

Prevalence of Coccidiosis in Cattle in Kashmir valley

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Nine hundred seventy one cattle calves under two different managemental practices were screened for different eimerian oocysts, out of which 711 were found to be positive for Eimeria parasites. 70.7% and 75.8% of calves from organized and un-organized managements were found to harbour Eimeria infection, respectively. The species identified included: Eimeria bovis, E. zuernii, E. bukidnonensis, E. subsphrica, E. auburnensis, E. ellipsodalis, E. Canadensis and E. cylindrica among which. Eimeria zuernii and E. bovis were most predominant species.

KEYWORDS

Eimeria, Calf, Kashmir.

INTRODUCTION

Coccidiosis is one of the most alarming problem for calf rearing industry and is responsible for morbidity and mortality. The most common clinical manifestations include inappetance, weakness, loss of weight, diarrhoea, depression and anaemia (Levine, 1985; Soulsby, 1982). In view of the lack of authentic information available regarding the prevalence of *Eimeria* sp. affecting cattle calves in Kashmir valley, the present study was undertaken to find out the prevalence and identify various species of *Eimeria* affecting cattle in the area.

MATERIALS AND METHODS

Calves maintained under two managemental conditions viz. organized (university & military

farm) and unorganized (locally reared calves) were used in this experiment. A total of 971 faecal samples were collected from rectum and were kept individually in polythene bags and labelled as per the management groups. The samples were kept at 4°C till examination. The oocysts were concentrated for examination by centrifugation with saturated common salt solution and were identified on the basis of morphological characters. The oocysts recovered were kept in two lots of 2.5% potassium dichromate solution ($K_2Cr_2O_7$). 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 $30\pm 2^\circ C$ 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 (Pellerdy, 1974; Soulsby, 1982). The data was analyzed by Logit Model (Snedecor and Cochran, 1994).

RESULTS AND DISCUSSION

The results of microscopic examination of 971 faecal samples are depicted in the Table 1. An overall occurrence of 73.2% infection recorded was mostly of a mixed type with two or more *Eimeria* sp. Among the two managemental practices, calves reared under organized farm management showed 70.7% infection while as the free range (un-organised) calves harboured 75.8% infection with *Eimeria* sp. The higher though non-significant rate of infection in free range calves may be attributed to access to oocyst infested grasses during grazing. The infection ranged between 54.7% (December) to 90.6% (March) under organized and 58.9% (June) to 90.2% (April) under un-organized managemental

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practices. The prevalence was the highest in spring from both management practices at 80.9 and 85.4% respectively. However, it ranged between 78.3 to 74.1; 70.9 to 78.7 and 58.3 to 68.6 percent during summer, autumn and winter seasons, respectively.

In Kashmir province the temperature starts declining from autumn season and falls to sub-zero levels during winter months as a result of which the environment becomes un-favourable for development of the oocysts. Also during the cold period animals too become stationed in houses due to snow fall. The infection starts increasing by spring season as environmental factors become conducive and more favourable through the summer season. Rajkhowa, et al., (2004) has however observed highest prevalence (84.6%) during monsoon, lowest (27.3%) in pre-monsoon and 41.7% in winter in mithun calves in Nagaland.

The sp. identified from pooled samples were: *Eimeria bovis*, *E. zuernii*, *E. bukidonensis*, *E. subsphrica*, *E. auburnensis*, *E. ellipsodalis*, *E. Canadensis* and *E. cylindrica*. Out of these species *Eimeria zuernii* and *E. bovis* were most predominant. The predominance of *Eimeria bovis* was earlier reported in domestic animals by Deka et al., (1995), and in mithun calves by Rajkhowa, et al., (2004). Raote et al., (1989) examined 1114 animals of 3 cattle farms in Bombay region and encountered Eimerian sp. were: *Eimeria bivis*, *E. auburnensis*, *E. alabanensis*, *E. zuernii*, *E. bukidonensis*, *E. cylindrica*, *E. ellipsoidalis*, *E. subspherics* and *E. brasiliensis*.

There were no apparent clinical signs in most of the animals sampled for the study. However, among cases of diarrhoea presented at clinics 20.5% were found positive for one or the other mentioned sp. of *Eimeria*. Few cases of one month old calves passing frank blood (Fig. 1) instead of faecal material were also seen and *Eimeria zuernii* oocysts obtained (full field filled with oocysts, Fig. 2).

This study also aimed to investigate the effects of season on flaring-up of the disease in calves and

to suggest some concrete measures in reducing the infection to a good extent. Though there was non-significant ($P>0.05$) variation in the incidence of coccidiosis among various seasons and months under both organized and un-organized system of rearing (Table 1), however, higher incidence during spring and summer seasons due to very conducive atmosphere for development of Eimerian oocysts warrants organized anticoccidial prophylactic measures to be taken up from March to August so that the disease can be kept under control with a reduction in oocysts output as well.

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Table 1

	Organized			Un-organized		
	Samples seen	Samples +ve	%age prevalence	Samples seen	Samples +ve	%age prevalence
March	32	29	90.62	49	39	79.59
April	57	41	71.92	41	37	90.24
May	42	36	85.71	33	29	87.87
Spring	131	106	80.91	123	105	85.36
June	35	26	74.28	39	23	58.97
July	42	33	78.57	40	31	77.50
August	38	31	81.57	37	32	86.48
Summer	115	90	78.26	116	86	74.13
September	30	21	70.00	36	29	80.55
October	32	23	71.87	39	30	76.92
Autumn	62	44	70.96	75	59	78.66
November	47	26	55.31	44	28	63.63
December	53	29	54.71	50	33	66.00
January	41	27	65.85	36	28	77.77
February	39	23	58.97	39	27	69.23
Winter	180	105	58.33	169	116	68.63
Overall	488	345	70.69	483	366	75.77

Fig. 1: Frank blood in fecal sample collected in polythene bag from a 28 day old calf



Fig. 2: Processed blood indicating full fields of oocysts of *E. zuernii*

