilateral genital pores
-ovigerous segments bearing multi-ovulated egg capsules containing 6 to 12 eggs
Evolutionary cycle
It is indirect and requires ants (order Formicoidea (ants) Family Mirmicidae) (mainly *Tetramorium* or *Pachycondyla sennaarensis*) as intermediate hosts as well as *Musca domestica* flies.
The ovigerous proglottids loaded with eggs are excreted, ingested by ants, develop into cysticercoids, and reinfect birds thru ingestion.
Other species of *Raillietina*
*Raillietina **(Raillietina)** echinobothrida*
Raillietina (Skrjabinia) cesticillus
Raillietina friedbergeri
Raillietina maroteli
Raillietina (Raillietina) echinobothrida
- Very widespread worm in the world
- Worms from a few cm to 0.25m long and 1 to 4 mm wide
- Scolex of 250 to 400µ with very developed circular suckers (100 to 200µ in diameter)
-Rostrum armed with 200 to 250 hooks arranged in 2 clearly visible crowns
-Absence of neck
-Genital pores open in the posterior 1/3 of the poral edge of the segments
-Ovarian capsules containing 8 to 12 eggs of 25 to 40 µ
Life cycle
Same intermediate hosts as Raillietina tetragona, the prepatent period is 20 days and the shedding of segments occurs during the nite.
Raillietina (Skrjabinia) cesticillus is very widespread among Galliformes.
- Worm 10 to 50 cm long and 1 to 3 mm wide - Globular scolex 300 to 600µ at its anterior part, forming a cushion bearing the rostrum - The rostrum is flattened and wide, armed with 400 to 500 hooks arranged in 2 crowns
-Small, slightly prominent suckers -Genital pores irregularly alternated, opening in the anterior third of the poral margin of the segments -Ovigerous segments with oviferous capsules
Life cycle
-Worm located in the initial portion of the small intestine, in front of the opening of the bile ducts, the intermediate hosts are the beetles



Second family: Hymenolepididae
Genus *Hymenolepis*
Species *Hymenolepis carioca*
-Worm 3 to 8cm long and 500 to 700µ, very narrow, threadlike
-Flat scolex, small size with atrophied rostrum, unarmed with circular suckers
-Segments are 3 to 5 times wider than long
-Genital pores open in the anterior part of the sexual margins
-Subglobular eggs
-Located in the anterior part of the small intestine
Life cycle
-It follows an indirect cycle requiring intermediate hosts such as flies and beetles

Third family: Dilepididae

Amoebotaenia cuneata, a cosmopolitan worm, located in the duodenum
-Triangular
-shaped worm with a narrow anterior part
-Very small worm (microscopic) measuring 3 to 4mm in length and 1 to 1.5mm in width -The number of segments varies from 12 to 24
-The rostrum is armed with 12 to 14 hooks. The suckers are circular or oval and unarmed. The mature segments possess 12 to 15 spherical testes, an elongated ovary. The genital pores are irregularly alternated. The intermediate hosts are oligochaete annelids, and the prepatent period is approximately 4 weeks.

Choanotaenia infundibulum
-Worm 5 to 25cm long and 2 to 3.5mm wide
-Rounded scolex with a diameter of 400µ
-Rostrum 65 to 90µ armed with a crown of 16 to 22 large hooks, 4 unarmed suckers
-The mature segments are funnel-shaped
-Genital pores regularly alternated and open in the anterior third on the poral side
-Gravid segments containing oval eggs
-This worm is located in the jejunal portion of the small intestine
-The intermediate hosts are the housefly and beetles