

SEROPREVALENCE OF BRUCELLOSIS IN ANIMALS AT GOVERNMENT AND PRIVATE LIVESTOCK FARMS IN PUNJAB

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ABSTRACT

Seroprevalence of brucellosis in 1473 cattle and 481 buffaloes from various Government and 286 cattle and 223 buffaloes from different private livestock farms was carried out by performing Rose Bengal plate test (RBPT) and serum agglutination test (SAT). RBPT recorded the seroprevalence as 14.70% in cattle and 15.38% in buffaloes at Government and 18.53% in cattle and 35.40% in buffaloes at various private livestock farms. Out of these RBPT positive animals, 7.19% cattle and 2.91% buffaloes at Government whereas 9.00% cattle and 23.70% buffaloes at private livestock farms were found sero-positive when applied SAT.

Key words: Brucellosis, seroprevalence, cattle, buffaloes.

INTRODUCTION

Bovine brucellosis is usually caused by *Brucella abortus*, less frequently by *Brucella melitensis* and rarely by *Brucella suis*. It is characterized by abortion, with excretion of the organisms in uterine discharge and in milk. Major economic losses result from abortion, loss of calves, reduced milk yield in females and infertility in males (WHO, 1971). It is a zoonotic infection and a serious threat to public health. Although exact incidence of the brucellosis in bovines in Pakistan is not known but has been reported to vary from 3.25 to 4.4 percent in different areas of Pakistan (Naeem *et al.*, 1990).

In this article the serological survey of brucellosis in cattle and buffaloes kept at various government and private farms in Punjab has been described to assess the current status of the disease in the country.

MATERIALS AND METHODS

A total of 2463 blood sera of cattle and buffaloes were collected from various Government and private livestock farms. Among these, 1759 samples were taken from cattle and 704 from buffaloes. All the serum samples were subjected to Rose Bengal Plate test (RBPT) and those giving positive reaction were subjected to serum agglutination test (SAT) (MAFF, 1987). Rose Bengal and concentrated antigen were procured from Veterinary Research Institute, Lahore. The results of agglutination in SAT were recorded by reading the degree of clearing and sedimentation. A titer of 1:40 (i.e. 50% agglutination at 1:40) or above was considered positive whereas 50% or above reaction in titer of 1:20 and less than 50% reaction at 1:40 was declared as suspicious. A titer of 1:10 was treated negative (Alton *et al.*, 1975).

RESULTS AND DISCUSSION

In cattle, RBPT indicated 218 (14.70%) and 53 (18.53%) reactors at Government and private livestock farms, respectively. When RBPT positive samples were subjected to SAT, 106 (7.19%) showed positive reaction for brucellosis, 41 (2.78%) were declared suspicious at Government and 26 (9.00%) positive and 11 (3.80%) doubtful at private livestock farms (Table 1)

In buffaloes, RBPT indicated 74 (15.38%) and 79 (35.40%) reactors at Government and private farms, respectively. At SAT, 14 (2.91%) were positive, 7 (1.45%) doubtful at Government and 53 (23.7%) were declared positive and 5 (2.24%) doubtful at private farms (Table 2). On RBPT, the overall positive percentage in cattle and buffaloes at Government and private livestock farms was 17.20% whereas on SAT it was 8.0 (Table 3).

Results of two serodiagnostic tests indicated that RBPT detected higher percentage of seropositive animals as compared to SAT. According to Flad (1983), RBPT is rapid, simple and sensitive but has low specificity. Similar study was conducted by Sanga *et al.* (1986) and Sarkar *et al.* (1987), who found an incidence of 22.50 and 18.32% respectively during the investigation of brucellosis among cattle and buffaloes at organized private farms. The overall incidence recorded in the present study is much higher than that reported by Nasir *et al.* (1999) in cattle at various government livestock farms. Chauhan *et al.* (2000) reported 44% incidence of brucellosis among buffaloes in Indian Gujrat which is higher than that of present findings. Zahid *et al.* (2002) reported 10.42%

Table 1: Brucella antibodies in cattle at government and private farms in Punjab

Source	Place	No of samples	Diagnostic tests			
			RBPT +Ve	+Ve	SAT ±Ve	-Ve
Government livestock farms	L.E.S. Bhunikey (Pattoki)	243	103	46	7	50
	L.E.S. Dera Rakh Chahal (Lahore)	92	2	2	--	--
	L.E.S. Jahangirabad (Khanewal)	372	70	49	21	--
	L.E.S. Kalur Kot (Bhakkar)	164	2	--	2	--
	L.E.S. Kherimurat, Attock	89	5	1	2	2
	L.E.S. Khizarabad (Sargodha)	391	14	1	9	4
	L.E.S. Rakh Ghulaman (Bhakkar)	122	22	7	--	15
	Total	1473	218	106	41	71
Private livestock farms	Hiraj Dairy Farm (Khanewal)	35	2	--	2	--
	Adil Dairy Farm, (Sheikhupura)	55	18	9	7	2
	Cheema Dairy Farm, (Gujranwala)	50	13	8	--	5
	Arshad Dairy Farm, Durian (Attock)	68	2	1	--	1
	Miscellaneous.	78	18	8	2	8
	Total	286	53	26	11	16

LES = Livestock Experiment Station.
SAT = Serum Agglutination test.

RBPT = Rose Bengal Plate Test.
± doubtful.

Table 2: Serological survey of brucellosis in buffaloes at Government and Private farms in Punjab

Source	Place	No of samples	Diagnostic tests			
			RBPT +Ve	+Ve	SAT ±Ve	-Ve
Government livestock farms	L.E.S. Dera Rakh Chahal (Lahore)	68	17	1	--	16
	L.E.S. Khushab	126	2	--	--	--
	L.E.S. Rakh Ghulaman (Bhakkar)	287	55	13	5	37
	Total	481	74	14	7	53
Private livestock farms	Hiraj Dairy Farm (Khanewal).	14	--	--	--	--
	Cheema Dairy Farm (Gujranwala)	64	31	20	--	11
	Miscellaneous.	145	48	33	5	10
	Total	223	79	53	5	21

Table 3: An overall seroprevalence of brucellosis in cattle and buffaloes

Source	Species	No. of samples	RBPT	SAT
Government livestock farms	Cattle	1473	218 (14.70%)	106 (7.19%)
	Buffaloe	481	74 (15.38%)	14 (2.91%)
Private livestock farms	Cattle	286	53 (18.53%)	26 (9.00%)
	Buffaloe	223	79 (35.40%)	53 (23.70%)
Total	Total	2463	424 (17.20%)	199 (8.00%)

seropositive buffaloes at various government livestock farms which is comparatively higher than that of present finding because animals taken for that study had history of reproductive disorders. Niazi (2003) reported that Milk Ring Test was carried out on 311, 238 and 9 milk samples of Friesian, Jersey and S x F crossbred cows, respectively, kept at Livestock Experiment Station, Bhumikey (Pattoki), District Kasure. Not a single serum samples from all the three species could be detected positive for brucellosis, however, Niazi (2003) collected samples during 1999-2000, while the present study was conducted during 2002-2003.

The results of the present study indicate that serological diagnosis of brucellosis in cattle at government livestock farms did not produce major problem as compared to buffaloes. But at private livestock farms, a high percentage of seropositive cattle and buffaloes are facing this problem. The wide distribution and high prevalence of brucellosis in animals at private farms might be due to frequent introduction of new high yielding animals into the farms without proper serological tests and high incidence of abortions. So regular testing, culling, proper hygiene and holistic inter-governmental approach is mandatory to prevent further spread of the disease at private sector.

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