

ABSTRACT

Leptospirosis in Dogs, Rodents and Livestock in Trinidad

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A seroepidemiological survey of leptospirosis in dogs, rodents and livestock in Trinidad revealed seroprevalence of 15.5% in stray dogs, 72% in suspected canine cases, 16.5% in rodents, 21.5% in cattle, 5.0% in sheep, 3.3% in goats and 5% in pigs. *Leptospira* spp. were cultured from 18.0% of suspected canine cases (n=50), 3.4% in stray dogs (n=207) and 25.6% of rodents (n=211). The most frequently occurring serovar was Copenhageni comprising 68.7% of all isolates obtained. Other serovars obtained were Mankarso at 10.4% and Icterohaemorrhagiae at 1.5%. It was interesting to note that 19.4% of isolates (n=67) yielded ambiguous serotyping results. The latter were subjected to multilocus sequence typing which revealed that they belonged to three different species: *L. interrogans*, *L. santarosai*, and *L. kirschneri*. *L. kirschneri* had not been previously documented in Trinidad.

There was no statistical significant difference ($P>0.05$; χ^2) between culture-positive and culture-negative dogs observed for factors such as sex, use as hunting animals, exposure to rodents and vaccination. This finding suggests that the current vaccines used in Trinidad do not offer protection against leptospiral infection. To address this, two of the isolates from the study were chosen as vaccine candidates based on their ability to cause death and to induce an immune

response in a hamster model. The LD₅₀ values of these isolates were then determined as 10 (serovar Mankarso) and 5 (serovar Copenhageni) in hamsters. Killed whole-cell vaccines were produced in-house and compared to two brands of commercial vaccines in vaccination and challenge experiments using a hamster model. The results demonstrate that the local in-house vaccines produced were significantly more efficacious than the available commercial vaccines.

Keywords: *Leptospira*, dogs, livestock, rats, Trinidad, seroprevalence, vaccine.