

International Journal of Advanced Biochemistry Research



ISSN Print: 2617-4693
ISSN Online: 2617-4707
NAAS Rating (2026): 5.29
IJABR 2026; 10(6): 1127-1130
www.biochemjournal.com
Received: 25-03-2026
Accepted: 29-04-2026

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Pathological investigation of coccidiosis in desi fowls

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DOI: <https://www.doi.org/10.33545/26174693.2026.v10.i6n.8840>

Abstract

Coccidiosis is one of the most important protozoal diseases of poultry. In the present study, a total of 50 domestic fowls has been received for detailed post-mortem examination at Department of Veterinary Pathology, College of Veterinary Science and Animal Husbandry, Anjora, Durg, Chhattisgarh, India, during a period of three months (February to April). Post mortem examination revealed, 32 out of 50, birds were positive for coccidial oocysts by examination of intestinal scrapping. Prevalence of coccidiosis reported as 64%. Gross examination of birds showed pale muscle, dehydration, ballooning, thickening and severe haemorrhages on the mucosa of intestine. Histopathological lesions characterized by presence of numerous coccidial oocysts in the lamina propria of intestine, loss of villi, marked haemorrhages and infiltration of heterophils and mononuclear cells in the intestine, desquamation of epithelium, congestion of submucosal blood vessels and mild hepatic congestion. To conclude, coccidiosis remains the prevalent protozoal infection in desi fowls. To reduce the prevalence of coccidiosis in the study area, improved management practices, such as increased biosecurity measures and regular monitoring, are recommended.

Keywords: Coccidiosis, pathology, desi fowl

1. Introduction

In recent years, the Indian poultry industry has seen a fundamental shift in structure and operations. Poultry is one of India's fastest growing agricultural sectors, providing humans with animal protein, particularly meat and eggs, while also contributing significantly to the national economy. However, this tremendous growth is hampered by a variety of factors, including the prevalence of various diseases (Yaro *et al.*, 2025) [15]. Modern and industrial poultry breeding programs have been shown to lead to much more production efficiency and increased poultry density; however, the application of various prevention and treatment programs in poultry farms leads to diseases with subclinical symptoms and development of drug resistance (Shahraki *et al.*, 2018) [12]. Confinement rearing and poor management, such as wet litter, contaminated drinkers and feeders, poor ventilation and high-density flocks, have increased the risk of disease transmission, including coccidiosis.

Coccidiosis is one of the most economically important protozoal disease of poultry caused by *Eimeria* spp. *Eimeria* multiplies in the intestinal tract and causes tissue irritations and bleeding in the gastrointestinal tract, resulting in the interruption of feeding, digestive processes, nutrient absorption that consequently leading to severe diarrhoea, dehydration, weight loss, anemia, loss of skin pigmentation, poor growth, low production and increased susceptibility to other disease pathogens with high rate of mortality and morbidity (Adamu *et al.*, 2013) [1]. In case of outbreaks, mortality and economic losses are tremendous. *Eimeria* spp. mainly affects the birds between the age of 3 and 18 weeks. Young chicks are most susceptible for the disease (Hayet *et al.*, 2021) [15].

Among the 9 species of coccidian affecting the domesticated poultry, *E. brunetti*, *E. maxima*, *E. necatrix* and *E. tenella* are considered as highly pathogenic, *E. acervulina*, *E. mitis* and *E. mivati* are rather less pathogenic, and *E. praecox* and *E. hagani* are regarded as the least pathogenic (Bora *et al.*, 2024) [4].

Avian coccidiosis is classified as caecal and intestinal forms. Caecal coccidiosis is characterized by diarrhoea and massive caecal haemorrhages whereas in intestinal form, lesions are found throughout the length of the intestine, primarily in the middle portion of the small intestine.

Gross pathology in poultry coccidiosis includes severe ballooning of intestine, presence of mucoid to blood tinged exudates, petechial hemorrhages, necrosis of intestinal and caecal wall, caecal enlargement with clotted blood and hemorrhagic enteritis. Microscopically, the disease is characterized by disruption of mucosa, clusters of oocysts, congestion of blood vessels, marked haemorrhage, necrosis of submucosa of the intestine and cecum, loss of intestinal villi and massive infiltration of heterophils and mononuclear cells (Olabode *et al.*, 2020) ^[11]. The present study was undertaken to determine the pathogenic impact of *Eimeria* spp. affecting desi fowl of in and around Durg district of Chhattisgarh.

2. Materials and Methods

In the present study, a total of 50 desi fowl with clinical history were subjected for detailed post mortem examination at Department of Veterinary Pathology, College of Veterinary Science and Animal Husbandry, Anjora, Durg. Gross pathological lesions were recorded and cytosmear examination of intestinal mucosal scrapping from all the birds has been carried out. Representative tissue samples of the intestine, caeca and liver of suspected birds were collected in 10% formalin for the histopathological examination. Tissues were then dehydrated in acetone, cleared in benzene, embedded in paraffin for preparation of blocks in paraffin wax. Sections were made at 4 μ thickness and Hematoxylin and eosin staining performed as per the standard procedure described by Slaoui and Fiette (2011) ^[14].

3. Results and Discussion

3.1 Prevalence

In the present study, post-mortem examination of 50 desi fowls conducted during a period of three months (February to April). All the birds had a history of bloody mucoid diarrhoea, dehydration, anemia and low production with mortality. The Prevalence rate of coccidiosis was recorded as 64% (Fig 1).

In post-mortem examination, grossly, haemorrhages in the intestine were observed in 43 birds out of which 32 cases revealed presence of *Eimeria* oocysts in intestinal scrapping (Fig 2).

Results of the present investigation were in accordance with the previous studies. In an earlier study, Khan *et al.* (2006) ^[9] reported 71.86% prevalence rate of coccidiosis in poultry of Pakistan. Karaer *et al.* (2012) ^[8] performed a study to determine the prevalence of subclinical coccidiosis in broiler farms in Turkey and found 54.3% prevalence rate. Bachaya *et al.* (2015) ^[3] investigated the prevalence of coccidiosis in broiler chickens in Pakistan and observed the overall prevalence of 65%. Similarly, in another study by Kumar *et al.* (2019) ^[10], prevalence rate of intestinal coccidiosis and caecal coccidiosis recorded as 32.15% and 28.36% respectively during a period of 1 month in which overall prevalence was 60.52%. Alwan *et al.* (2025) ^[12] found an overall prevalence of coccidiosis in Backyard chickens of Al-Diwaniyah City-Iraq as 37.97%, which was quite lower than our findings.

High prevalence of coccidiosis in this study, might be due to poor managemental practices and biosecurity measures, malnutrition or non-use of coccidiostats as preventive measures. Higher stocking densities may also be a contributing factor. Overcrowding results in rapid accumulation of faecal materials and moisture in the litter, providing an ideal environment for *Eimeria* oocysts to sporulate. This substantially increases the potential of ingestion and reinfection throughout the flock (Islam *et al.*, 2025) ^[6].

3.2 Gross lesions

The gross necropsy changes revealed pale muscles, emaciation and severe ballooning in intestine. Upon opening of the intestines, blood-tinged contents were found along with thickening of the intestinal wall and severe haemorrhages on the mucosa (Fig 3). Haemorrhagic enteritis was observed in whole length of intestine in 26 cases out of which 19 cases revealed the presence of coccidial oocysts in intestinal scrapping examination.

Our findings were in corroboration with findings of Kaboudi *et al.* (2016) ^[7] who also noticed dehydrated and pale carcasses along with ballooning, clotted blood and fibrino-caseous materials and hemorrhages in intestine and caeca. Similar results were also reported by Sharma *et al.* (2013) ^[13]; Kumar *et al.* (2019) ^[10] and Olabode *et al.* (2020) ^[11]. They observed dehydration, ballooning and thickened wall in the intestine and hemorrhagic enteritis in their study.

3.3 Histopathology

Histopathological studies revealed presence of numerous coccidial oocysts in the lamina propria of intestine (Fig 4). Infection in some places is so severe that all the submucosal area of intestine found to be filled with different developmental stages of coccidia (Fig 5). Intestine showed desquamation and sloughing of enterocytes leading to necrosis of intestinal villi (Fig 6). There was inflammatory reaction characterized by infiltration of heterophils and mononuclear cells. Complete desquamation of epithelium from the mucosal surface observed at few places. Marked haemorrhages in intestinal and caecal mucosa and massive congestion of submucosal blood vessels were observed (Fig 7). Fibrosis with degeneration of sub-mucosal glandular epithelium in intestine were also seen. Additionally, mild hepatic congestion was also observed as considerable finding (Fig 8).

These findings were similar to those of Sharma *et al.* (2013) ^[13]. They observed loss of epithelial tissue, congestion of blood vessels, necrosis of submucosa, loss of villi, disruption of mucosa, presence of clusters of oocysts in the lamina propria and marked haemorrhage as well as necrosis of caecal mucosa. There was massive infiltration by heterophils and mononuclear cells and several merozoites, schizonts and microgametes were found in the epithelial cells of intestine and caecum. Similar changes were also observed by Shahraki *et al.* (2018) ^[12] and Olabode *et al.* (2020) ^[11].

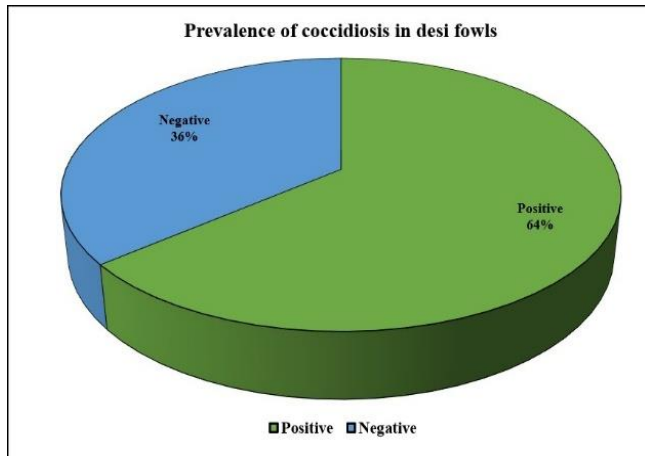


Fig 1: Prevalence of coccidiosis in desi fowls in study area

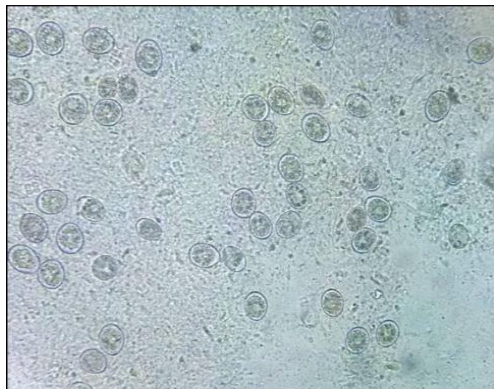


Fig 2: Intestinal scraping showing numerous oocysts of *Eimeria* spp. X 400



Fig 3: Intestine showing severe haemorrhages in mucosa.

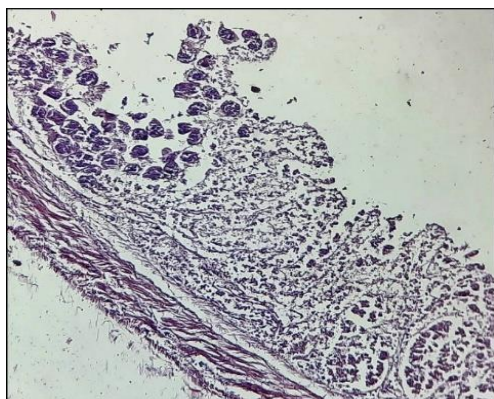


Fig 4: Intestine showing numerous coccidial oocyst in the lamina propria along with clubbing and shortening of adjacent villi. H&E X100

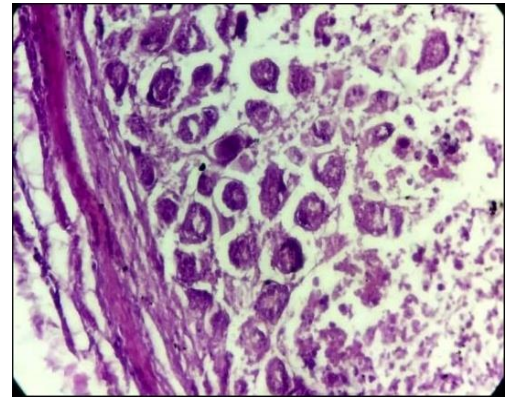


Fig 5: Intestine showing presence of various developmental stages of *Eimeria* spp. in the lamina propria of intestine. H&E X400

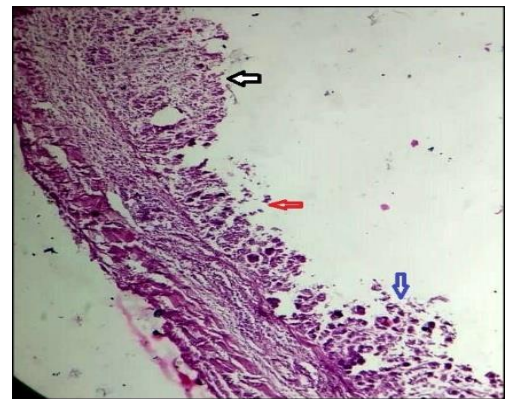


Fig 6: Intestine depicting destruction and sloughing of intestinal villi (red arrow), clubbing and shortening of the adjacent villi (black arrow) along with *Eimeria* oocysts (blue arrow). H&E X100

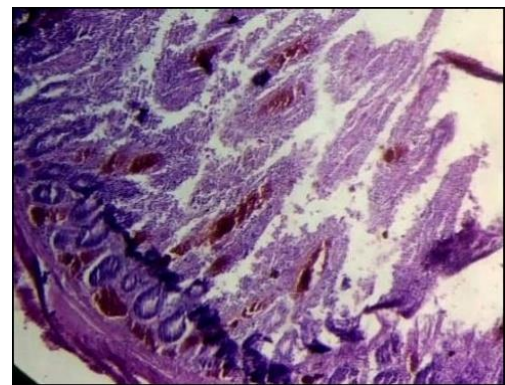


Fig 7: Intestine showing haemorrhages in the mucosal and submucosal area. H&E X400

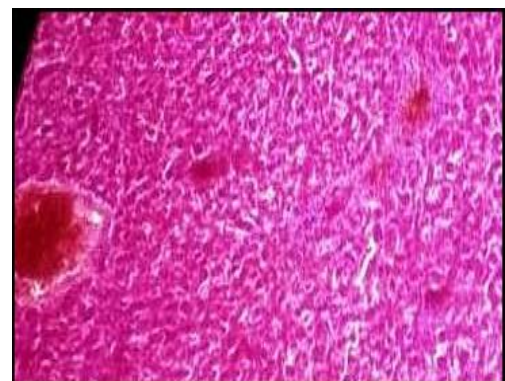


Fig 8: Liver showing moderate congestion along with mononuclear cell infiltration. H&E X400

4. Conclusion

It could be concluded that high prevalence records of the present work reflect existence of severe burden of coccidian infection in desi birds of the study area. Various degenerative and inflammatory changes along with presence of coccidial oocyst in the intestinal mucosa supports the high prevalence results which is clear indication of coccidian infection in birds. Poor management and unhygienic practices in the backyard poultry production are the main contributory factors for the onset of coccidiosis. Due to the potential of coccidiosis for a catastrophic outbreak and the resulting economic loss, it is, therefore, recommended that proper control measures must be adopted in terms of strict biosecurity measures, hygienic practices and use of anticoccidial drugs. Additionally, further investigations should be performed in order to improve the control strategies and managemental practices in farms.

5. Acknowledgement

Authors acknowledge the support and necessary facilities received from Department of Veterinary Pathology, College of Veterinary Science and Animal Husbandry, DSVCKV, Anjora, Durg, (C.G.) to do this work.

6. Conflict of Interests

Authors declare that they have no conflict of interest.

References

1. Adamu M, Boonkaewwan C, Gongruttananun N, Vongpakorn M. Hematological, biochemical and histopathological changes caused by coccidiosis in chickens. *Agriculture and Natural Resources*. 2013;47(2):238-246.
2. Alwan MS, Al-Ibrahimi LA, Marhoon IA. Prevalence and risk factors of coccidiosis in the backyard chickens of Al-Diwaniyah City-Iraq. *International Journal of Medical Parasitology & Epidemiology Sciences*. 2025;6(1):24-31.
3. Bachaya HA, Abbas RZ, Raza MA, Iqbal Z, Rehman TU, Baber W, *et al.* Existence of coccidiosis and associated risk factors in broiler chickens in Southern Punjab, Pakistan. *Pakistan Veterinary Journal*. 2015;35(1):81-84.
4. Bora CAF, Kumar VJA, Mathivathani C. Prevalence of Avian coccidiosis in India: a review. *Journal of Parasitic Diseases*. 2024;48(2):181-188. <https://doi.org/10.1007/s12639-024-01661-7>.
5. Hayet S, Sujun KM, Mustari A, Miah MA. Hemato-biochemical profile of turkey birds selected from Shergpur district of Bangladesh. *International Journal of Advanced Research in Biological Sciences*. 2021;8(6):1-5. doi: 10.22192/ijarbs.2021.08.06.001.
6. Islam MS, Mir DA, Islam S, Jahid MA, Sumona NA, Swar DK, *et al.* Prevalence of coccidiosis in commercial chickens of Bangladesh: species identification with age and seasonal associations. *World Veterinary Journal*. 2025;15(3):764-773. doi: <https://dx.doi.org/10.54203/scil.2025.wvj78>
7. Kaboudi K, Umar S, Munir MT. Prevalence of coccidiosis in free-range chicken in Sidi Thabet, Tunisia. *Scientifica*;2016.
8. Karaer Z, Guven E, Akcay A, Kar, S, Nalbantoglu S, Cakmak A. Prevalence of subclinical coccidiosis in broiler farms in Turkey. *Tropical Animal Health and Production*. 2012;44(3):589-594.
9. Khan MQ, Irshad H, Anjum R, Jahangir M, Nasir U. Eimeriosis in poultry of Rawalpindi/Islamabad area. *Pakistan Veterinary Journal*. 2006;26(2):85-87.
10. Kumar YR, Namratha ML, Sawale GK, Ramesh G, Mahesh B, Reddy KAK, *et al.* Occurrence of intestinal and caecal coccidiosis in Rajasri birds. *Journal of Animal Research*. 2019;9(6):875-878.
11. Olabode VB, Gunya DY, Alsea, UM, Choji TPP, Barde IJ. Histopathological lesions of coccidiosis natural infestation in chickens. *Asian Journal of Research in Animal and Veterinary Sciences*. 2020;5(2):41-45.
12. Shahraki F, Shariati-Sharifi F, Nabavi R, Jamshidian A. Coccidiosis in Sistan: the prevalence of *Eimeria* species in native chicken and its histopathological changes. *Comparative Clinical Pathology*. 2018;27(6):1537-1543.
13. Sharma S, Azmi S, Iqbal A, Nasirudullah N, Mushtaq I. Pathomorphological alterations associated with chicken coccidiosis in Jammu division of India. *Journal of Parasitic diseases*. 2015;39(2):147-151.
14. Slaoui M, Fiette L. Histopathology procedures: from tissue sampling to histopathological evaluation. *Methods of Molecular Biology*. 2011;691:69-82.
15. Yaro SS, Mohammed A, Sani NH, Abdulrahman A, Iliya B, Abubakar A. Prevalence of coccidiosis in chickens from Gwallameji, Bauchi State, Nigeria. *International Journal of Agriculture and Ecological Research*. 2025;10(1):1-6.