

**Title: Susceptibility and response of C3H/HeJ mice to experimental infection with *Leptospira interrogans* serovar Copenhageni**

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**Abstract**

Leptospirosis is the most widespread zoonosis caused by pathogenic species of *Leptospira* genus. Studies related to the comprehension of the pathogenesis of leptospirosis require the use of experimental animal models. The most commonly used animal models include hamsters and guinea pigs, that present the same manifestations of the severe disease in human, such as jaundice, hemorrhage and interstitial nephritis. However, hamsters are highly susceptible to lethal infection with virulent *Leptospira* strains, which makes difficult to obtain material for analysis. On the other hand, mice and rats are, in general, resistant to the infection and are often found to be reservoirs of the bacteria in nature. The aim of this study was to confirm the susceptibility of C3H/HeJ mice in experimental infection, using *L. interrogans* serovar Copenhageni, and evaluate the resistance to infection of surviving mice, considering remarking aspects such as development of antibody response and possible histopathological changes. C3H/HeJ mice were infected with  $10^5$  and  $10^6$  leptospire to obtain at least half of survive animals to analyze infection resistance. The *Leptospira* strain chosen for the experimental infection was obtained from a human fatal case of severe leptospirosis. PCR, culture and immunohistochemistry were used to evaluate presence of leptospire and tissue damage. It was possible to observe both directly (culture) and indirectly (PCR) the presence of leptospire in the kidneys of surviving animals. Histopathology analysis revealed mild lesions, without serious damages, in surviving mice, different from what is observed in moribund ones. The surviving mice presented high antibodies titers by MAT, ranging from 1600 to 6400, indicating development of immune response against the infective strain and confirming the infection resistance. Based on these results, the C3H/HeJ mice showed be suitable as an experimental model to leptospirosis pathogenesis studies.

**Key-words:** Animal model, Infection, Leptospirosis

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