

Prevalence of Coccidiosis in Broiler Chickens in Djôrô Region, Southwestern Burkina Faso

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ABSTRACT

In Burkina Faso, the poultry industry faces significant health challenges, notably coccidiosis, an intestinal parasitic disease that results in substantial economic losses. This cross-sectional clustered study aimed to determine the prevalence and oocyst load of *Eimeria* (*E.*) spp. in litter-derived fecal samples from broiler chickens in Batié, Dano, Diébougou, and Gaoua in the Djôrô region of Burkina Faso. The study was conducted from June to September 2024. A total of 600 fresh fecal samples were collected from broiler chickens aged 35 to 45 days, originating from 30 traditional and 30 modern farms across the Djôrô region. The droppings were collected from litter, placed in airtight plastic bags, and stored in cooling boxes at 4°C, then transferred to the Laboratory of Animal Biology and Physiology at the Gaoua University Center, Burkina Faso, for subsequent parasitological analysis. Samples were examined using a modified McMaster flotation procedure with saturated sodium chloride, and oocyst counts were determined. For postmortem examination, 25 broiler chickens were randomly selected from a local poultry market in Gaoua, Burkina Faso, then slaughtered and plucked on-site the same day. The plucked, uneviscerated carcasses were then stored in cooling boxes at 4°C, and the intestinal tracts were later analyzed at the laboratory for macroscopic lesion identification and site localization. Out of the 600 samples analyzed, 439 (73.17%) tested positive for *Eimeria* spp. oocysts. Positivity rates ranged from 62.7% in Dano city to 92.0% in Diébougou city, with Batié and Gaoua at 72.7% and 65.3%, respectively. Diébougou city had the highest mean oocyst count (40,310.67 ± 2,863.40 OPG). Descriptively, traditional farms had higher oocysts per gram of feces (OPG) values than modern farms. Postmortem examination identified *E. acervulina* (13/25), *E. maxima* (8/25), and *E. necatrix* (4/25) in the intestinal tracts of chickens obtained from the Gaoua slaughter market. Nevertheless, postmortem findings were not generalized to the Djôrô region. The current results demonstrated the substantial *Eimeria* contamination on broiler farms in the Djôrô region, Burkina Faso, and supported the need for improved litter management, biosecurity, and farmer training on coccidiosis prevention.

Keywords: Broiler chicken, Coccidiosis, *Eimeria* spp., Oocyst, Prevalence

INTRODUCTION

In Burkina Faso, cattle and poultry farming significantly affects livelihoods, contributing between 71 and 115 million USD to the economy and playing a crucial role in food security and poverty alleviation (FAO, 2018). The poultry sector involved 98% of rural households and comprised 46 million chickens in 2021 (MARAH, 2022; Dione et al., 2025). However, diseases such as avian coccidiosis are a major constraint to the development of poultry production. Coccidiosis is an enteric disease caused by an intracellular

protozoan parasite of the genus *Eimeria* (*E.*), family *Eimeriidae* (Taylor et al., 2015). In domestic chickens (*Gallus gallus domesticus*), five *Eimeria* spp. are considered the most pathogenic, including *E. acervulina*, *E. brunetti*, *E. maxima*, *E. necatrix*, and *E. tenella*, which cause significant economic losses (El-Shall et al., 2022). Animals are mainly infected orally through contaminated food, water, or litter containing sporulated oocysts of *Eimeria* species. Following ingestion, sporozoites are released into the host's intestine (Abd El-Ghany, 2021). The life cycle of *Eimeria* spp.

comprises three main phases, including sporogony, which occurs in the external environment, followed by schizogony and gametogony, both of which occur within the epithelial cells lining the host's intestine (López-Osorio et al., 2020; McDougald et al., 2020). Each *Eimeria* spp. has its own intestinal tract localization preference, resulting in different clinical signs in affected chickens (Liao et al., 2024). Clinical signs range from mild subclinical to severe, depending on the *Eimeria* spp., infection level, host age, and immune status (El-Shall et al., 2022). The most common signs of *Eimeria* infection in chickens include huddling and feather ruffling, dehydration, decreased feed consumption, reduced weight gain or egg production, and hemorrhagic diarrhea with fresh or digested blood and mucus (Abd El-Ghany, 2021). Disease control mainly relies on chemoprophylactic compounds such as amprolium (Snyder et al., 2021). However, anticoccidial resistance and toxicity to non-target organisms have been increasingly reported (Mooney et al., 2020; Liao et al., 2024), driving continued investigation into alternatives such as vaccination and herbal remedies (Ghafouri et al., 2023; Bai et al., 2026). Coccidiosis, endemic in tropical and subtropical regions, has impacted the commercial broiler industry worldwide (Alito, 2023). The economic impact is substantial, with annual losses due to coccidiosis estimated at 2.4-3 billion USD (Badri et al., 2024). A recent study in Bobo-Dioulasso, located in the Guiriko region of western Burkina Faso, reported a predominance of *Eimeria* spp. (53.13%) among gastrointestinal parasites in peri-urban local chickens, followed by *Heterakis* spp. (43.13%) and *Ascaris* spp. (0.63%; Zongo et al., 2026). However, data on coccidiosis in broiler chicken farms within the Djôrô region of southwestern Burkina Faso remain scarce. The Djôrô region is one of the wettest regions of Burkina Faso and a vital source of agricultural, forestry, and pastoral potential (Thienon, 2025; ANAM-BF, 2026). Therefore, the present study aimed to determine the prevalence of *Eimeria* oocyst contamination in litter-derived fecal samples from broiler chicken farms across the Djôrô region of Burkina Faso.

MATERIALS AND METHODS

Ethical approval

The present study followed animal welfare guidelines and protocols at the University Center of Gaoua in Gaoua, Burkina Faso. The present study used field-reared broiler and market chickens, with licensed veterinarians supervising all procedures and farm activities. Informed consent was obtained from all poultry owners before sample collection.

Study location and duration

The present study was carried out from June to September 2024 on peri-urban chicken farms in the cities of Diébougou, Dano, Gaoua, and Batié, capitals of the provinces of Bougouriba, Ioba, Poni, and Nounbiel, respectively, within the Djôrô region of Burkina Faso. The Djôrô region is located between isohyets of 1,000 and 1,200 mm and has an annual rainfall of 1,071.09 mm from June to October. The dry season starts from November to April, with temperatures ranging from 17°C to 36°C. These environments, along with the predominance of Savannah, gallery forests, and open woodlands, make the Djôrô region suitable for crop farming and animal husbandry (Thienon, 2025; ANAM-BF, 2026). The Djôrô region ranks among the greenest areas of Burkina Faso and supports a wide diversity of plant species. Cultivated crops include cereals such as sorghum, millet, maize, and rice, cash crops including cotton, cashew, and sesame, and food crops such as yam, cowpea, and sweet potato. Fruit tree cultivation is also significant, with mango, banana, papaya, and citrus widely grown (Bene and Fournie, 2012).

Study design

A cross-sectional, clustered study was conducted across 60 selected poultry farms in the cities and peri-urban areas of Gaoua, Diébougou, Batié, and Dano. The inclusion criterion was farmers' consent to participate after the study objectives were explained. Sampling was conducted on 30 modern and 30 traditional broiler chicken farms, with broiler chickens aged 35 to 45 days. A certified veterinarian examined all farms to assess chicken health status and prevent infectious diseases. Modern poultry farms were characterized by medium- to high-level biosecurity measures, such as vector- and pest-proofing, strict visitor control, routine use of footbaths and farm clothes, and fully enclosed houses with litter floors. In this farming system, chickens received commercially balanced feeds, such as Galdus and The Koudijs Broiler Concentrate (KBC), produced by Koudijs Animal Nutrition (the Netherlands) and customized for different ages and production targets. The ingredient composition of Galdus, as indicated on the product packaging, included maize, cooked soybean meal, wheat, corn gluten, rapeseed meal, oat hulls, wheat screenings, chemically refined soybean oil, physically refined palm kernel fatty acid distillates, feed phosphate, calcium carbonate, fish meal, crude lecithins, sodium chloride, and sodium bicarbonate. According to the product packaging, the Koudijs broiler concentrate consisted of concentrated plant proteins derived from soybean meal, a mineral mixture (phosphate, calcium carbonate, sodium

chloride), a vitamin premix (Vitamins A, D₃, E, B), and trace elements (iron sulfate, zinc oxide, calcium iodate, manganese sulfate, selenium), as well as synthetic amino acids including L-lysine, DL-methionine, and threonine. The Koudijs broiler concentrate was incorporated into diets formulated with locally available cereals and oilseed by-products, including maize, soybean, cottonseed meal, and wheat bran. In addition to the basal diets, the poultry received the nutritional complex Amin'Total (Laprovét, France) and the vitamin supplement Genevits (Granovit AG, Switzerland). In modern poultry farms, anticoccidials (Amprolium 20%, Laprovét, France) were routinely used either in feed or water. In contrast, traditional poultry farms used simple, open-sided shelters with compacted dirt floors, bare earth, or straw or mixed organic waste. This farming system was characterized by free-range scavenging, including insects, seeds, household scraps, supplemented with grains such as maize or sorghum. Depending on farmers' financial capacity, poultry received supplementary inputs such as soybean meal, cottonseed meal, fish meal, and the nutritional complexes Amin'Total (Laprovét, France) and Genevits (Granovit AG, Switzerland). Anticoccidials were rarely or never used on traditional farms (Tapsoba et al., 2024; Dione et al., 2025). Generally, the Marek's disease vaccine was administered at the hatchery using Nobilis Rismavac (MSD Animal Health, The Netherlands) via subcutaneous injection. Subsequently, chickens were vaccinated against Newcastle disease on day 7, with a booster given on day 18, utilizing Nobilis ND (MSD Animal Health, The Netherlands) via drinking water. Gumboro vaccination was administered on day 21 using either Nobilis Gumboro (MSD Animal Health, The Netherlands) via drinking water or Cevac Transmune IBD (Ceva Santé Animale, France) through subcutaneous injection in modern and traditional farms.

Sample size

The estimated sample size was calculated using Formula 1 (Stevenson, 2021).

$$n - \text{clustered} = n - \text{srs} \times \text{DEFF} \quad (\text{Formula 1})$$

where $n - \text{srs}$ was the base sample size using a simple random sample, and DEFF was the design effect.

The Thrusfield formula was used to calculate the simple random sample as follows (Thrusfield, 2005; Pearl, 2006).

$$n - \text{srs} = 1.96^2 \times \text{Pexp} (1 - \text{Pexp}) / d^2 \quad (\text{Formula 2})$$

where n was the required sample size, Pexp was the expected prevalence (0.53; Zongo et al., 2026), d was the

desired absolute precision (0.05), and 1.96 was the constant for a 95% confidence interval.

$$n - \text{srs} = ([1.96]^2 \times 0.53 [1 - 0.53]) / (0.05)^2 = 383$$

The design effect was calculated using Formula 3.

$$\text{DEFF} = 1 + (m - 1) \times \rho \quad (\text{Formula 3})$$

With m as the average cluster size (10) and the intra-cluster correlation coefficient (ICC), ρ , as 0.05.

$$\text{DEFF} = 1 + (10 - 1) \times 0.05 = 1.45$$

Finally, the sample size was estimated using Formula 1.

$$n - \text{clustered} = n - \text{srs} \times \text{DEFF} = 383 \times 1.45 = 555$$

The study set the sample size at 555, while 600 broiler chicken feces were sampled to maximize precision.

Due to limited resources, only 25 randomly selected slaughtered and plucked broiler chickens were collected from the chicken slaughter market in Gaoua, Burkino faso, supplied by nearby poultry farms.

Fecal sample collection

Freshly deposited fecal samples were collected early in the morning from different areas of the litter using clean disposable gloves, ensuring that samples were not intentionally mixed. Each sample was placed in a labeled plastic bag indicating the date, farm code, and city, and kept at 2-4°C during transport. Subsequently, the samples were stored at 4°C until analysis. Fecal appearance was recorded descriptively according to consistency and visible abnormalities, including formed/normal, watery, mucoid, or blood-stained material. The chickens on the farms were aged 35 to 45 days (approximately 5 to 6 weeks). Farmers collected feces only from enclosures housing poultry that had reached sale age, as collecting feces from younger chickens could induce stress.

Fecal sample examination

Eimeria spp. oocysts were detected and quantified using a modified McMaster flotation procedure adapted from the study of Conway (2007). Briefly, 3 g of feces were homogenized with 42 mL of a 30% sodium chloride flotation solution, filtered through gauze-lined fine strainers, and mixed well. The suspension was then transferred into the two chambers of a McMaster slide (1 mL in each) and left for about 15 minutes before microscopic analysis. Afterward, the McMaster slide was examined at 40 and 100x magnification using an optical microscope (Labomed, USA). Oocysts of *Eimeria* spp. were identified by size, shape, presence or absence of a micropyle, and sporulation time, and expressed as oocysts per gram of feces (OPG; Haug et al., 2008; Carvalho et al., 2011).

Postmortem sampling and examination

A total of 25 broiler chickens were randomly selected and purchased from the chicken market in Gaoua, Burkina Faso, supplied by nearby peri-urban traditional and modern poultry farms. These chickens, aged 35 to 45 days, were fed locally available cereals, including maize and millet, and had ad libitum access to water. No therapeutic treatments or vaccinations were administered to these chickens. Gaoua, in the Poni Province of the Djôrô Region of Burkina Faso, was chosen because it was close to the laboratory at the University Center of Gaoua, Burkino faso. Postmortem samples were used only to identify the *Eimeria* spp. present in the slaughtered chickens collected from the market of Gaoua city, because farmers preferred to sell their chickens to professional poultry dealers or processors. The selected chickens were then slaughtered and plucked on-site the

same day. The time between slaughter and collection was approximately 15 minutes. The plucked, non-eviscerated chickens were collected in clean, labeled polythene bags and transported in cooling boxes (2°C-4°C) to the laboratory at the University Center of Gaoua, Burkina Faso, for necropsy. The duodenum (upper small intestine), mid-intestine, distal intestine, and ceca were carefully opened and examined for gross lesions including mucosal thickening, petechiae, necrosis, whitish plaques, cecal cores, and hemorrhage (Nana-Mariam et al., 2023). Lesion severity was graded from 0 to 4 based on the Johnson and Reid scale. Score 0 indicated no visible lesion, 1 indicated very mild, 2 indicated moderate, 3 indicated severe, and 4 indicated extremely severe lesions (Johnson and Reid, 1970).



Figure 1. Study location in the provinces of Poni, Nounbiel, Ioba, and Bougouriba in the Djôrô region, Burkina Faso

Data analysis

All statistical analyses were conducted utilizing R software version 4.5.1 (R Core Team, 2025). Descriptive statistics were employed to determine the means and standard errors of the OPG. The χ^2 test was used to compare qualitative parameters, including breeding system, sampling sites, and feces appearance. The normality of the distributions for quantitative data was assessed via the Shapiro-Wilk test. Comparisons of OPG means were carried out using the nonparametric Kruskal-Wallis test, followed by Dunn's post hoc test with a Bonferroni correction to account for multiple comparisons. The threshold for statistical significance was established at a p-value less than 0.05.

RESULTS AND DISCUSSION

Prevalence in farms

In the Djôrô region of Burkina Faso, 73.17% of fecal samples from broiler chicken litters were infected with *Eimeria* species. Broiler chickens are more likely to have higher *Eimeria* spp. infection rates, and insufficient biosecurity measures can contribute to this high prevalence (Hofmann et al., 2020; Begum et al., 2024). The use of poor-quality veterinary medicines has increased across West Africa (Teko-Agbo et al., 2011; Dembele et al., 2026). A study in Burkina Faso found that 53% of veterinary antiparasitic medicines sold in official and unofficial markets failed to meet quality standards (Teko-Agbo et al., 2011). Farmers' low skill level, combined with the poor quality of veterinary antiparasitic medicines, may have contributed to the high oocyst load observed in farms in the present study. A study on broiler chickens from Pichincha and Santo Domingo de los Tsáchilas provinces in Ecuador has indicated a higher prevalence of coccidiosis (100%) than the present result, using flotation and McMaster techniques (Cevallos-Gordon et al., 2024).

In the present study, chickens were aged 35-45 days old. Several studies have reported the importance of chicken age in susceptibility to natural *Eimeria* spp. infection. An investigation in Medea province, Algeria, found that broiler chickens aged 31 to 40 days (about 4 to 6 weeks) had the highest coccidial prevalence (24.8%) (Debbou-Iouknane et al., 2018). In Swabi district, Pakistan, a study using the fecal flotation technique reported the highest *Eimeria* spp. infection rate (55.5%) in chickens aged 4-6 weeks (Begum et al., 2024). Likewise, in Borno State, Nigeria, the prevalence of coccidiosis was higher in chickens aged less than 8 weeks (70.3%) using the same fecal flotation diagnostic technique (Lawal et al.,

2025). These results were consistent with the present study, indicating that the highest *Eimeria* spp. infection rate was observed in broiler chickens aged between 4 and 8 weeks. A study in Medea province, Algeria, found that younger flocks (10 to 20 days old) had the highest oocyst counts (19,930 OPG) from fecal samples collected on broiler farms (Bachene et al., 2026). This finding indicated that peaks in oocyst shedding occur earlier and differ by *Eimeria* spp. and host age. All reported results reflected peaks in oocyst shedding in broiler chickens, typically occurring between 28 and 35 days after infection (Williams, 2005).

The current study was performed between June and September, which period corresponded to the rainy season in Burkina Faso (ANAM-BF, 2026). Increased rainfall, ambient temperatures (25°C to 30°C), and humidity fostered optimal conditions for sporulation, survival, and sustained transmission of coccidian oocysts in poultry flocks, leading to a high infection rate (Lawal et al., 2025). Consistent with the present study, Lawal et al. (2025) conducted a study in Borno State, North-eastern Nigeria, under the same environmental conditions and using the same diagnostic technique to explore the effects of seasonal differences in coccidiosis in chickens. This seasonal effect can influence the occurrence and spread of avian coccidiosis outbreaks (Parveen et al., 2021). Moreover, several studies that collected fecal samples to evaluate coccidiosis in broiler chickens have reported lower prevalence rates than the present results. Bachene et al. (2026) recorded a prevalence rate of 42.9% in Medea province, Algeria, an area characterized by a Mediterranean climate with both continental and orographic influences. In the Swabi district, Pakistan, with a humid subtropical climate, 53.63% of fecal samples tested positive for *Eimeria* spp. (Begum et al., 2024). Similarly, coccidiosis prevalence among broiler chickens in the Tarai region of Uttarakhand, India, characterized by a tropical monsoon and subtropical climate, was 60% (Pant et al., 2018; Bora et al., 2024). In Gwallameji, Bauchi State, Nigeria, coccidiosis prevalence reached 46.7% in a tropical savannah climate with distinct wet and dry seasons (Yaro et al., 2025). These differences might be attributed to the distinct agro-ecological zones in different countries and regions.

At sampling sites in the Djôrô region of Burkina Faso, farm-level contamination frequency differed significantly ($p < 0.05$), with rates of 92% in Diébougou city, 72.7% in Batié, 65.3% in Gaoua, and 62.7% in Dano region (Table 1). Notably, Diébougou region had a significantly higher average oocyst load ($40,310.67 \pm 2,863.40$ OPG) than

Batié ($15,612.00 \pm 1,578.34$ OPG), Dano ($14,734.67 \pm 1,397.11$ OPG), and Gaoua region ($13,115.33 \pm 1,461.06$

OPG; $p < 0.001$; Table 1; Figure 2).

Table 1. Prevalence and oocyst loads (oocysts per gram) of *Eimeria* spp. in broiler chickens in the Djôrô region of Burkina Faso, 2024

Sampling Site	Number of positive samples and prevalence percentage	OPG (mean $\pm$ standard error)	P-value
Batié	109 (72.7%)	$15,612.00 \pm 1,578.34^a$	< 0.001
Dano	94 (62.7%)	$14,734.67 \pm 1,397.11^a$	
Diébougou	138 (92%)	$40,310.67 \pm 2,863.40^b$	
Gaoua	98 (65.3%)	$13,115.33 \pm 1,461.06^a$	

OPG: Oocysts per gram. ^{a,b} Mean different superscript letters in the same column are statistically different at $p < 0.05$.

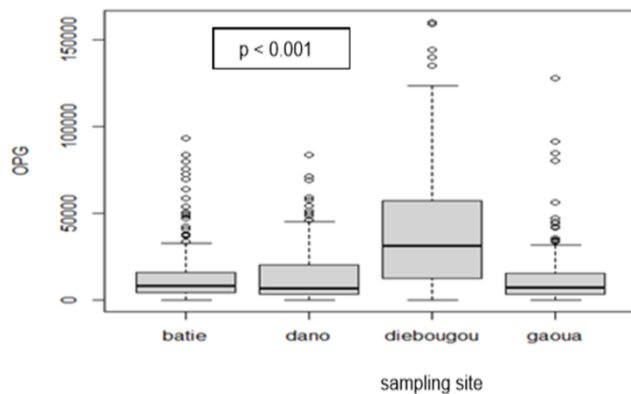


Figure 2. *Eimeria* spp. oocyst loads of broiler chickens (oocysts per gram) in different sampling sites in Burkina Faso, 2024

Diébougou is a strategically positioned city at the crossroads of roads connecting Ivory Coast and Ghana, which underscores its potential role in facilitating animal transportation and commercial exchanges (Werthmann, 2006). The considerable mobility of animals with diverse health conditions, including poultry arriving from diverse locations without quarantine protocols, may be associated with the observed *Eimeria* spp. infection rate in Diébougou region. In addition to this geographical factor, inadequate biosecurity measures, farmers' limited awareness, and limited access to veterinary care could explain the higher *Eimeria* spp. oocyst load observed in the Diébougou region (Hofmann et al., 2020; Saleem et al., 2025). The influence of geographical location on the prevalence of coccidiosis in broiler chickens has been examined worldwide. For instance, a study in Medea province, Algeria, found prevalence ranging from 57.1% to 19% in the districts of Beni Slimane and Oumari, respectively (Bachene et al., 2026). In India, broiler chickens in Uttar Pradesh province were more infected with coccidiosis (88%) than those in Madhya Pradesh province (60%; Bora et al., 2024). A similar pattern was observed in broiler chickens in South Africa, with

prevalence ranging from 9.8% in Scottburgh to 17.1% in Phoenix in KwaZulu-Natal province (Fatoba et al., 2020). Beyond geographical considerations, variations in poultry management practices may explain these differences.

In the present study, traditional poultry farms had significantly higher oocyst loads than modern farms ($p < 0.038$; Figure 3). Traditional farms were characterized by poor housing, low biosecurity, and limited access to veterinary care. A recent study demonstrated that inadequate housing conditions compromised the immune systems of chickens, thereby enhancing their susceptibility to diseases, regardless of geographic location (Hofmann et al., 2020). In the field, inadequate management can easily contaminate feed and water, increasing parasitic pressure on poultry (Mramba, 2023; Cevallos-Gordon et al., 2024; Makouloutou-Nzassi et al., 2024). In the present study, external personnel were often observed on traditional farms without adhering to biosecurity measures. Their clothing and vehicles may serve as mechanical vectors, promoting oocyst transfer between farms. Management practices differ across countries depending on poultry production systems. Poultry production systems are typically categorized into indigenous/traditional, small-scale, and large-scale commercial types, each with distinct differences in housing, feeding, biosecurity, and health management (Abadula et al., 2022). In line with this classification, the farms in the present study were identified as either traditional or modern, primarily based on their housing, biosecurity protocols, feed sources, and use of anticoccidials. In contrast to the present study, the poultry-keeping system did not notably affect coccidiosis occurrence in broiler chicken farms in Mazandaran province, Iran (Shirzad et al., 2011). In addition, a recent study in Borno State, Nigeria, reported higher coccidiosis prevalence in broiler chickens reared in intensive systems (78.5%) than in extensive systems (23%; Lawal et al., 2025). Consistent with the previous finding, the risk of

Eimeria spp. infection in broiler chickens from an intensive rearing system was eight times higher than in an extensive system in Bangladesh (Rahman et al., 2025). These findings indicated that effective management, stocking pressure, litter quality, and biosecurity are essential for controlling coccidiosis in poultry farms.

Fecal appearance demonstrated no significant correlation with *Eimeria* spp. oocyst load in poultry breeding systems ($p = 0.098$; Figure 4), indicating a high prevalence of subclinical coccidiosis forms.

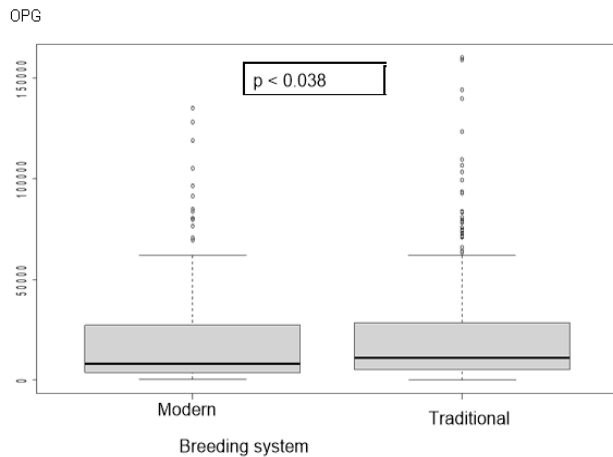


Figure 3. *Eimeria* spp. oocyst loads (oocysts per gram) in broiler chicken farm breeding systems in Burkina Faso, 2024

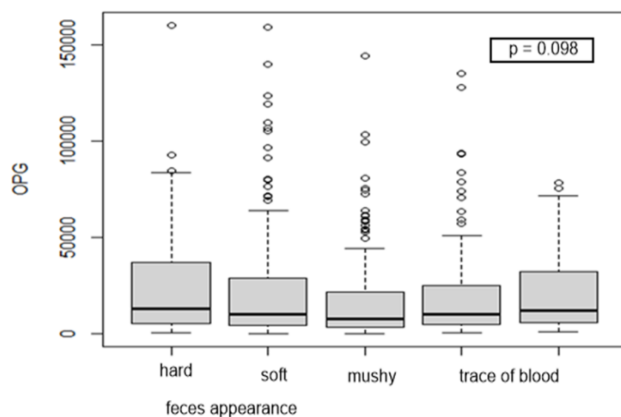


Figure 4. Fecal sample appearance characteristics of chickens infected with *Eimeria* spp., collected from different regions of Djôrô, Burkina Faso, 2024

Postmortem examination of chicken intestinal tracts

The upper intestinal (duodenum) lesion score ranged from 1 to 2, indicating mild to moderate lesions with white transverse streaks, small red spots, a ladder-like pattern,

and thickened mucosa. In the mid-intestine (jejunum), the lesion score was 3, exhibiting severe lesions with thickened mucosa, orange mucus, ballooning, and hemorrhage. In the distal intestine (ileum) and ceca, the lesion score was 4, indicating extremely severe lesions, including cecal cores, hemorrhage, and necrosis. Among the 25 gastrointestinal tracts examined from the Gaoua slaughter market, gross lesion distribution and morphology were presumptively compatible with *E. acervulina* in 13/25 samples (52%), *E. maxima* in 8/25 (32%), and *E. necatrix* in 4/25 (16%). Lesion locations that matched *E. acervulina*, *E. maxima*, and *E. necatrix* were biologically plausible, as these species tend to affect different parts of the intestine. However, lesion scoring alone did not definitively identify the species (Johnson and Reid, 1970). Furthermore, these postmortem findings were only from samples examined at the Gaoua market, Burkino faso, and offered preliminary insights. Therefore, the postmortem results did not reflect the true prevalence of species in the study farms or across the whole Djôrô region in Burkina Faso.

Control of avian coccidiosis in the Djôrô region of Burkina Faso mainly depended on amprolium, a chemical coccidiostat that inhibits parasite development. However, its effect diminishes notably after elimination (Ahmad et al., 2024; Dabire et al., 2025), leading to recurrence of the infection (Avi et al., 2023; Ahmad et al., 2024). Amprolium is used in layer and broiler chickens as a feed additive during one or more growth phases (Attree et al., 2021). Reports of resistance to anticoccidial medicines such as amprolium, toltrazuril, and clodol against *Eimeria* spp. have increased globally (Ojimelukwe et al., 2018; Flores et al., 2022; Bai et al., 2025), alongside growing demand for drug-free poultry meat (Bharti et al., 2025). Therefore, alternative control methods such as vaccines (Fatemi Motlagh et al., 2022; van Eerden et al., 2022; Zhang et al., 2025) and phytochemical compounds are needed. Several herbs, including garlic (*Allium sativum*), turmeric (*Curcuma longa*), and neem (*Azadirachta indica*), are documented for their antioxidant, antimicrobial, and anti-inflammatory effects. These herbs have been reported to enhance poultry immunity and diminish the severity of coccidiosis in poultry farming (Eftekhari et al., 2023).

CONCLUSION

In the Djôrô region, 73.17% of broiler chicken fecal samples collected from litters in farmhouses tested positive for *Eimeria* spp. The highest infection rate was

recorded in Diébougou city, at 92%. Postmortem findings on samples collected from the Gaoua slaughter market in Burkina Faso demonstrated presumptive identifications of *E. acervulina* (52%), *E. maxima* (32%), and *E. necatrix* (16%). These findings supported an immediate focus on litter management, routine cleaning, farm biosecurity training, and parasitological monitoring, along with the rational use of anticoccidials. Key limitations included limited data on farmers' management practices in Djôrô and limited use of postmortem findings because of sampling and analytical constraints. Further studies should include a knowledge, attitude, and practices survey on coccidiosis among poultry farmers in the Djôrô region in Burkina Faso. Moreover, analyzing farm samples using molecular diagnostic techniques can help characterize *Eimeria* spp. circulating in the region.

DECLARATIONS

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Authors' contributions

Séna Hervé Vitouley designed and implemented the study and wrote the manuscript. Sié Isidore Papis Hien contributed to data collection and manuscript writing. Soumaïla Pagabeleguem analyzed the field samples. Martin Bienvenu Somda analyzed the data, Gniniwéwo Carèle Botoni contributed to field sample analysis, and Salimata Sondé Pousga supervised the entire study. All authors read and approved the final edition of the manuscript for publication.

Availability of data and materials

The data to support the present study's findings are available upon reasonable request to the corresponding author.

Competing interests

The authors declare no conflict of interest.

Ethical considerations

All authors checked the ethical issues, including plagiarism, consent to publish, misconduct, data fabrication and/or falsification, double publication and/or

submission, and redundancy. The authors confirmed that they did not use any AI tools to prepare or write this article. All authors accept full responsibility for the manuscript's originality before submission and after acceptance, and approve the revised edition.

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