Prevalence of *Eimerian species* of Mithun (*Bos frontalis*) from North Eastern Hilly Region of India

J. K. Chamuah*, P. R. Dutta, D. Borkotoky, K. Vupru and N. Ebibeni
National Research Centre on Mithun (ICAR), Jharnapani, Nagaland-797106

1KVK, Dimapur, ICAR research complex for NEH region, Jharnapani, Nagaland-797106

*Corresponding author: drjayantavet@gmail.com*

Rec. Date: Sep 04, 2014 03:50
Accept Date: Nov 09, 2014 06:27
Published Online: November 13, 2014
DOI 10.5455/ijlr.20141109062732

Abstract

An investigation was conducted in order to have an overview of the occurrence of coccidian parasites in Mithuns of north eastern hilly region of India based on standard parasitological procedure during the period 2010-13. The study was conducted in free ranging as well as semi intensive condition. Under free ranging condition, only 8 animals were found positive out 205 animals examined. In comparison to both free ranging as well as semi intensive, there was no significant occurrence in mithun. The predominance of *Eimeria bovis*, *E. aurburnensis*, *E. alabamensis* and *E. zurnii* was observed. Three animals were found to be positive for *E. bukidonensis* infection which is a rare finding.

Key words: Mithun, incidence, Eimeria parasites

Introduction

Mithun (*Bos frontalis*) is a pride animal of north eastern hill region, which is important as a bridal gift and a medium of exchange in the tribal society. Mithun is sacrificed for meat and also used as draught animal in this remote hilly region of India. Like other animals, mithun suffers from different ailments of bacterial, viral and parasitic origin. Parasitic agents are contributory factors for reduced growth and production in terms of meat and milk. Coccidium is a known pathogen causing calves’ mortality. However, literature on occurrence of coccidiosis in mithun is meagre (Rajkhowa et al., 2005; Chamuah 2005 and Chamuah *et al.*, 2009). The present study includes the observation recorded in sub clinical Eimerian infection of Mithun from the north eastern hilly region of India.

Materials and Methods

The samples were collected from different remote hilly areas of Nagaland, Arunachal, Manipur and Mizoram during the period between 2010 and 2013. The animals were randomly selected and faecal samples were collected per rectally. Faecal samples were also collected from Institute farms based at Jharnapani (310 MSL) and Porba (2133 MSL) in Nagaland, which are reared under semi intensive condition with optimum scientific management. The samples were subjected to standard parasitological
techniques and coccidian parasites were identified based on morphology of oocyst as described by Soulsby, (1986). The correlation of occurrence of coccidian parasite with rainfall humidity and temperature was determined as per salkin scale. The data were analysed as per the standard methods of Snedecor and Cochran (1994).

Results and Discussion

In order to elucidate the month wise prevalence of Eimerian infection, a total of 30 numbers of calves below 1 year of age of Jharnapani farm were screened. The percentage of incidence was recorded to be highest in the month of October, whereas no infestation was noticed in July and January. However, there was no significant occurrence between the months of a year. The recorded incidence of Eimeria was found to be 9.16% out of 30 mithun calves examined. In case of adult animals, the incidence recorded was 1.81%, of 110 animals investigated of Jharnapani farm. Eimerian infection was found to have a high correlation with rainfall whereas, moderate for temperature and humidity as per salkin scale. The predominance of Eimeria bovis, E. auburnensis, E. alabamensis and E. zurnii was noted. As a rare case, three animals were found to be positive for E. bukidonensis infection. The predominance of E. bovis in domestic animals was earlier reported by Deka et al. (1995). The recorded percentage of occurrence is very low as compared to the reports by different workers (Rajkhowa et al., 2007). Besides, the OPG count was very low and quite insignificant. Records of such low incidence in mithun might be due to better management and proper preventive measures. To find out the incidence is at Porba farm which is based at a higher altitude, a total of 30 animals were screened during the period of 2010-11. The percentage of occurrence was noted to be 4.06% during the investigation. This finding could also be attributed to be a better management of the farm. Statistically, Eimerian infection was found has direct or positive moderate correlation with rainfall, humidity and temperature as per salkin scale.

In free ranging condition or natural habitat, irrespective of age and sex, a total of 205 animals were screened to have a picture of coccidian parasites in mithun. The totals of 8 (3.90%) animals were found to be positive out of 205 animals examined, which was very negligible in terms of level of significance(P≤0.05). Of 158 animals examined in the hilly state of Nagaland, 8 (5.06 %) animals were found to be positive. However, none of animals were found to be positive out of 33 animals examined from Arunachal Pradesh. No oocyst was observed during faecal examination of mithun from Manipur and Mizoram. Rajkhowa et al. (2007) had observed 63% of mithun calves were suffered from Eimerian infection which is in contrast to our present findings.

In semi intensive condition, total of 128 animals, irrespective of age and sex were screened, where only 5 (3.90%) animals were found to be positive, which supports our better system of management. Rajkhowa et al. (2003) were recorded percentage of infection of Eimeria spp. (32.25%) in mithun calves and
observed highest prevalence (84.6%) during monsoon, lowest (27.3%) in pre-monsoon and 41.7% in winter in mithun calves in Nagaland (Rajkhowa et al., 2004). The significantly higher prevalence of incidence (22.91%) was noted in monsoon season in calves below one year of age as recorded by Chamuah et al. (2009). Rajkhowa et al. (2007) recorded the higher incidence of 63% of *Eimerian* infection found in mithun calves with significantly higher level occurrence in premonsoon season. In the present finding the percentage of occurrence is very low in comparison to the reports of other workers which might be due to better system of management.

**Conclusion**

To sum up, in the present study it was observed that mithun harbored significantly low *Eimerian* parasite in north eastern hilly terrain due to high rainfall, peculiar topography and altitudinal variation of hilly region. In addition, semi intensive condition coupled with proper scientific management resulted in low incidence as well as intensity of occurrence. However, advance study on molecular characterization of *Eimerian* parasites is advocated for proper taxonomic identification.

**Acknowledgements**

The authors duly acknowledge the Director, National Research Centre on Mithun (ICAR), Jharnapani, Nagaland, India for providing facilities required for the study and proper guidance as and when needed.

**References**