

## ***Listeria monocytogenes* IN HORSES ON THE STATE OF RIO DE JANEIRO, BRAZIL<sup>1</sup>**

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**ABSTRACT:** From June to December 1995, 430 horses used for work and leisure, in 12 municipalities located in the State of Rio de Janeiro, were tested by means of sero-agglutination to anti-*Listeria monocytogenes*. The horses blood was collected from the external jugular vein; after coagulation, the serum obtained was frozen to the temperature of 20°C negative and stored until the performance of the serology analysis. Titers of anti-*Listeria* antibodies in five horses, were 1/320 or above this level.

**INDEX TERMS:** *Listeria monocytogenes*, Equine Listeriosis, Zoonosis, Rio de Janeiro

## ***Listeria monocytogenes* EM EQUINOS NO ESTADO DO RIO DE JANEIRO, BRASIL**

**RESUMO:** De junho a dezembro de 1995, 430 cavalos usados para trabalho e lazer, em 12 municípios localizados no Estado de Rio de Janeiro, foram testados por meio de soro-aglutinação anti-*Listeria monocytogenes*. O sangue dos cavalos foi coletado da veia jugular externa; depois da coagulação, o soro obtido foi congelado e armazenado a temperatura de 20°C negativos até o desempenho do teste sorológico. Títulos de anticorpos anti-*Listeria* igual ou superior a 1/320 foram encontrados em cinco cavalos

**TERMOS PARA INDEXAÇÃO:** *Listeria monocytogenes*, Listeriose Equina, Zoonose, Rio de Janeiro

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## 1 – INTRODUCTION

Listeriosis is an infection caused by *Listeria monocytogenes*. Besides affecting equines, it can also be infectious to humans and other animals such as mammals and birds (Hutyra & Marek, 1966).

In Germany, Zinsser (1967) reported that this bacteria cause abortion and foetal deaths in women who had ingested whole milk of cow and goat origin. Hofer (1974) compared listeriosis with other bacteriosis and concluded that listeriosis was the most widespread infection in the animal kingdom. At the time, however, he could not make an accurate evaluation of its occurrence. Since humans and animals contribute mostly to the transmission of the agent, resulting infections might be considered zoonosis.

According to Holt et al (1994), there are seven distinguishable species of the genus *Listeria* previously identified as *Listeria denitrificans*. This genus has drawn a great epidemiological interest (Schlech et al, 1983), since there have been many deaths resulting from outbreaks caused by *L. monocytogenes*, mostly among immuno-depressed people and newborn children. Norberg et al (1996) found 5.44% of listeriosis among 202 caprines examined in the Rio de Janeiro State and concluded that the infection occurred in urban environments.

In the present study the authors made a serological analysis of the horses in Rio de Janeiro state about *L. monocytogenes*.

## 2 – MATERIAL AND METHODS

Twelve municipalities in the State of Rio de Janeiro (Table 1) were selected for a survey, which was facilitated by the easy access by road and the permission of the owners of the ranches Unvolved. The fact that these horses were being used for work and leisure was considered fundamental by the researchers.

The blood was collected from the external jugular vein in sterile tubes and carried, in refrigerated containers, to the laboratory of the pos-graduation course in Biological Sciences of the Iguaçú University. The serum was obtained after centrifugation at 2.500 rpm for five minutes, transferred to sterile tubes and stored at  $-20^{\circ}\text{C}$ . The serotypes of *L. monocytogenes* were used as antigens supported by Hoechst-Behring Laboratory and were preserved in formalin contained approximately one billion of bacteria/ml. Four antigens of *Listeria* available on the market – 1:0, 1:H, 4b:0 and 4b:H – were used for the tests of sero-agglutination (Audurier, 1982), as recommended by Moura et al (1977). The unknown serum titers were designated according to higher dilutions of the serum, which resulted in a marked agglutination. The efficiency of the antigens was tested by means of sero-agglutination reaction, being included during the analysis, to each reaction of the groups, positive (positive control) and negative serum (negative control) with weell-known titers, making sure that the method was being constantly tested.



Table 1 – Distribution of equines samples examined according to the area and the municipal district in the State of Rio de Janeiro, Brazil.

Municipality	Area	N° of samples
Três Rios	rural	64
Volta Redonda	rural	16
Itaguaí	urban	22
Iguaba	urban	26
Raposo	rural	10
Raposo	urban	21
Rio de Janeiro	urban	95
Teresópolis	urban	46
Teresópolis	rural	15
Itaborai	rural	20
São Fidélis	rural	24
Santo Antônio de Padua	urban	31
Bom Jesus de Itabapuna	urban	21
Itaperuna	rural	19
Total	14	430

### 3 – RESULTS

According Table 2, five animal (1,2%) presented titers equal or above 1:320 for flagellated and somatic antigens of *L. monocytogenes* of the serotype 4b, demonstrating the occurrence of listeriosis distributed in the municipalities of São Fidélis (2), Santo Antônio de Padua (2) and Itaperuna (1), corresponding to 8,3%, 6,5% and 5,3%, respectively.

### 4 – DISCUSSION

The prevalence of equine seropositive for *L. monocytogenes* was concentrated in the northern region of the Rio de Janeiro State. Three of these equines were found in rural areas and two in urban areas, corresponding to 4,0 % and 2,7 % of the total horses infected.

Since the horses from the two areas were used for work and breeding purposes as well, the direct contacts with humans, workers and owners, could facilitate the spread of the disease and allow the occurrence and persistence of an infection. This fact has great epidemiological importance, since *Listeria* does not cause the disease with well-defined clinical symptoms. Murray et al (1992), calculated that humans can be good as carriers for this bacteria, although difficult to know, between 1% and 5%, a percentage that was found in feces. Blood et al (1991) reported that listerioses caused by the serotype 4b tend to be most frequent in farm animals, where as other serotypes appear in immunodepressed animals. Our results corroborate the findings of Blood et al (1991), since five out of 430 studied horses were reported to be seropositive for somatic and flagellated antigens



Table 2 – Distribution and prevalence of equines with titer  $\geq 1:320$  of *Listeria monocytogenes* in investigated areas in the State of Rio de Janeiro, Brazil.

Municipality	Area	N° of Equines with titer $\geq 1:320$	% of Equines with titer $\geq :320$
Três Rios	rural	0	0
Volta Redonda	rural	0	0
Itaguaí	urban	0	0
Iguaba	urban	0	0
Raposo	rural	0	0
Raposo	urban	0	0
Rio de Janeiro	urban	0	0
Teresópolis	urban	0	0
Teresópolis	rural	0	0
Itabarai	rural	0	0
São Fidélis	rural	2	8.3
Sto. Antônio de Padúa	urban	2	6.5
B. Jesus de Itabapuna	urban	0	0
Itaperuna	rural	1	5.3
Total	14	05	1.2

of the serotype 4b. According to those authors, *L. monocytogenes* may infect 10 % of the herd. Its resistance to pasteurization makes it a significant source of infection to men. Considering the fact that the consumption of meat and milk of equine origin is increasing (the milk is popularly believed to have therapeutic effects on bronchitis and asthma), there is a growing risk that this practice might become a source of infection to humans, mainly in the northern region of the state of Rio de Janeiro.

## 5 – CONCLUSION

Listeriosis is present in equine herd of rural and urban areas, with 1,2 % of prevalence in Rio de Janeiro State, mainly in the northern region. Zoonotic risk exists.

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