

Study of poultry coccidiosis in organized and backyard farms of Jammu region

Sourabh Sharma¹, Asif Iqbal², Shagufta Azmi¹ and Hamid A. Shah³

1. Division of Veterinary Pathology, SKUAST- Jammu, R. S. Pura-181102, India;
2. Division of Veterinary Epidemiology & Preventive Medicine, SKUAST-Jammu, India;
3. Faculty of Veterinary Science, Shuhama, Alusteng-SKUAST-K, India

Corresponding author: Sourabh Sharma, E-mail: saurabhsharma841@yahoo.in

Received: 09-01-2013, **Accepted:** 31-01-2013, **Published online:** 08-05-2013

How to cite this article:

Sharma S, Iqbal A, Azmi S and Shah HA (2013) Study of poultry coccidiosis in organized and backyard farms of Jammu region, *Vet World* 6(8): 467-469, doi:10.5455/vetworld.2013.467-469

Abstract

Aim: The present study was undertaken to know the Prevalence of chicken coccidiosis in Jammu division in both organized and backyard chickens during the year 2010-11.

Materials and Methods: A total of 720 faecal samples were collected from both organized farms and backyard poultry (unorganized) sector of Jammu.

Results: The overall prevalence of 39.58% was recorded in the present study and five *Eimeria* species were identified viz., *E. tenella*, *E. necatrix*, *E. maxima*, *E. acervulina* and *E. mitis*. *E. tenella* was the predominant species in both organized and unorganized farms.

Conclusion: Higher prevalence of 53.61% in unorganized (backyard poultry birds) as compared to organized birds (25.55%) was recorded. The prevalence was the highest in monsoon from both organized and unorganized management practices.

Key words: backyard chicken, *Eimeria*, Jammu, poultry,

Introduction

India is one of the world's largest and fastest growing poultry industries, ranking third in hen egg production and sixth in broiler meat production. According to Ministry of Food Processing Industries, about 70% of poultry is in the organized sector and 30% is in the unorganized sector. Broiler production grew at an annual percentage growth rate of 8.35% from 2001(1.25 million metric tons) to 2010 (2.65 million metric tons). Per capita consumption has grown from 1.22 kilograms in 2001 to 2.26 kilograms in 2010. India's egg production is anticipated to reach 61.5 billion eggs, upto 68% from 36.6 billion in 2001[1]. The Jammu & Kashmir state is no more exception to this as the poultry population has increased from 2.039 million in 2003 to 3.48 million in 2007 [2]. But the tremendous growth of poultry industry in India is hampered by various factors and prevalence of various diseases in poultry are of main concern. Among the various diseases, protozoan parasites of the genus *Eimeria*, which resides and multiplies in intestinal mucosa causing coccidiosis [3] characterized by dysentery, enteritis, emaciation, drooping wings, poor growth, low production [4,5] with high rate of mortality and morbidity [6]. Mortality and economic losses especially in case of outbreaks, are frequent [7, 8] and it causes high mortality in young

chicks because most of the *Eimeria* spp affects birds between the age of 3 and 18 weeks [9,10]. Due to higher stocking densities and intensive husbandry practices, its incidence is being increased in poultry [11].

E. tenella and *E. necatrix* are the most pathogenic species. *E. acervulina*, *E. maxima* and *E. mivati* are common and slightly to moderately pathogenic; *E. brunetti* is uncommon but pathogenic when it does occur. *E. mitis*, *E. praecox* and *E. hagani* are relatively non-pathogenic species [12,13]. In view of the lack of authentic information available regarding the prevalence of *Eimeria* sp. affecting poultry in Jammu region, the present study was undertaken to find out the prevalence and identify various species of *Eimeria* affecting poultry in the area.

Materials and Methods

Poultry birds maintained under two management conditions viz. organized and unorganized (backyard poultry birds) were used in this study. A total of 720 faecal samples were collected from organised farms and backyard poultry (unorganised) of Jammu. The faecal samples were collected directly from floors of backyard poultry and commercial farms and stored in plastic containers. The particulars like age, farm management practices were recorded. The samples were kept at 4°C till examination. The oocysts were concentrated for examination by centrifugation with saturated sugar solution and were identified on the basis of morphological characters. The oocysts

This article is an open access article licensed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/2.0>) which permits unrestricted use, distribution and reproduction in any medium, provided the work is properly cited.

Table-1. Prevalence of chicken coccidiosis in organized and backyard farms in Jammu region.

Farm management	Areas	Total faecal samples (720)	Positive samples (285)	Total number of positive samples	Percentage of infection
Unorganized Farms	R.S.Pura	120	48	193	53.61
	Aknoor	120	62		
	Kathua	120	83		
Organized Farms	Thathar	120	34	92	25.55
	Bishnah	120	22		
	Aknoor	120	36		

recovered were kept in two lots of 2.5% potassium dichromate solution (K₂Cr₂O₇). The material of one lot was poured in Petri dishes to a depth of 3-4 mm and kept in Biological Oxygen Demand' (BOD) incubator at a temperature of 30±2°C for sporulation. The other lot of culture was kept at 4°C. The culture of both the lots was examined and morphological characters were studied before and after sporulation [12,14,15].

Results and Discussion

The results of microscopic examination of 720 faecal samples are depicted in the (Table-1). An overall occurrence of 39.58 % infection recorded was mostly of a mixed type with two or more *Eimeria* sp. Among the two managemental practices, poultry reared under organized farm management showed 25.55% infection while as the backyard chickens (un-organised) harbored 53.61% infection with *Eimeria* sp. The prevalence was the highest in monsoon from both organized and unorganized managemental practices at 58.24% and 68.82% respectively. In the present study, percentage prevalence of infection in backyard chickens may be high due to poor managemental practices, malnutrition and non-use of coccidiostats as preventive measures. The warmth and moisture in such environment favours greater transmission and contamination of oocysts. In the present study, the prevalence of coccidiosis in chickens was highest in monsoon and lowest in summer. The present finding is in commensuration of Jithendran [16] who recorded higher incidence during monsoon season and [17] also found highest coccidial infection in chickens during monsoon season in India, indicating the seasonal influence on the prevalence of coccidiosis. However, the higher prevalence rate of coccidiosis during the rainy season also agrees with earlier reports of [18, 19, 20,]. In the present study, the high prevalence in monsoon period could be attributed to increase in rainfall with subsequent high humidity and drop in temperature which is conducive for sporulation of oocysts for easy dispersion and transmission.

Authors' contribution

SS and SA implemented the study design. AI and HS helped in collection of research material, drafted the manuscript and revised the manuscript. All authors read and approved the final manuscript.

Acknowledgments

The authors are thankful to the Dean, FVSc and

A.H, R.S.Pura Jammu for providing necessary facilities at time of research.

Competing interests

Authors declare that they have no competing interest.

References

1. Basic Animal Husbandry Statistics (2010) Government of India, Ministry of Agriculture, Department of Animal Husbandry, Dairying and Fisheries, New Delhi.
2. Livestock census. (2007) Ministry of Agriculture and Dairying, Government of India.
3. Hadipour, M. M., Olyaie, A., Naderi, M., Azad, F. and Nekouie, O. (2011) Prevalence of *Eimeria* species in scavenging native chickens of Shiraz, Iran. *African J. Micro. Res.* 5:3296-3299.
4. Rehman, T. U., Khan, M. N., Sajid, M. S., Abbas, R. Z., Arshad, M., Iqbal, Z. and Iqbal, A. (2010) Epidemiology of *Eimeria* and associated risk factors in cattle of district Toba Tek Singh, Pakistan. *Parasitol Res.* 108:1171-77.
5. Awais, M. M., Akhtar, M., Iqbal, Z., Muhammad, F., Anwar, M. I. (2012) Seasonal prevalence of coccidiosis in industrial broiler chickens in Faisalabad, Punjab, Pakistan. *Trop Anim Health Prod.* 44(2):323-8. doi: 10.1007/s11250-011-0024-x. Epub.
6. Shirzad, M. R., Seifi, S., Gheisari, H. R., Hachesoo, B. A., Habibi, H. and Bujmehrani, H. (2011) Prevalence and risk factors for subclinical coccidiosis in broiler chicken farms in Mazandaran province, Iran. *Trop. Anim. Health Prod.* 43:1601-04.
7. Morris, G. M. and Gasser, R. B. (2006) Biotechnological advances in the diagnosis of avian coccidiosis and the analysis of genetic variation in *Eimeria*. *Biotechnology Advances*, 24: 590-603.
8. Williams, R. B. (1999) A compartmentalised model for the estimation of the cost of coccidiosis to the world's chicken production industry. *Intern J of Parasitol*, 29: 1209-1229.
9. Nematollahi, A., Moghaddam, G. H. and Pourabad, R. F. (2009) Prevalence of *Eimeria* species among broiler chicks in Tabriz (Northwest of Iran). *Mun. Ent. Zool.* 4: 53-58.
10. Toulah, F. H. (2007) Prevalence and comparative morphological studies of four *Eimeria* sp. of sheep in Jeddah area, Saudi Arabia. *J. Biol. Sci.* 7:413-416.
11. Nnadi, P. A., and George, S. O. (2010) A Cross-Sectional Survey on Parasites of Chickens in Selected Villages in the Subhumid Zones of South-Eastern Nigeria. *J. Parasitol. Res.* 141; 1-6.
12. Soulsby, E. J. L. (1982) *Helminths, Arthropods & Protozoa of Domesticated Animals*. 8th Edition Page : 809. English Language Book Society and Baillere Tindal, London.
13. Dalloul, R. A. and Lillehoj, H. S. (2006) Poultry coccidiosis. Recent advancements in control measures and vaccine development. *Expert Revised Vaccines*, 5(3): 143-162.
14. Lima, J. D. (1979) *Eimeria caprina* sp. from the domestic goat (*Capra hircus*) from the United States of America. *J of Parasitol*, 65(6): 902-903.
15. Levine, N. D. (1985) *Veterinary Protozoology*, page 414. Iowa State University Press, Ames, Iowa.
16. Jithendran, K. P. (2001) Coccidiosis- an important disease among poultry in Himachal Pradesh. ENVIS Bulletin:

- Himalayan Ecology and Development*, 9(2): 1-3.
17. Hirani, N. D., Hasnani, J. J., Veer, S., Patel, P. V. and Dhami, A. J. (2011) Epidemiological and clinic-pathological studies in Gujrat. *J of Vet Parasitol*, 25 (1): 42-45.
18. Oluyemi, J. A. and Roberts, F. A. (1979) Poultry production in warm wet climate. *J of Animal Prod*, 29: 301-311.
19. Halle, P. D., Umoh, J. U., Saidu, L. and Abdu, P. A. (1998) Diseases of poultry in Zaria, Nigeria: A ten-year analysis of clinical records. *Nigeria J of Animal Prod*, 25: 88-92.
20. Alawa, C. B. I., Mohammed, A. K., Oni, O. O., Adeyinka, I. A., Lamidi, O. S. and Adam, A. M. (2001) Prevalence and seasonality of common health problems in Sokoto Gudali cattle at a beef research station in the Sudan ecological zone of Nigeria. *Nigeria J of Animal Prod*, 28: 224-228.
