Technical Note

Elements for a More Effective Serological Diagnostic of Bovine Leptospirosis in Camaguey, Cuba

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INTRODUCTION

Leptospirosis is a current paradox: it is the most widely spread zoonosis on the planet and one of the officially listed underestimated diseases. Perhaps, because of the latter, its negative impact on human and animal health, causing enormous economic losses in animal production, is still overlooked. Cattle constitutes a clear example of the above. This phenomenon is under the influence of veterinary, ecological, and social factors. These aspects are, unfortunately, absent in the many studies that fail to consider the One Health perspective (Barreto, Rodríguez, and Barreto, 2022).

This technical note aims to provide elements that facilitate a more effective diagnostic of bovine leptospirosis in Camaguey.

DEVELOPMENT

In most animal health laboratories (LSA) in Cuba, the serological diagnostic of cattle leptospirosis is performed through microagglutination (MAT). Despite its various complexities, this technique has been used internationally since the 1990s. To increase the reliability of microagglutination, the kits must include 14-21 serovars. In Camaguey, there are only six of them (Icterohaemorrhagiae, Canicola, Ballum, Pomona, Hebdomadis, and Sejroe), whose selection was based on their inclusion in the 1970-80s (Barreto, Rodríguez, and Barreto, 2020). Are they equally reliable as then? Although there are no local research studies that confirm or reject this argument, it is very likely not to. The long period elapsed since constitutes an element

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that does not meet the recommendations for this type of selection: *serovars that participate in the locally-produced cases and outbreaks, in a given context.* This decision does not exclude the industrial countries, as shown in a study in the province of Holguin, Cuba (Gómez Leyva *et al.*, 2018).

Hardjo has been attributed to the prevalence of bovine leptospirosis reported internationally during this millennium. The same behavior has been reported in Latin America and the Caribbean, so Cuba may not be the exception. The symptoms and signs observed in the animals affected include septicemia, miscarriages, infertility, hemoglobinuria, reduced milk production, and mastitis. Overall, the main economic losses are associated with estrus repetitions or the birth of weakened calves (Góngora Orjuela, Parra-Arango, and Sarmiento-Rubiano, 2022). However, among the numerous changes occurring in the ecosystems of these dairy productions in the last forty years, this serovar has not been included in the MAT kits at the LSA for the diagnostic of leptospirosis in most of the country (Barreto, Rodríguez, and Barreto, 2020). Because Hardjo has been predominant in the events described, its omission may result in false diagnostics to assess the status and control of leptospirosis.

In addition to that absence, chronic leptospirosis caused by Hardjo is thought to cause low MAT titers (< 1:100). The experience of several specialists coincides that the outcomes observed in the tests should not be ignored, both due to their epidemiological significance on the farm and their zoonotic repercussions on the animal-human interaction (Góngora Orjuela, Parra-Arango, and Sarmiento-Rubiano, 2022). However, the national standards in place state that the preset value is 1:200, from which the animals are considered positive, and proper actions need to be taken (Puentes *et al.*, 2009). This is another bias found in the diagnostic, which might limit the thoughts about this type of chronic leptospirosis caused by serovars cleared for MATs at LSA. This could be worth mulling over, as there are no extra charges for resources (Gómez Leyva *et al.*, 2018; Barreto, Rodríguez, and Barreto, 2020).

CONCLUSIONS

Consequently, the kit available would produce a more reliable outcome of this zoonosis, until the corresponding authorities clear the use of Hardjo. Other serovars could be added to this list, particularly those spotted locally, while the corresponding classifications gain relevance within the MAT kits, seeking a more effective blood diagnostic of cattle leptospirosis.

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AUTHOR CONTRIBUTION STATEMENT

Research conception and design: GBA, HCRT; data analysis and interpretation: GBA, HCRT; redaction of the manuscript: GBA, HCRT.

CONFLICT OF INTEREST STATEMENT

The authors state the are no conflicts of interest whatsoever.