CURRENT SEROPREVALENCE OF LEPTOSPIROSIS AMONG BUFFALOES FROM TAMIL NADU

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ABSTRACT

A total of 267 blood samples collected from buffaloes showing clinical signs of anorexia, pyrexia, mastitis, abortion, premature calving and infertility and apparently healthy animals from different districts of Tamil Nadu were subjected to microscopic agglutination test (MAT) to diagnose leptospirosis. The seropositivity to leptospirosis was found to be 75.66% in buffaloes. Out of 12 different serovars screened, only 5 serovars namely *australis, ballum, hardjo, hebdomadis* and *pomona* could be observed. The study indicated current circulation of only five leptospiral serovars among buffalo population of Tamil Nadu.

KEY WORDS: Buffaloes, Leptospirosis, Prevalence, Tamil Nadu

INTRODUCTION

Leptospirosis is a zoonotic disease, it causes heavy economic losses on account of jaundice, abortion and drop in milk production. In India, Adinarayan *et al*. (1960) were the first to report leptospirosis among buffaloes in Uttar Pradesh. Subsequently, seroprevalence among buffaloes has been reported from many parts of India (Srivastava and Kumar, 2003). In Southern India, the prevalence of leptospiral antibodies in buffaloes has been reported by many authors (John et al., 1980; Ratnam *et al.*, 1983; Ramani Pushpa and Punya Kumari, 2005 and Balakrishnan *et al*., 2014). Information on the current status of leptospirosis among buffaloes in Tamil Nadu is inadequate. This study reports seroprevalence of leptospirosis among buffaloes in Tamil Nadu.

MATERIALS AND METHODS

A total of 267 blood samples were collected from buffaloes showing clinical signs of anorexia, pyrexia, mastitis, abortion, premature calving and infertility and apparently healthy animals in four districts, Chennai, Dindigul, Kancheepuram and Thiruvallur of Tamil Nadu .The samples were subjected to Microscopic agglutination test (MAT) to diagnose leptospirosis as per procedure of OIE (2004) in 96 well 'U' bottom titration plates (M/s. Laxbro, India). Quantitative assay was carried out in 'U' bottom micro titration plates against the reacting serovars of leptospires. The reciprocal of the highest dilution which showed 50 per cent reduction in the number of free leptospires comparable to the respective antigen control with or without agglutination was recorded as the respective titre. Twelve Leptospira reference strains obtained from National Reference Laboratory, ICMR, Andman and Nicobar, India were used as antigens.

RESULTS AND DISCUSSION

Out of a total 267 sera samples screened in four districts of Tamil Nadu, the seropositivity was found to be 75.66%. The seropositivity found was (184/243), 75.72 %; (7/12) ,58.33%; (4/5), 80% and (7/7), 100 % in Chennai ,Dindigul ,Kancheepuram and Thiruvallur Districts respectively. All the 7 samples from Thiruvallur district were found to be positive. Out of 12 samples and 5 samples screened in Dindigul and Kancheepuram districts, 7 (58.33%) and 4 samples (80.00%) respectively were found to be positive. The seropositivity in Chennai district was found to be 75.72%. The

frequency of occurrence of serovars ranged from 4.44% to 34.47% . Among the serovars, pomona (34.47%) was more prevalent, followed by *hardjo* (21.84%), *hebdomadis* (19.80%), *australis* (19.45%) and *ballum* (4.44%;). The antibody titre distribution for *australis* ranged from 1:100 – 1:400. The antibody titre for *ballum* ranged from 1:100 – 1:200 and 1:1600, for *hardjo* and *hebdomadis* it ranged from 1:100 – 1:1600. The serovar *pomona* had the antibody distribution from 1:100 to 1:6400. Only 5 different serovars could be observed out of 12 different serovars screened (Table1). The serovars, *autumnalis, canicola, grippotyphosa, icterohaemorrhagiae, javanica, pyrogenes and tarassovi* could not be observed in the area screened in present study.

Table 1: Reference strains of Leptospires* used in the study

S.No	Serogroup	Serovar	Strain
1	Australis	Australis	Ballico
2	Autumnalis	Rachmati	Rachmati
3	Ballum	Ballum	Mus127
4	Canicola	Canicola	HondUtrecht IV
5	Grippotyphosa	Grippotyphosa	Moskva V
6	Hebdomadis	Hebdomadis	Hebdomadis
7	Icterohaemorrhagiae	icterohaemorrhagiae	RGA
8	Javanica	Poi	Poi
9	Pomona	Pomona	Pomona
10	Pyrogenes	Pyrogenes	Salinem
11	Sejroe	Hardjo	Hardjoprajitno
12	Tarassovi	Tarassovi	Peripellicin

**Obtained from National Reference Laboratory, ICMR, Andaman and Nicobar Islands, India.*

We found seroprevalence of 5 serovars namely *pomona, hardjo, hebdomadis, australis* and *ballum* with high seropositivity (75.66%). However such high seropositivity has been recorded earlier by Selvaraj *et al.* (2005), who reported 85.70% and 82.67% seropositivity, respectively. The occurrence of these serovars namely *hebdomadis hardjo pomona, australis* and *ballum* have been reported earlier among buffaloes in Tamil Nadu by various workers (Karthikeyan, 2004 and Selvaraj *et al*., 2005, Ratnam *et al*., 1983), and these serovars were found in our study too.

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