

## **Biodiversity of the Germs Involved in the Human and Animal Leptospirosis in Stray Dog of Bucharest Temporally Adopted by the Community**

**Simona IVANA<sup>1</sup>, Alexandru T. BOGDAN<sup>2</sup>, Iudith IPATE<sup>2</sup>, Nicoleta ANDREESCU<sup>3</sup>, Constantin CHIURCIU<sup>4</sup>, Viorica CHIURCIU<sup>4</sup>, Dana Magdalena CAPLAN<sup>3</sup>, Stelian BRITREANU<sup>1</sup>, Iulian OGOE<sup>1</sup>, Alexandru Nicolae POPESCU<sup>4</sup>**

<sup>1</sup>) University of Agricultural Sciences and Veterinary Medicine, Institute of Comparative Medicine, Bucharest, 59, M r ti Bd., 011464, Bucharest, Romania, simonaivana@yahoo.com

<sup>2</sup>) Institutul de Biodiversitate Agrosilvic David Davidescu - Academia Rom n

<sup>3</sup>) Cantacuzino Institute, 105, Splaiul Independentei street, Bucharest, Romania, brulisa@cantacuzino.ro

<sup>4</sup>) Romvac Company, 7, oseaua Centurii street, Voluntari, Romania, romvac@romvac.ro

**Abstract.** A number of 103 ownerless dogs, not vaccinated against leptospirosis, accommodated at the testing moment in a community shelter in Bucharest, are tested for leptospirosis by the ultramicroscopic agglutination seroreaction with MAR\* type live antigen.

The results revealed that 36,89% of these dogs represent for humans and for domestic and farm animals a potential natural reservoir of infection with microorganisms of the *Leptospira* genus. The *Canicola* serotype was identified in 81,57% of the positive cases and the *Icterohaemorrhagiae* serotype in 18,43% of the positive cases.

**Keywords:** stray dog adopted by the community, leptospirosis

### INTRODUCTION

The study performed in the framework of a research project was aimed at identifying the rate at which stray dogs adopted by the community may represent for humans and animals a reservoir of infection with *Leptospira* microorganisms.

### MATERIALS AND METHODS

A number of 103 blood serum specimens were sampled from 103 dogs not vaccinated against leptospirosis, from a community shelter in which dogs from all the areas of Bucharest are admitted.

The serological testing was performed by means of the ultramicroscopic agglutination reaction with 9 MAR type live antigens. The antigens were "in house" prepared from pathogenic strains of international reference circulating in the European space.

The 9 live antigens are of the following serotypes: *Icterohaemorrhagiae*, *Canicola*, *Pomona*, *Grippotyphosa*, *Wolffi*, *Australis*, *Bataviae*, *Hyos*, *Javanica*.

The serum samples analysed are initially diluted 1/50 (in dependence of the body weight of the animals) and the positive serum samples at the initial dilution were further tested by binary dilution against the positive antigens.

The serotest was read at the ultramicroscope, which is a darkfield microscope. The sign (-) was used when all the *Leptospira* microorganisms (the live antigen) of the

microscopic field were non-agglutinated, free and mobile, then about 50% of leptospire of the microscopic field were agglutinated and the remaining microorganism were free and mobile, the result of the serotest was marked with the sign (+) when all or almost all leptospire. The microscopic field were agglutinated, the sign (++), was used.

The interpretation of the positivity of the test was selective, in dependence of the title of the *Leptospira* antibodies complimentary to the serum which makes the object of the research, leading to the delimitation of the positive results into two categories: results excluding the possibility that the respective animals represent for humans and for animals a natural reservoir of germs capable of producing *Leptospira* infections, on the one hand, and results demonstrating this possibility, in the other hand. Thus, for positive serological tests (ST) an agglutination marked with (++) sign at the minimum serum dilution of 1/400 was taken into consideration.

## RESULTS AND DISCUSSIONS

*Tab. 1*

Representing the results of the serological tests through MAR

No. of serologically tested dogs	103
No. of dogs with negative tests	51
No. of dogs with serotests excluding the possibility that represent for humans and animals a natural reservoir of germs capable of producing infections with <i>Leptospira</i> microorganisms.	14
- of Canicola serotype	4
- of Icterohaemorrhagiae serotype	10
<b>No. of dogs with positive serological tests, indicating the existence of the a live mentioned possibility of infecting humans and animals with leptospire of:</b>	38
- the Canicola serotype	31
- the Icterohaemorrhagiae serotype	7

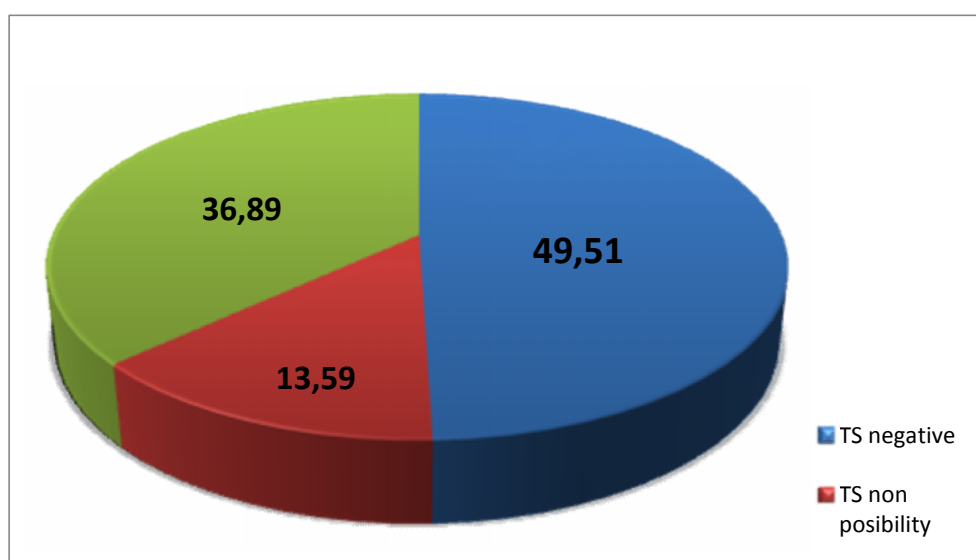


Fig. 1. Representation in percentages of the MAR serotests

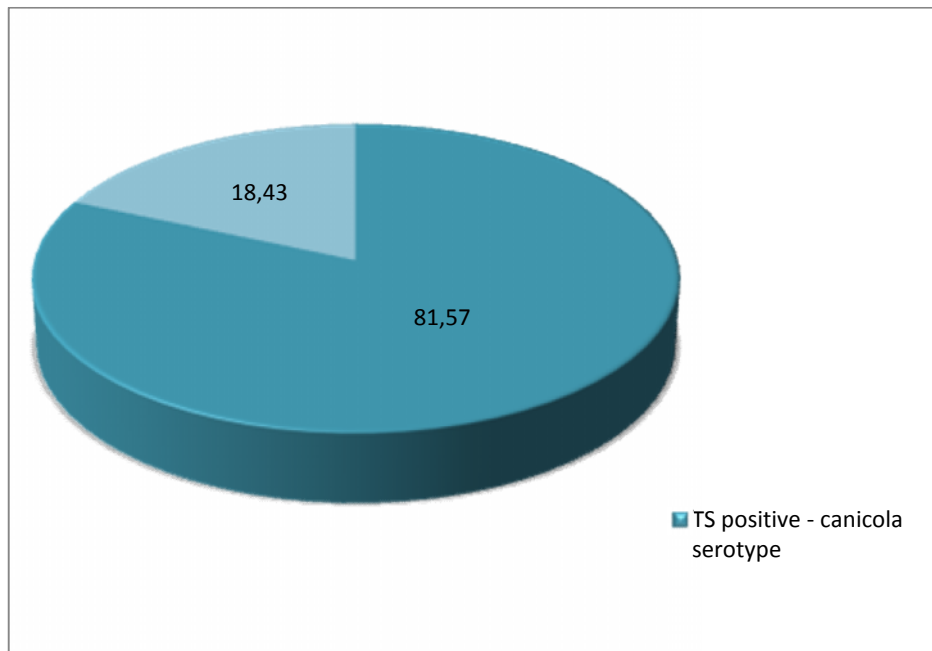


Fig. 2. Representation in percentages of the MAR serotests

The samples which was negative at the serological tests (Table 1) represent 49,51% of the total number of tested dogs (Fig. 1).

The 14 dogs (Table 1) with serological tests the results of which exclude the possibility that they would represent a reservoir of germs capable of producing an infection with leptospires make up 13.59% of the total number of tested dogs (Fig. 1).

The positive serological tests (38 dogs) (table) represent 36.89% of the total number of tested dogs (Fig. 1). The Canicola serotype was identified in 81.57% of the positive cases, whereas the Icterohaemorrhagiae type was diluted in 18.43% of the positive cases (Table 1, Fig. 2).

A non-vaccinated dog against leptospirosis may contaminate humans and domestic or farm animals, either by a direct contact through its water or urine which contain leptospires ( $10^2$ - $10^4$  germs/1 ml), or by an indirect contact through surface waters, non-protected water container, waste disposal plaur, spaces for food storage, etc. contaminated with their urine, in this last situation, a temperature of at least  $10^0\text{C}$  is necessary to allow the survival of leptospires.

If the vaccination against leptospirosis of ownerless dogs and of dogs living in shelters represents a significant financial effort, it is necessary to vaccinate the adopted dogs and to inform the future masters about the necessity of vaccinating of the dog.

In addition it is necessary to take the measures of prophylaxis and control of leptospirosis for the protection of the attendants employed in the community shelter.

Likewise, it is important to initiate measures such as, for example, surgical sterilization of masterless dogs and the education by mass media of those who love dogs, both for an attentive management of the animals regarding the adequate hygiene measures and for discouraging from the abandon.

## CONCLUSIONS

Of the masterless serologically tested dogs in this study, 36,89% represent for humans and animals a potential natural reservoir of infection with *Leptospira* microorganisms of the *Canicola* and *Icterohaemorrhagiae* serotypes.

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