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## RESEARCH ARTICLE

# THEILERIOSIS IN CATTLE: PREVALENCE AND SEASONAL INCIDENCE IN JALANDHAR DISTRICT OF PUNJAB (INDIA)

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### ABSTRACT

Theileriosis is a major threat to dairy industry that causes a fatal disease in cattle. The aim of the present study was to assess the prevalence of theileriosis in cattle, 620 blood samples were screened by using Giemsa's staining technique. Microscopic examination of blood smears revealed 9.35% (58) overall prevalence of theileriosis. The highest prevalence was found in summer season with a prevalence rate 13.3% which indicates that theileriosis spread more in hot and humid weather (summer season), immediate screening norms/policies are needed to reduce the extent of spread. There is a need for further investigation using molecular technique.

#### Key words:

Blood smear, seasonal prevalence, Theileria, Punjab.

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### INTRODUCTION

Haemoprotozoan diseases are major constraints to the dairy industry and causes devastating losses to the livestock. Most of these diseases are initiated by ticks. The hot and humid climate is highly favourable for the development and survival of ticks. In particular, ticks spread Theileria which pose a serious challenge to the cattle population. *Theileria annulata* and *Theileria parva* are considered to be the most pathogenic species of Theileria. Tropical theileriosis is one of the most prevalent diseases of cattle caused by *T. annulata* (Mirzaei 2007) and is transmitted through Ixodid tick of genus *Hyalomma*. Theileriosis has serious economic impact in view of mortality and reduced milk yield.

Most of the haemoprotozoan parasites are tick borne and are of great economic importance in Asia and have always been formidable barriers to the survival of cattle in India. In India the annual loss reported due to tropical theileriosis is approximately US\$ 800 million (Devendra 1995).

In India theileriosis has been reported from geographical regions such as Punjab, Haryana and Gujrat. In Northern Kerala and Gujrat (16 % and 37 %) positive cases of theileriosis has been reported in cattle, respectively. The present study was aimed to assess the season wise prevalence of Theileria in Jalandhar district of Punjab, India.

### MATERIALS AND METHODS

A total of 620 cattle blood samples were received in vacuutainers test tube having EDTA from field to Regional Diseases Diagnostic Laboratory (Parasitology laboratory), Jalandhar (March to December 2013) with a clinical history of high fever (104°-106°F).

Thin blood smears were prepared immediately after receiving the blood samples as described by Afridi *et al.* (2005). The stained slides were examined under oil immersion at 100x magnification. Thereafter, the blood parasites were identified as described by various OIE publications (OIE, 2004, 2008a, b).

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Spring (March, April), Summer (May, June, July), Rainy (August, September, October) and Winter (November, December)

**Table 1** Seasonal Incidence and Prevalence of Theileria in cattle

Season	Month	Total no of Samples recieved	Theileria Positive	% of Positive cases
Spring	March	33	1	4.39
	April	58	3	
	May	69	3	
Summer	June	26	5	13.3
	July	92	17	
	Aug.	126	16	
Rainy	Sep.	107	9	9.85
	Oct.	41	2	
	Nov.	30	1	
Winter	Dec.	38	1	2.94
<b>Total</b>		<b>620</b>	<b>58 (9.35%)</b>	

## RESULTS AND DISCUSSION

The study was conducted from March to December 2013 to identify the seasonal prevalence of theileriosis in Jalandhar district, Punjab. A total number of 620 cattle blood samples were received and analysed by Giemsa's stained blood smear. 4.39% cows were found positive for Theileria as per blood smear in spring season, 13.5% were found positive in summer season, 9.85% were found positive in rainy season and 2.94% were found positive in winter season (Table-1). Highest numbers of positive cases were obtained in summer season which corresponds to months between June and July. Microscopic examination of blood smears revealed 9.35% overall prevalence of theileriosis. In India, theileriosis is a fatal parasitic disease and has been reported from various regions of the country and recorded as 21.1% in Tamil Nadu (Anandan et al, 1989), 16% in Northern Kerala (Nair et al, 2011), 17.7% in Karnataka (Muraleedharan et al. 1994) and 45.4% in Dehradun, Uttarakhand (Kohli et al, 2014). These differences observed in the prevalence may be due to the different geographical locations, time periods and various methods of sample analysis. Low incidence of theileriosis may be due to regular usage of chemical control programme particularly the application of Deltamethrin (0.2% Butox) as a spray on animals and cattle shed which reduced the tick population under field conditions. An effort that was made to know the influence of seasonal variation on the prevalence of theileriosis. High incidence during summer (13.3%), followed by rainy season (9.85%) and less in spring (4.39%) and winter (2.94%). The present investigation is in conformity with the report from Ranchi, Bihar (Radostits et al, 1994). A high prevalence of theileriosis was observed during summer (17.64%), followed by rainy (7.32%) and less in winter (5%). On contrary, a few reports of higher prevalence of theileriosis were observed during monsoon season (Vahora et al, 2012; Roy et al, 2004 and Radostits et al, 1994). The high prevalence of theileriosis observed in the present study may be due to high abundance of tick vector, because high temperature and humidity is ideal for survival and breeding of ticks (Magona et al, 2011). A considerable seasonal variation with respect to the occurrence of the haemoprotozoan disease may be due to changes in macroclimate that is essential for breeding of ticks.

The present study suggests that Jalandhar region is endemic for theileriosis and occurrence of the disease was high during summer. The outcome of the present study would help to forecast disease outbreak not only in this region but also in other parts of country. There is a need for further investigations using molecular techniques for the accurate identification of the carrier status of haemoprotozoan parasites.

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