

## LETTER TO THE EDITOR

## Characterization of new *Leptospira* spp. isolates from Nicaragua Republic for the development of future antileptospirosic vaccine preparations

### Caracterización de nuevos aislados de *Leptospira* spp. provenientes de la República de Nicaragua como base para formular preparados vacunales antileptosirósicos

Leptospirosis constitutes a current problem on animal health. Although, there are vaccines available in the market, they have as main disadvantage the low cross-protection specific serogroup/serovar. Due to this situation it is important to have virulent and characterized strains of the serogroup or serovar of epidemic interest.

In some countries of the region, such as Nicaragua Republic, there have been important epidemics with severe climatological events. During the period October-November, 2007, this country suffered a severe outbreak caused by the hurricane Felix. This outbreak led to the development of an epidemic with leptospirosis in León and Chinandega departments. Eight leptospira strains of patients with evidence and symptoms of leptospirosis were isolated by Cuban specialists.

Leptospirosis is an endemic disease in this country, especially in some of its departments, with a high frequency of clinical cases associated to climatological events such as the intense rains and a medium prevalence with tendency to high. There are also risk factors regarding rodents, hygiene problems, low perception of risks, practical agriculture and inadequate upbringing of animals. There is not a reduction of human risks including vaccination that allows the reduction of human population and animal vulnerability to the disease, contributing to reduce its prevalence.

With the aim of characterizing new *Leptospira* spp. isolates from Nicaragua Republic for the development of future antileptospirosic preparations, 8 clinical isolates obtained in the outbreak in 2007 were studied.

They were classified as pathogens by means of 3 phenotypic assays and amplification by PCR of virulence genes (*ompL1* and *lipL32*). The serogroups of these strains: 3507 (Icteroahemorrhagiae), 6307 (Pomona), 8807 (Ballum), 4207 and 7407 (Sejroe) and 8707, 3907, 5007 (Pyrogenes) were determined by means of microscopic microagglutination (MAT). When determining the virulence qualitatively in *Mesocricetus auratus* as biomodel, it was evidenced that 3507, 6307, 8807, 4207 and 7407 strains were highly virulent. On the other hand, 8707, 3907 and 5007 strains were classified as non-virulent. With LD<sub>50</sub> determination, it was demonstrated that 7407, 6307 and 8807 strains were less virulent than 4207 and 3507 strains. Strains 8807 and 6307 also produced hemorrhage foci in kidneys and lungs; renal hemorrhages were more frequent in strain 6307.

The analysis of the extract of all cells allowed identifying the expression of the antigenic bands for the strains selected with a molecular weight between 11 and 94 kDa. These antigenic bands were equally identified in the 3 autochthonous strains of the country. Some of these highly conserved cellular antigens were recognized by the serum of healthy people vaccinated with vax-SPIRAL®, which corroborates the existence of conserved antigens among the strains studied, suggesting a possible protection of vax-SPIRAL® vaccine against such strains.

These results will contribute to the thesis of the veterinary doctor Daniel Francisco Arencibia Arrebola to opt for the scientific degree of Master in Veterinary Microbiology (CENSA, February 2012).

**D.F. Arencibia Arrebola<sup>I</sup>, L.A. Rosario Fernández<sup>II</sup>, J.F. Infante Bourzac<sup>I</sup>,  
Y.E. Suárez Fernández<sup>III</sup>, N. Batista Santiesteban<sup>I</sup>**

<sup>I</sup>Animal Models and Preclinical Toxicology Department, Research and Development Vicepresidency, Finlay Institute, 17 avenue between 198 and 200 street, Atabey, Playa Municipality, Post office box 16017, Havana, Cuba.

E-mail: [darencibia@finlay.edu.cu](mailto:darencibia@finlay.edu.cu). <sup>II</sup>Pharmaceutical Technology Department, Institute of Pharmacy and Food Science (IFAL, U.H), 222 street between 25 and 27 avenue, Coronela, Lisa Municipality, Havana, Cuba. <sup>III</sup>Veterinary Faculty, Agrarian University of Havana (UNAH), San José Municipality, Mayabeque, Cuba