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Research Article

PREVALENCE OF HAEMOPROTOZOAN DISEASES IN LARGE ANIMALS OF KUMAON TARAI OF UTTARAKHAND

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ABSTRACT

The investigation was intended to study the occurrence of blood parasites infecting large animals in Kumaon Tarai of Uttarakhand during January 2015 to December 2016 in clinically suspected (febrile and anorectic) cattle by examining 524 blood samples. Out of these, 52 (9.92%) were positive for blood parasites. Among the positive samples, maximum 84.62% were cases of Theileriosis followed by Babesiosis in 5 (9.62%) and Anaplasmosis in 3 (3.77%). More cases (51.92%) recorded during 2016 as compared to 1015. The incidence was higher during rainy season (59.62%) followed by summer (28.85%) and in winter season (11.54%).

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INTRODUCTION

Haemoprotzoan diseases cause devastating losses to the livestock industry throughout the world. However, it is known that most of blood protozoan parasites cause anemia by inducing erythrophagocytosis. These haemoprotzoan are vector borne economically important in Asia and has always been a formidable barrier to the survival of exotic as well as cross bred cattle (Ananda *et al.*, 2009) resulting in US \$ 800 million annual loss due to tropical theileriosis in India. Bovine babesiosis is equally important disease because of direct losses of production as many animals die and undergo a long period of convalescence entailing loss of milk and meat production (Bhatnagar *et al.*, 2015). Endemic presence of these blood parasites has been reported in animals of India (Vahora *et al.*, 2012). With early diagnosis and effective treatment, the mortality rate can be reduced. Hence, an attempt was made to study the prevalence and evolve suitable treatment regimen for effective and early recovery from blood parasites.

MATERIALS AND METHODS

The study was carried out in 524 blood samples collected from clinically suspected indigenous and crossbred cattle, suffering with varying range of symptoms reported to veterinary hospital, Pantnagar during January 2015 to December 2016. Blood smears were prepared, fixed with methanol and stained using Giemsa stain to examined under microscope (100 X)

with immersion oil for the identification of blood parasites (Soulsby, 1982).

RESULT AND DISCUSSION

The study was conducted during 2 years period to observe the overall, yearly & seasonal prevalence of blood parasites in cattle. The overall prevalence of blood parasites (Table 1) observed in current study was 9.92% concomitant to Bhatnagar *et al.*, (2015).

Table 1 Prevalence of haemoprotzoan diseases in large animals of Kumaon Tarai of Uttarakhand during 2015-16.

Sl No.	Parasite	Presence
1	Anaplasma	3 (5.77%)
2	Babesia	5 (9.62%)
3	Theileria	44 (84.62%)
	Total	52/524 (9.92%)

Figures in parenthesis shows percent presence

Out of positive cases, maximum (84.62%) were of theleriosis, much higher than observation of Kohli *et al.* (2014) as 27.2%. Babesiosis was recorded 9.62% cases, concomitant (9.25%) to Alim *et al.* (2012). Anaplasmosis could be recorded in 5.77% cases, much lower than the reports of Ananda *et al.* (2009) as 33%. Such findings might be due to samples collected from clinically ill animals having variation in geo-climatic condition, breed, and exposure of vectors and age (Muhanguzi *et al.*, 2010).

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During the year 2016, slightly more (51.92%) blood parasite (Table 2) were found as compared to 2015 due to favorable climatic conditions for vectors as higher temperature, humidity and rainfall, etc. (Nath, *et al.*, 2017), However, incidences of babesiosis and anaplasmosis (both 8%) during 2015 were higher than year 2016.

Table 2 Year-wise Prevalence of haemoprotozoan diseases in large animals of Kumaon Tarai of Uttarakhand during 2015-16.

Sl No.	Parasite	Presence	
		Year 2015	Year 2016
1	Anaplasma	2 (8%)	1 (3.70%)
2	Babesia	2 (8%)	3 (11.11%)
3	Theileria	21 (84%)	23 (85.19%)
Total		25	27

Figures in parenthesis shows percent presence

There was a considerable seasonal variation in occurrence of haemoprotozoans. The highest (59.62%) prevalence was recorded during rainy season in concord with the report of Ananda *et al.* (2009) who observed higher incidence of hemoprotozoan soon after peak of vector population due to higher temperature, humidity and rainfall, etc. Lower temperature and humidity of winter months were less favorable for the growth and multiplication of vectors responsible for lower (11.54%) frequency of babesiosis in the study population (Zahid *et al.*, 2005). During rainy season highest (93.55%; 29/31) incidence has been recorded for *Theileria spp* (Table 3) in agreement with Kohli *et al.* (2014).

Table 3 Seasonal Prevalence of haemoprotozoan diseases in large animals of Kumaon Tarai of Uttarakhand during 2015-16.

Season	Parasite	2015	2016	Total
Summer	Anaplasma	1	1	2
	Babesia	1	1	2
	Theileria	5	6	11
	Total	7	8	15 (28.85%)
Rainy	Anaplasma	0	0	0
	Babesia	1	1	2
	Theileria	13	16	29
	Total	14	17	31 (59.62%)
Winter	Anaplasma	1	0	1
	Babesia	0	1	1
	Theileria	3	1	4
	Total	4	2	6 (11.54%)

Figures in parenthesis shows percent presence

CONCLUSION

The overall prevalence of blood parasites was observed 9.92%. Maximum (84.62%) cases were of theleriosis followed by babesiosis 9.62% and anaplasmosis (5.77%).

During the year 2016, slightly more (51.92%) blood parasite were found as compared to 2015, although, incidences of babesiosis and anaplasmosis (both 8%) during 2015 remained. The highest (59.62%) prevalence was recorded during rainy season due to peak of vector population followed by summer season (28.85%).

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