**Research Journal of Chemical and Environmental Sciences**
Res J. Chem. Environ. Sci. Vol 6 [6] December 2018: 65-67
Online ISSN 2321-1040
CODEN: RJCEA2 [USA]
©Academy for Environment and Life Sciences, INDIA
Website: www.aelsindia.com/rjces.htm

RJCES

**ORIGINAL ARTICLE**

# Occurrence of Leptospirosis among suspected canines in and around Tirupati

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**ABSTRACT**
*The present study was carried out for diagnosis and seroprevalence studies. About fifty serum samples, urine & whole blood samples were collected from clinically suspected dogs with hepatic and renal failure. All the samples were subjected for dark field microscopy for initial screening then the serum samples were subjected for sero diagnosis. out of 50 Urine samples screened, 18 samples were positive on dark field microscopy. Similarly out of 50 serum samples subjected for MAT revealed seropositivity of 36%. Highest seropositivity was reported against L.canicola-10(55.5%) followed by L.icterohemarrhagae-6(33.3%), L.hardjo-1(5.5%) and L.giyppotyphosa-1(5.5%) respectively. The study proves that there is a prevalence of leptospirosis in dogs in and around Tirupati. Hence it is necessary to implement control measures to prevent further transmission to other live stock and humans.*
***Key words:*** *Zoonotic, Microscopic agglutination test (MAT) and Seroprevalence.*

Received 22.10.2018 Accepted 27.11.2018 © 2018 AELS, INDIA

## INTRODUCTION

Leptospirosis is a common global Zoonotic disease affecting all domestic animals in sub tropical & tropical regions of the world. It is a neglected zoonotic disease due to lack of awareness about its incidence and severity [1]. It is caused by pathogenic spirochete belonging to genus Leptopsira. Dogs may serve as sentinels and indicators of environmental contamination as well as potential carriers for Leptospira.Leptospirosis in dogs is a very serious disease, and the disease may present as subclinical form with leptospiruria and acute form characterized by high fever, vomiting, prostration, icterus and renal failure [2]. Both clinical and Subclinically infected dogs will shed the leptospires through their urine which acts as main source of infection to other animals and humans [3].The increased level of disease activity among dogs prompts questions about increased risk of transmission to humans.

Though isolation of leptopsira from clinical specimens is a confirmatory,it is not preferable because leptospira is slow grower, it takes several weeks to months for isolation and antibiotic treatment reduces chances of recovery of bacteria. leptospirosis is commonly diagnosed by using serological technique known as Microscopic agglutination test, which is highly sensitive, serovarspecific. MAT is a gold standard test for diagnosis and epidemiological studies [4]. Available vaccines are inactivated vaccines which gives homologous protection only *viz* serovar specific and does not give cross protection [5]. But immunization is the effective way for prevention of infection.

In this context, present study was carried out to identify the various serovars affecting canines in and around Tirupati.

## MATERIALS AND METHODS

Sample Collection:

A total of 50 whole blood, serums and urine samples were collected from clinically suspected dogs, reported with vomitions, hepatic and renal failure during the period of five months (August-December 2017).Whole blood samples, urine samples were subjected to dark field microscopy for identification of leptospires and Serum samples were subjected to MAT.

**Preparation of Antigens for MAT:**

MAT is a gold standard test **[6]** for diagnosis of leptopsirosis. Reference Serovars were grown in EMJH liquid Media. The7- 8th day old cultures with density of 2.3 x $10^9$ organs per ml were used as antigens. The reference serovars used in present study were procured from Regional Medical Research centre (RMRC),Portblair, Andaman Nicobar Islands and were maintained at Leptospira Laboratory, State Level Diagnostic Laboratory, SVVU, Tirupati, Andhra Pradesh.

**Microscopic Agglutination Test (MAT):**

Microscopic agglutination test (MAT) was performed according to standard protocol followed at RMRC, WHO collaborating center for diagnosis, reference and training on leptospirosis, Port Blair, Andaman and Nicobar islands to detect antibodies against leptospira. A panel of pathogenic serovars such *autumnalis, icterohaemorrheae, canicola, hardjo, hebdomedis, grippotyphosa, javanica, , pomona, ballum* and non pathogenic serovar *potac* were included.

**RESULTS**

On MAT agglutination titres of equal or greater than 1: 100 were considered as positive for leptospiral infection. The serovar with highest titre is considered as infecting serovar.out of fifty clinically suspected serum samples, 18(36%) were positive on MAT with cut off titre above 1:100.Highest seropositivity was observed against *L.canicola*-10(55.5%) followed by *L.icterohaemarrhagae*-6(33.3%), *L.hardjo*-1(5.5%) and *L.grippotyphosa*-1(5.5%) respectively. Out of 18, six samples showed high agglutination titres against both *L.canicola* and *icterohemarrhagae* and in one sample high agglutination titres were observed against *L.canicola* and *L.grippotyphosa.* Agglutination was not observed against *hebdomedis,, javanica, , pomona, ballum.*

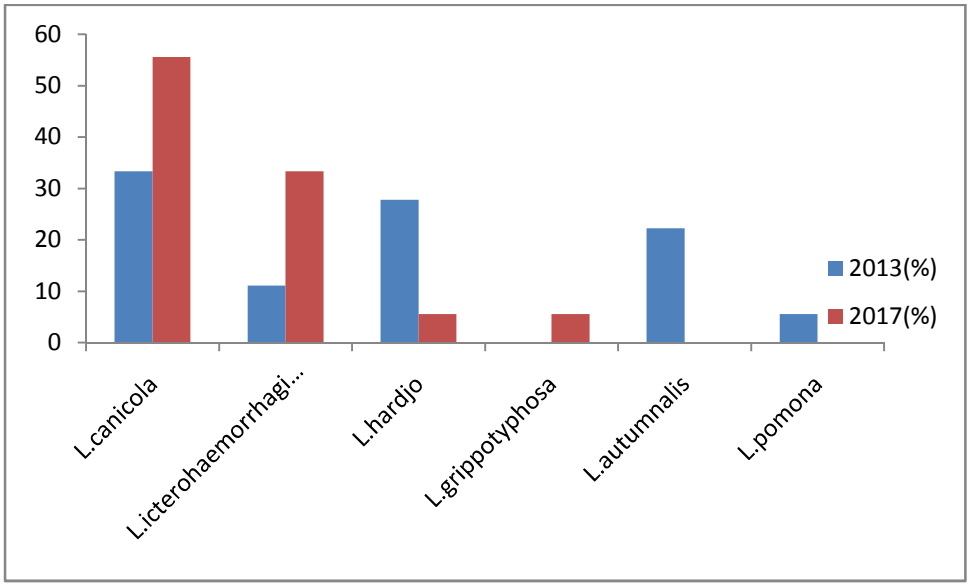


**Fig:1**. Comparison of seroprevalence over a period of time.

**DISCUSSION**

From the above study, the preodimant serovar affecting canines in and around Tirupati is *canicola* followed by *icterohaemorrhagae*, *hardjo* and *grippotyphosa*. Out of 18 positive cases, 7 showed high agglutination titres with two serovars, in such cases both were considered as infecting serovars. Five serum samples showed agglutination with non pathogenic Potac, and it is considered to be non significant. Raniprameela *et., al* **[7]** from Andhra pradesh reported a seropositivity of 34% in clinically suspected dogs Highest seropositivity was reported against canicola(33.33%) followd by hardjo (27.77%), *autumnalis* (22.22%), *icterohaemorrhagae* (11.11%) and Pomona (5.55%) ..But in present study *autumnalis* and *pomona* were not recorded.Senthil kumar *et., al***[8]** in his studies reported a seroprevaleence of 57%, with highest seropositivity against *L.icterohaemorrhagae* (52.3%) followed by *L. canicola*(26.19%),*L. Pomona* (4.9%), *L. autumnalis* (4.7%) and *L.grippotyphosa* (3.0%) in Namakal. Abhinay.G *et., al* **[9]** and Ambily.R et., al (2013) **[10]** in their studies reported that *autumnalis* and *australis* were the predominant serovars affecting canines followed by *pomona, grippotyphosa, canicola, pyrogenes, icterohaemorrhagae,and javanica* in and around Trissur region of Kerala. Chowdary.A et., al

(2014),**[11]** reported that predominant serovars affecting canines was *L. pyrogens* followed by *icterohaemorrhagae* in Mumbai.

## CONCLUSION

The above study draws a conclusion that serovars affecting canines varies over a period of time and geographical areas. This necessitates that seroprevalence studies should be regularly carried out for updating epidemiological data, So that new serovars should be incorporated in to vaccine for effective control.

## ACKNOWLEDGEMENT

All authors thankfull to Dr. Vijayachari, Director for WHO Collaborating Centre for Diagnosis, Research, Reference and Training in Leptospirosis, RMRC, Port Blair, Andaman and Nicobar Islands, Dean Of Research, Sri Venkateswara Veterinary University, Tirupati.

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**CITE THIS ARTICLE**

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