



Prevalence of tickborne haemoparasitic diseases in Cattle of Lakhimpur and Dhemaji districts of Assam

Gautam Bordoloi • Prasanta Kr. Boro • L. Sanathoi Khuman • Manoj Kumar Kalita* • Prasanta Chabukdhara • Sanjib Khargharia • Dwipjyoti Mahanta • Prerona Patowary • Chinmoy Sarmah
Lakhimpur College of Veterinary Science, Assam Agricultural University, Joyhing, North Lakhimpur-787051

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ABSTRACT

Cattle play a critical role in Indian economy that directly influences the rural economy. With a population of 192.49 million nos. of cattle India ranked second in the World (20th Livestock census). In spite of having a huge cattle population, India is unable to get the optimum productivity. Many factors such as tick-borne haemoparasitic diseases viz. babesiosis, theileriosis, trypanosomosis and anaplasmosis plays important role in reduced productivity in terms of loss of milk production, reduced weight gain, abortion and mortality. The present study was carried out for a period of 2(two) years to record the prevalence of different haemoparasitic diseases among the cattle population in Lakhimpur and Dhemaji districts of Assam situated in the North Bank plain zone of river Brahmaputra. Out of 112 nos. of animals (47 nos. were crossbred and 65 were Lakhimi cattle) screened during the period mentioned 54 nos. were found positive for *T. orientalis* and 7 nos. for *B. bovis*. The prevalence of haemoparasite in Lakhimi cattle was (36/65) 55.38% and in crossbred cattle it was (25/47) 53.19%. Theileriosis is (32/65) 49.23% in Lakhimi cattle and (22/47) 46.80% in Crossbred cattle. Whereas babesiosis is (4/65) 9.23% in Lakhimi cattle and (3/47) 6.38% in Crossbred cattle. Prevalence of theileriosis among positive cases was (54/61) 88.52% and of babesiosis was (7/61) 11.47%.

1. Introduction

The livestock plays a vital role in the socio-economic development of rural households since the time immemorial. It contributes about 6 per cent to the Gross Domestic Product and 25 per cent to the Agricultural Gross Domestic Product (Paturkar, 2019). Cattle are an integral part of Indian economy that directly influences the rural economy. With a population of 192.49 million nos. of cattle India ranked second in the World (20th Livestock census). Apart from milk production cattle also contributes to the meat, skin and hide industry and also act as drought animal (Arya and Singh 2020). In spite of having a huge cattle population, India is unable to get the optimum productivity. Many factors contribute to the suboptimal productivity, among them disease is one of the major. Out of many diseases tick-borne haemoparasitic diseases such as babesiosis, theileriosis,

trypanosomosis and anaplasmosis plays important role in reduced productivity in terms of loss of milk production, reduced weight gain, abortion and mortality (Rajput et al. 2005). Most of the times mixed infections plays important role in significant morbidity and mortality in cattle of tropical and subtropical countries (Enbiyale et al. 2018). Lakhimpur and Dhemaji districts of Assam situated in the North Bank plain zone of river Brahmaputra having cattle population 1156008 nos. out of which 16801 nos are exotic/ crossbred and 1139207-nos are indigenous cattle of Assam (20th livestock census). Occurrence of haemoprotozoan diseases in India and the world is well known among cattle (Maharana et al. 2016). The present study was carried out for a period of 2(two) years to record the prevalence of different haemoparasitic diseases among the cattle population in the present area of study.

*Corresponding author: manoj007kalita@mail.com

2. Materials and Methods

The present study was conducted in the Department of Veterinary Parasitology, LCVSc., Assam Agricultural University, Joyhing, North Lakhimpur, Assam. The duration of the study was 2 years starting from February, 2018 to February, 2020. Suspected cases having various symptoms like high rise of temperature, anaemia, weakness and sometimes haemoglobinuria and swollen superficial lymph nodes were brought to the Veterinary Clinical Complex, LCVSc., others from some private farms and farmers with less numbers of animals in Lakhimpur and Dhemaji districts were screened for the presence of haemoparasites. Types of cattle comprises indigenous (Lakhimi breed) and HF crossbred. Blood samples from suspected animals were collected in EDTA vials and brought to the Veterinary Parasitology laboratory, LCVSc. Giemsa stained smears were later examined under oil immersion objective of a light microscope. The prevalence rate was simply calculated as percent of positive cases to total suspected (screened) cases.

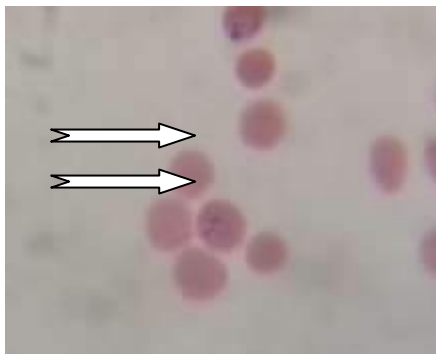


Fig. 1 Intraerythrocytic *Babesia bovis* organism

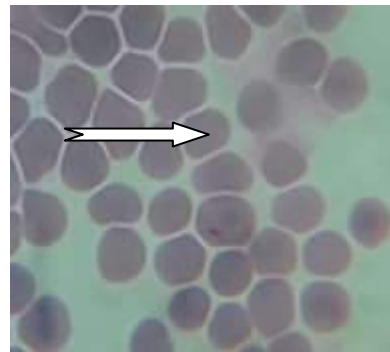


Fig. 2 Intraerythrocytic *Theileria orientalis* organism

3. Results and discussion

On light microscopy intraerythrocytic piroplasms of *Babesia bovis* (Fig. 1) and *Theileria orientalis* (Fig. 2) were observed. Out of 112 nos. of animals (47 nos. were crossbred and 65 were Lakhimi cattle) screened during the period mentioned 54 nos. were found positive for *T. orientalis* and 7 nos. for *B. bovis*. No other haemoparasite were detected in the present study. The prevalence of haemoparasite in Lakhimi cattle was (36/65) 55.38% and in crossbred cattle it was (25/47) 53.19% (Fig. 3). Theileriosis is (32/65) 49.23% in Lakhimi cattle and (22/47) 46.80% in Crossbred cattle (Fig. 4). Whereas babesiosis is (4/65) 9.23% in Lakhimi cattle and (3/47) 6.38% in Crossbred cattle (Fig. 5). Prevalence of theileriosis among positive cases was (54/61) 88.52% and of babesiosis was (7/61) 11.47% (Fig. 6).

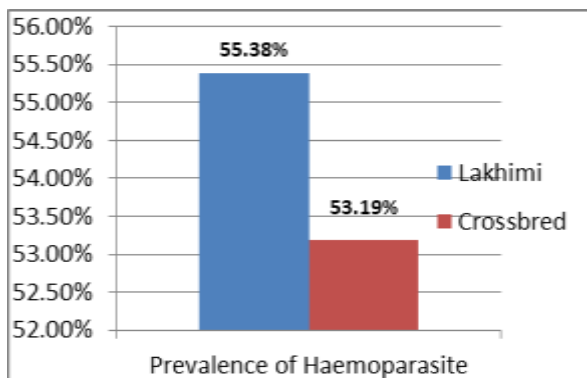


Fig. 3 Prevalence of Haemoparasite in two breeds of cattle

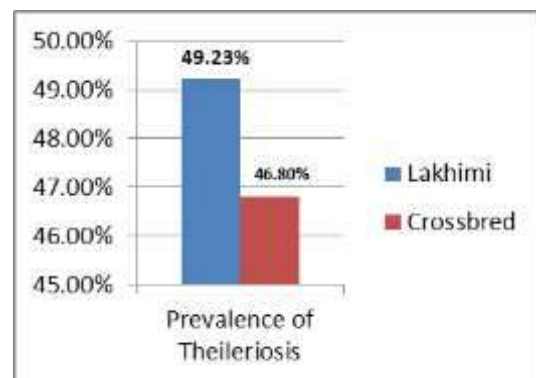


Fig. 4 Prevalence of theileriosis in two breeds of cattle

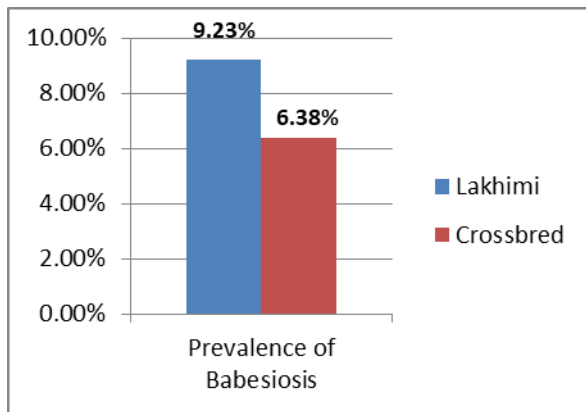


Fig. 5 Prevalence of babesiosis in two breeds of cattle

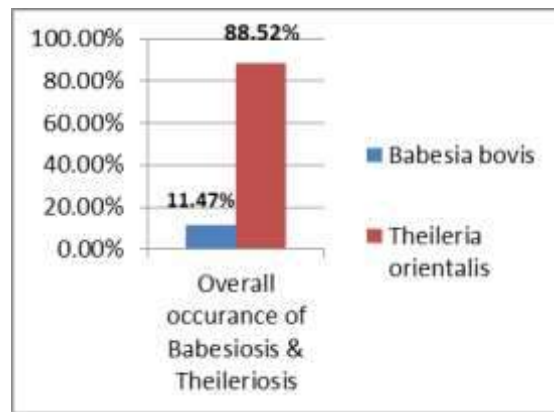


Fig. 6 Overall occurrence of babesiosis and theileriosis in cattle

Haemoprotozoans like *Babesia bigemina*, *Theileria annulata*, *Theileria mutans* and rickettsial organisms like *Anaplasma marginale* were reported earlier in animals from India (Ananda et al. 2009 and Vahora et al. 2012). Although babesiosis was reported from Assam since long back but oriental theileriosis caused by *Theileria orientalis* was reported recently (Kakati et al. 2015). The occurrence of oriental theileriosis in Lakhimi cattle of Assam was reported very recently from the present area of study (Bordoloi et al. 2020). In a study conducted in and around Guwahati, Assam from October 2015 to September 2016, where the overall prevalence of babesiosis in cattle was recorded 8.78 percent (Barman et al. 2018). This finding corroborates the present study where the lower prevalence rate of babesiosis is recorded 11.47%.

4. Conclusion

The present findings will enrich the database regarding the prevalence of haemoparasites in the area of study which will definitely help in making strategies to control the occurrence of these diseases among the cattle population.

5. Acknowledgements

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