

Eimeridae
Coccidiosis in Poultry

The criteria in species differentiation

- 1) The morphological and molecular features of the oocysts
- 2) Hosts,
- 3) Immune specificity
- 4) The localization area and appearance of the lesions in the natural host
- 5) Prepatent period

Caecal, small intestine and rectal coccidiosis are seen in chickens. High pathogenic species are *E. necatrix* and *E. tenella*.

Development

- The sporozoites release after the oocysts wall torn, and they enter the epithelial cells of the intestine and start to reproduce.
- Following at least two generation of a asexual meragony, sexual gametogony is seen.
- Active microgamets fertilize macrogamets and the zygotes occur.
- The zygote matures and becomes a thick-shelled oocyst.
- The oocysts are thrown out with stool.
- This period is completed in 4-6 days.

Transmission

- Transmission occurs with taking of water and food that are contaminated with sporulated *Eimeria* oocysts.
- There are important impacts relating to hosts, species, environment, nutrition, other diseases and stress in the occurrence of the disease.
- The factors belonging to host are pathogen strain, age and immunity.
- The immunity is also an important factor in the occurrence of the disease. Immunity is specific to host.
- The mixed infections can be seen in chickens.

The severity of clinical infection

- The severity of clinical infection depends on the pathogenicity of *Eimeria* spp. and the amount of oocysts.
- In the outbreaks
 - Crowded dreading
 - Contamination of foods and water with stool
 - External animal participations
 - play important role.

Eimeria tenella: One of the most pathogenic species. They develop in the cecum. Cecal coccidiosis is generally seen in chicks (4 week).

Deaths reach the highest level on 5-6. days.

Eimeria necatrix: They locate in the small intestine of chickens. 1. and 2. generation meronts develop in the small intestine and 3. generation meronts and gametocytes develop in cecum.

Eimeria brunetti: The developmental stages of this species are seen cecum and cloaca.

A - D: *E. necatrix*, E - H: *E. brunetti*, I - L: *E. tenella*

Eimeria maxima: The oocysts are large and resemble to chicken egg. They generally locate in the middle part of small intestine.

Eimeria acervulina: They generally locate in duodenum.

Eimeria mitis: They locate in the front part of the small intestine.

Eimeria mivati: They locate in the front part of the small intestine.

Eimeria praecox: They locate in the front part of the small intestine.

Eimeria hagani: They locate in the front part of the small intestine.

A: *E. maxima*, B – E: *E. acervulina*, F: 1. sporulated *E. maxima* oocyst,
2. Sporulated *E. maxima* oocyst,
3. *E. tenella* (probably), 4 and 5 *E. mitis* (probably),
G: 1. normal view of intestine, 2. *E. maxima*, H – J: *E. maxima*

Clinical manifestations

- Acute, chronic and subclinical forms
- *E. tenella* causes acute disease, while *E. necatrix* causes chronic disease.
 - Acute coccidiosis is seen in chicks.
 - Chronic infection is formed in less severe infection.
 - The disease is overcome before the clinical signs appear in the subclinical coccidiosis.

Pathological appearance of the intestines in
coccidiosis

Treatment

- 1. Sulfonamid group drugs
- 2. Pyrimidine group drugs
- 3. Dinitro compounds
- 4. Nitrofuranlar
- 5. Hydroxyquinolinler
- 6. Pyridinler
- 7. Polyether İonophorous Antibiyotikler
- 8. Triazintrionlar
- 9. Diğerleri

Control and Prevention

- The main target in the control is that susceptible chickens must be prevented to take of too many oocysts in a short time.
- Frequently replacement of poultry litter.
- The conservation of poultry litter in dry condition prevent the sporulation of oocysts.
- Waterer hygiene is also important.
- Ventilation
- The contamination of waterers and mangers with feces should be hampered.
- Crowded and mixed (young, old) breeding should not be done.

Coccidiosis in turkeys