

## INCIDENCE AND TREATMENT OF THEILERIASIS AND BABESIASIS

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### ABSTRACT

A total of 50 adult cows each of Friesian and Jersey breed maintained at the Livestock Experiment Station Bhunikey (Pattoki) District Kasur were selected randomly for this study. Blood smears of all animals were prepared aseptically through standard procedure. The cows found positive for theileriasis were treated with Buparvaquone (Butalex) injection @ 5 ml/100 Kg b. wt. intramuscularly, while for the treatment of babesiasis, positive animals were treated with Imidocarb dipropionate 12% w/v (Imizol) @ 2 ml/100 Kg b. wt. I/M injection. Three days after medication, animals were re-tested for the presence of haemoparasites. The overall incidence of theileriasis in Holstein-Friesian and Jersey cows was 24 and 15 per cent, respectively, while the incidence of babesiasis was 2.5 per cent in both the breeds. The highest incidence of Theileria, i.e., 38 and 30 per cent was observed in Holstein-Friesian and Jersey cows during 3<sup>rd</sup> and 4<sup>th</sup> quarter of the year, respectively. The lowest incidence of Theileria was observed during 1<sup>st</sup> quarter in both Holstein-Friesian and Jersey cows (16 and 8 percent, respectively). The incidence of Babesia was observed only during 3<sup>rd</sup> quarter of the study, which was 10 per cent in both the breeds. Butalex and Imizol injection showed 100 per cent effectiveness in both the breeds.

**Key words:** Haemoparasites, blood smears, Theileriasis, Holstein-Friesian.

### INTRODUCTION

Haemoparasites inflict losses to animals in term of morbidity and mortality due to their heavy incidence (Fadraga *et al.*, 1991). If affected animals are not treated properly and efficiently, mortality rates become high. The haemoparasites include Babesia, Theileria, Anaplasma and Trypanosoma etc. but the most important are Babesia, Theileria and Anaplasma. These protozoa are transmitted through ticks. Haemoparasites are the protozoa present in animals specially in suckling calves, which are highly susceptible. Among various blood protozoan diseases, bovine babesiasis and theileriasis have been reported as diseases of major economic importance, as they cause heavy losses due to mortality, decreased production and lowered working efficiency of affected animals in the tropics and subtropics of the world, including Pakistan. Exotic and crossbred cattle are more susceptible to tick infestations than indigenous cattle. Many workers studied about various tickcidals. Muhammad *et al.* (1999) reported that Butalex was most effective in bovine theileriasis.

The present study was, therefore, conducted to determine the incidence of blood protozoa in exotic cattle maintained at the Livestock Experiment Station Bhunikey (Pattoki), District Kasur. Moreover, efficacy of Buparvaquone (Butalex) and Imidocarb dipropionate

12% w/v (Imizol) for the treatment and control of haemoparasites was also tested.

### MATERIALS AND METHODS

#### Experimental animals

The study was designed to know about incidence of haemoparasites and efficacy of commercially available medicines for the treatment and control of haemoparasites in an exotic herd maintained at the Livestock Experiment Station Bhunikey (Pattoki), District Kasur. A total number of 50 adult cows each of Friesian and Jersey breeds were randomly selected in each of the four quarters of the study period from July 2003 to June 2004.

#### Collection of blood samples

Blood smears of all the selected animals were prepared aseptically on grease free sterile glass slides directly from the ear vein. The smears of blood were prepared according to the method described by Kreier and Barker (1987). Each cow was bled only once during each quarter of the study. The division of the quarter was 1<sup>st</sup>: July to September 2003, 2<sup>nd</sup>: from October to December 2003, 3<sup>rd</sup>: from January to March,

2004 and 4<sup>th</sup>: from April to June, 2004. Each slide was labeled with specific number and date of smear made. All the prepared slides were brought to laboratory for further investigation.

#### Processing and examination of blood smears

The smears were air dried, fixed in methanol and stained with freshly prepared Giemsa stain for 45 minutes (Levine, 1985). The parasites were identified according to the characters described by Soulsby (1982), Sastry (1983), Levine (1985) and Kreier (1994).

#### Treatment

The cows found positive for theileriasis were treated with Butalex (5 ml/100 Kg b. wt.) I/M injection, while for the treatment of babesiasis, positive animals were treated with Imizol (2 ml/100Kg b. wt.) I/M injection. Three days after medication with both the medicines, animals were re-tested for the presence or absence of haemoparasites to assess the efficacy of these medicines against haemoparasites.

### RESULTS AND DISCUSSION

Results of present study regarding the prevalence of haemoparasites are presented in Table 1, while results about the medication of haemoparasitic affected animals are presented in Table 2. The overall incidence of Theileria in Holstein-Friesian and Jersey cows was 24 and 15 per cent, respectively, while the incidence of Babesia was 2.5 per cent in both the breeds. The highest incidence of Theileria was 38 and 30 per cent in Holstein-Friesian and Jersey cows during 3<sup>rd</sup> and 4<sup>th</sup> quarters of the study, respectively. The lowest incidence in Holstein-Friesian and Jersey cows was 16 and 8 per cent during 1<sup>st</sup> quarter of the study, respectively.

In 2<sup>nd</sup> quarter of the study, the incidence of Theileria was 20 per cent in Holstein-Friesian cows which was moderately higher than the incidence observed during the 1<sup>st</sup> quarter of the study. In 4<sup>th</sup> quarter, the incidence of the Theileria in Holstein-Friesian cows was 22 per cent which was comparatively higher than the incidence noted during 1<sup>st</sup> and 2<sup>nd</sup> quarters in this breed. During 1<sup>st</sup> and 2<sup>nd</sup> quarters, the incidence of Theileria was 8 per cent in Jersey breed. Similarly, moderately higher results in Jersey breed was noted during 3<sup>rd</sup> quarter of the study. The incidence of Babesia was 10 per cent in each breed during 3<sup>rd</sup> quarter of the study. However, in other quarters of the study there was no incidence of Babesia in both the breeds.

Butalex was administrated @ 5 ml/100 Kg b. wt. for the treatment of Theileriasis. A total of 29 and 22

animals of Holstein-Friesian and Jersey cows, respectively which showed 100 per cent effectiveness in both the breeds. Similarly Imizol which was used for the treatment of babesiasis @ 2 ml/100 Kg b. wt. in 5 animals of each breed, showed 100 per cent effectiveness.

The findings of present study are not in agreement with the finding of Fadruga *et al.* (1991), who reported 67.6 per cent incidence of haemoparasites in cattle, while in the present study the incidence of theileriasis and babesiasis in Holstein Friesian cows was 24 and 2.5 per cent and in Jersey cows was 15 and 2.5 per cent respectively. However, Ozkan *et al.* (1993) reported 18 per cent protozoan infection in cattle. The report of these authors is closely in line with the findings of the present study. Ahmad *et al.* (1995) reported that the incidence of infection was higher during the rainy season and this was related to an increase in the tick population. The report of these authors is not in agreement with the findings of present study because the highest incidence, 38 and 30 per cent of theileria was in Holstein Friesian and Jersey cows during such a season in which there are very short rains in Pakistan, while in heavy rainy season the incidence of theileria was 16 and 8 per cent in Holstein Friesian and Jersey cows, respectively.

The results of the present study are in agreement with the observation of Hussain *et al.* (1991), who reported 20.46 per cent incidence of haemoparasites in sheep. El-Metenawy (1999) reported that the highest incidence of haemoparasites was recorded during the autumn season, in Al-Qassim region, Saudi Arabia. The findings of present study are not in agreement with the findings of above said workers as in the present study there was lowest incidence of haemoparasitic infestation in Holstein Friesian and Jersey cows during the autumn season i.e. in 1<sup>st</sup> and 2<sup>nd</sup> quarters of the study. The finding of present study are closely in line with those of Muhammad *et al.* (1999), who reported that the frequency of Theileria steadily increased, peaked in June and then steadily declined up to November. The findings of the present study regarding treatment of theileriasis are closely in line with those of Muhammad *et al.* (1999), who reported 93 per cent effectiveness of Butalex in bovine theileriasis.

#### Conclusion

The incidence of theileriasis in Holstein-Friesian and Jersey cows was 24 and 15 per cent, respectively, while the incidence of babesiasis was 2.5 per cent in both the breeds. The highest incidence of theileria (16 and 8 per cent) was observed during 1<sup>st</sup> quarter in both Holstein-Friesian and Jersey cows, respectively. The incidence of Babesia was observed only during 3<sup>rd</sup> quarter of the study, which was 10 per cent for both the breeds. Butalex and Imizol showed 100 per cent effectiveness in both the breeds.

**Table 1: Incidence of Theileria and Babesia in Holstein-Friesian and Jersey cows**

Quarter of the study	Holestein Friesian cows			Jersey cows		
	No. of samples	No. and %age of samples positive for Theileria	No. and %age of samples positive for Babesia	No. of samples	No. and %age of samples positive for Theileria	No. and %age of samples positive for Babesia
1 <sup>st</sup>	50	8/16	-	50	4/8	-
2 <sup>nd</sup>	50	10/20	-	50	4/8	-
3 <sup>rd</sup>	50	19/38	5/10	50	7/14	5/10
4 <sup>th</sup>	50	11/22	-	50	15/30	-
Overall	200	48/24	5/2.5	200	30/15	5/2.5

**Table 2: The efficacy of medicines against haemoparasites**

Name of haemoparasites	Holestein Friesian cow			Jersey cow		
	No. of animals treated	No. of animals recovered	Percentage of recovered animals	No. of animals treated	No. of animals recovered	%age of recovered animals
Theileria	29	29	100	22	22	100
Babesia	5	5	100	5	5	100

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