

Prevalence of Coccidia in Mathura Region of Uttarpradesh

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Abstract

The present was done in sheep in Mathura region to identify the parasitic infections which was proving to be very harmful to them. For this purpose faecal samples were collected and examined. Maximum cases were found to be positive for coccidia. Prevalence of coccidian was further categorized in the basis of age of sheep and months of year. Samples were incubated for their sporulation and the five Eimeria species was identified on their morphology. It was found that maximum infection is in age group of below six months and in month of October. The individual species prevalence was more for Eimeria ovina and that the favorable temperature for all the five species of Eimeria ranged between 30°C and 37°C.

Key words: Faecal samples, Coccidia, Morphology, Sporulation, Parasite.

Introduction

Protozoa infections are the major constraints in sheep production all over the world particularly developing countries like India where animals are generally reared in natural conditions and because of high animal density reinfections occur more rapidly and effectiveness of drugs become poor. Coccidiosis is one of the most pathogenic infections responsible for considerable morbidity and mortality particularly in young lambs. Profuse diarrhoea, loss of body weight, reduction in milk yield, production of inferior wool, nervous symptoms and death have been the effects in this infection (Pellerdy, 1974 and Pande et al., 1970). Levine (1985) reported fourteen species of Eimeria from sheep. The present study was therefore undertaken to study the prevalence and diagnose the prevailing coccidian species in different age group of sheep in Mathura region in reference to agewise and monthwise.

Materials and Methods

596 faecal samples were collected from Mathura region from sheeps of different age groups which were categorized into three groups viz; below six months, between 6-12 months and above 1 year during the period of October, 2006 to February, 2007. Faecal samples was taken directly from the rectum of individual animals and kept in polythene bags. Faecal examination was done both qualitatively and quantitatively. Both direct method and centrifugation

method was used for qualitative study of the faecal samples. To obtain accurate information with regard to severity of infection, eggs were counted to determine number of eggs per gram of faeces. For this purpose Mc Master technique was used. Positive samples for coccidia were separated.

The Eimeria were further identified species wise on the basis of morphology that was obtained by sporulation. The characters included were oocyst shape, presence or absence of micropyle, polar granules and residuum. Similarly, for sporocysts its shape, steida, residuum and sporulation time was taken into consideration. The faecal samples were spread in thin layer in glass petridish, in 2.5% potassium dichromate and kept in BOD incubator for sporulation at different temperatures (20°C, 25°C, 30°C, 37°C and 40°C ± 0.5°C) as per method of Shah (1963). The observations were recorded immediately in fresh faeces (at 0 hr.) and subsequent intervals until sporulation was completed. Morphology was studied under the compound microscope.

Results and Discussion

Out of 596 samples examined, the coccidian infection was found in 208 cases. The rate of prevalence in 5 months ranged from 29.41% to 41.50%. Highest infection i.e. 44/106 was recorded in October, 2006 (41.50%) followed by January, 59/165 (35.75%), November, 24/70 (34.28%), February, 56/170 (32.94) and lowest in December 25/85

Table-1. Showing morphology of different Eimerian species.

Eimeria species	Oocyst				Sporozoite			
	shape	micropyle	Polar granules	residuuum	Shape	stieda	residuuum	S.Time(days)
<i>E. ovina</i>	Ellipsoid	+	+	-	Elongate	-	+	3
<i>E. parva</i>	spherical	-	+	-	oval	+	+	2
<i>E. ovinoidalis</i>	ovoid	+	+	-	Elongate	+	+	2
<i>E. faurei</i>	Egg	-	+	-	ovoid	-	+	3
<i>E. intricata</i>	ovoid	+	+	-	elongate	+	+	4

(29.41%). In relation to age wise prevalence maximum affection was in age group below 6 months (110/256) i.e. 42.57% followed by sheep above 12 months (55/179) i.e. 38.72% and lowest in age group between 6-12 months (44/161) i.e. 27.32%. Morpho-logical studies revealed five different types of Eimerian species. The result is displayed in table 1. In the present study Eimeria was not detected as pure infection but always found mixed with other species. The individual species prevalence was: *Eimeria ovina* (27.68%), *E. parva* (15.43%), *E. ovinoidalis* (11.07%), *E. intricata* (0.11%) and *E. faurei* (11.24%). Mixed infections involving two, three and four species were encountered. Multiple infection of coccidian is given in table 2. Out of 596 samples examined, 165 samples were positive for *Eimeria ovina*. Highest infection was found in November, 2006 and lowest in January, 2007. 92 samples were found positive for *E. parva*. Highest infection was detected in October, 2006 and lowest in December, 2006. 64 samples were found positive for *E. ovinoidalis*. Highest infection was found in February and lowest in January, 2007. 67 samples were found positive for *E. fauri*. Maximum infection was found in February while minimum in January, 2007.

Seven samples were found positive for *E. intricata*. Maximum infection was found in October, 2006 and minimum in January, 2007. Other workers have done similar studies like Dasilva (1991) who reported prevalence of Eimerian sp. in Iovisiana state

Table-2. Showing multiple Eimerian species infection in sheep.

Eimerian species	Infected
<i>E. ovina</i> + <i>E. parva</i>	61
<i>E. ovina</i> + <i>E. ovinoidalis</i>	46
<i>E. ovina</i> + <i>E. faurei</i>	46
<i>E. ovina</i> + <i>E. intricata</i>	03
<i>E. parva</i> + <i>E. ovinoidalis</i>	10
<i>E. parva</i> + <i>E. faurei</i>	10
<i>E. ovinoidalis</i> + <i>E. faurei</i>	02
<i>E. ovina</i> + <i>E. parva</i> + <i>E. ovinoidalis</i>	02
<i>E. ovina</i> + <i>E. parva</i> + <i>E. faurei</i>	02
<i>E. ovina</i> + <i>E. parva</i> + <i>E. intricata</i>	02
<i>E. parva</i> + <i>E. ovinoidalis</i> + <i>E. faurei</i>	03
<i>E. ovinoidalis</i> + <i>E. faurei</i> + <i>E. intricata</i>	01
<i>E. ovina</i> + <i>E. parva</i> + <i>E. ovinoidalis</i> + <i>E. faurei</i>	02
<i>E. ovina</i> + <i>E. parva</i> + <i>E. faurei</i> + <i>E. intricata</i>	01

university in ewe flock and ten different species. Bhatia et al. (1968) studied sporulated oocyst of 7 Eimerian species in Indian goat and sheep. Amarante et al. (1992) and Kaya (2002) similarly studied species of coccidian occurring in lambs in Sao Paulo Brazil and Prevalence of Eimeria species in lambs in Antakya Province, Turkey respectively. Kumar et al. (2005) reported different Eimeria sp. in goat in and around Patna.

Sporogonic studies at different incubation temperatures revealed that the favorable temperature for all the five species ranged between 30°C and 37°C. The most optimum temperature being 37°C at which the sporulation was completed in minimum time. The thermal death point was 40°C at which no sporulation could occur. Bhatia et al. (1978) reported that for *E. intricata* the optimum temperature for sporulation was 30°-37°C and thermal death point was above 40°C and below 43°C. For *E. ovina* the optimum temperature was 20°C-25°C and thermal death point was 40°C as reported by Christensen (1939). Chauhan et al. (1980) studied sporogony of *E. bareillyi* of buffalo and reported most optimum temperature was 30°- 37°C and thermal death point was 40°C.

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References

- Amarante, A.F. and Barbosa, M.A. (1992). Species of coccidian occurring in lambs in Sao Paulo Brazil: *Vet. Parasitol.* 41: 189-193.
- Bhatia, B. B. and Pandey, T.P. (1968). Significance of the sexual stages in assessing Eimerian infections of goats. *Indian Vet. J.* 46: 399-403.
- Bhatia, B.B., Chauhan, P.P.S., Katara, R.P. and Agarwal, R.D. (1978). A note on the sporogony of *Eimeria intricata*. *Indian J. Anim. Sci.* 48: 688-691.
- Chauhan, P.P.S., Bhatia, B.B., Katara, R.P. and Ahluwalia S.S. (1980). Note on some epidemiological aspects of *E. bareillyi*. *Indian Journal of Anim. Sci.* 50: 84-87.
- Christensen, J. F. (1930). Sporulation and viability of oocysts of *Eimeria arloingi* from the domestic sheep. *J. Agric. Res.* 59: 527-534.

6. Dasilva, N.R., Miller, J.E. (1991). Survey of Eimeria spp. Oocyst in faeces from Iovisiana state university ewes. *Vet.Parasitol.* 40:147-150.
7. Kaya. (2002). Prevalence of Eimeria species in lambs in Antakya Province. *Turk. J. Vet. Anim. Sci.*, 28: 687-692.
8. Kumar, L., Singha, S.R.P., Sinha, S., Sharma, S.K. Mandal, K.G. and Verma, S.B. (2005). Studies on Eimeria sp. in goat in and around Patna. *J. Vet. Parasitol.* 19: 139-141.
9. Levine, N.D. (1985). *Veterinary Protozoology*. Iowa State University, Pess Ames, Iowa-50010, 114pp.
10. Pallerdy, L.P. (1974). *Coccidia and Coccidiosis*. 2nd Edn. Paul, Parey, Berlin. 459pp.
11. Pande, B.P., Bhatia, B.B. and Chauhan, P.P.S.. (1972). Coccidiosis in domestic ruminants-A major problem. Bull. III. Coll. Vet. Sci. & A.H., Mathura, 15pp.
12. Shah, H.L. (1963). Coccidia and coccidiosis in sheep and goats- a review. *J. Vet. Anim. Husb. Res.* 7 : 69-70.

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