

Molecular and serological identification of *Leptospira* carrier status in synanthropic rodents in the Kurunegala District, Sri Lanka

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Introduction and Objective: Human leptospirosis is a widespread zoonotic disease caused by pathogenic *Leptospira* species and is a notifiable disease in Sri Lanka. Many wild and domestic mammals can act as pathogen carriers. This study was aimed at understanding the carrier status of pathogenic and intermediately pathogenic leptospires among synanthropic rodents in the intermediate zone, Kurunegala district, Sri Lanka.

Methods: Kidney and blood samples were collected from rodents trapped in paddy fields and nearby houses from March to September 2022. Extracted DNA from the rodent kidneys was subjected to nested PCR targeting the flagellin protein subunit B (*flaB*) gene PCR primers, P-*flaB* for the detection of pathogenic leptospires and I-*flaB* for the detection of intermediate pathogenic leptospires. Positive PCR amplicons were sequenced using the Sanger method, and a phylogenetic tree was constructed using the neighbor joining method based on the partial *flaB* sequences. The serum samples of PCR-positive rodents were used for the microscopic agglutination test (MAT) to identify the infected *Leptospira* serogroups.

Results: A total of 69 rodents belonging to three species (*Rattus rattus*, 36; *Bandicota bengalensis*, 31; *Mus* spp., 2) were collected. Of 69 kidney DNA samples, three were positive for P-*flaB* PCR (4.3%) and one was positive for I-*flaB* (1.4%). By phylogenetic analyses, two of the pathogenic leptospires DNAs were identified as *Leptospira borgpetersenii*, and one was identified as *L. interrogans*. Intermediate-pathogenic leptospiral DNA has been identified as *L. inadai*. The rodents infected with pathogenic leptospires were seropositive for Hardjo, and Icterohaemorrhagiae serogroups.

Conclusions: According to the findings, synanthropic rodents in the study area harbor both pathogenic and intermediate pathogenic leptospires in their kidneys, posing a threat to the people working in the paddy fields. Other livestock animals living in proximity can also get infected through contaminated soil and water.

Keywords: Leptospirosis, carrier status, rodents, Kurunegala district-Sri Lanka.


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