DOI: 10.29413/ABS.2018-3.4.25
УДК 579.62, 579.61

Corona B.G. [1], **Díaz-Sánchez A.A.** [1], **Meli M.L.** [2, 3], **Cañizares E.V.** [1], **Arias L.R.** [1], **Dorta Y.L.** [1], **Rivero E.L.** [1], **Hofmann-Lehmann R.** [2, 3]

OCCURRENCE OF TICK-BORNE PATHOGENS IN STRAY DOGS FROM HAVANA, CUBA

[1] *National Center for Animal and Plant Health (CENSA), Carretera de Tapaste y Autopista Nacional*
(P.O.B. 10, CP 32700, San José de las Lajas, Mayabeque, Cuba)
[2] *Center for Clinical Studies, Vetsuisse Faculty, University of Zurich*
(Rämistrasse 71, Zürich CH-8006, Switzerland)
[3] *Clinical Laboratory, Vetsuisse Faculty, University of Zurich*
(Rämistrasse 71, Zürich CH-8006, Switzerland)

The article presents the results of examination of stray dogs from Havana, Cuba for six ixodid tick-borne diseases. Analysis was carried out using real-time PCR. Overall 107 dogs, 95 (89.09 %) were infected. 41 dogs (38.31 %), 66 (61.68 %), 28 (26.17 %) and 40 (37.38 %) were found to be infected with Anaplasma platys, Ehrlichia canis, Rickettsia spp. and Hepatozoon canis, respectively. Sequence analysis of 16S rRNA and groEL genes for Rickettsia spp. revealed 99 % identity with Rickettsia felis. There were no dogs infected with A. phagocytophilum and Borrelia spp.

Key words: *tick-borne infections, dogs, Cuba*

For citation: Corona B.G., Díaz-Sánchez A.A., Meli M.L., Cañizares E.V., Arias L.R., Dorta Y.L., Rivero E.L., Hofmann-Lehmann R. Occurrence of tick-borne pathogens in stray dogs from Havana, Cuba. Acta biomedica scientifica, 3 (4), 158-159, DOI 10.29413/ABS.2018-3.4.25.

ВСТРЕЧАЕМОСТЬ ВОЗБУДИТЕЛЕЙ КЛЕЩЕВОГО ЭНЦЕФАЛИТА У БРОДЯЧИХ СОБАК Г. ГАВАНА (КУБА)

Корона Б.Г. [1], **Диас-Санчес А.А.** [1], **Мели М.Л.** [2, 3], **Канисарес Э.В.** [1], **Ариас Л.Р.** [1], **Дорта Й.Л.** [1], **Риверо Э.Л.** [1], **Хофманн-Леманн Р.** [2, 3]

[1] *National Center for Animal and Plant Health (CENSA), Carretera de Tapaste y Autopista Nacional*
(P.O.B. 10, CP 32700, San José de las Lajas, Mayabeque, Cuba)
[2] *Center for Clinical Studies, Vetsuisse Faculty, University of Zurich*
(Rämistrasse 71, Zürich CH-8006, Switzerland)
[3] *Clinical Laboratory, Vetsuisse Faculty, University of Zurich*
(Rämistrasse 71, Zürich CH-8006, Switzerland)

В работе приведены результаты обследования популяции бродячих собак г. Гавана на заражённость шестью инфекциями, передаваемыми при укусах иксодовых клещей. Исследование проводили с помощью ПЦР с учётом результатов в режиме реального времени. Из 107 обследованных животных было заражено 95 (89,09 %). Среди них 41 (38,31 %), 66 (61,68 %), 28 (26,17 %) и 40 (37,38 %) были заражены, соответственно, Anaplasma platys, Ehrlichia canis, Rickettsia spp. и Hepatozoon canis. Нуклеотидные последовательности генов 16S rRNA, gltA и htrA Rickettsia spp. были на 99 % идентичны последовательностям соответствующих генов Rickettsia felis, опубликованных в базе данных GenBank. Не было обнаружено случаев заражения собак A. phagocytophilum и Borrelia spp.

Ключевые слова: *клещевые инфекции, собака, Куба*

Для цитирования: Корона Б.Г., Диас-Санчес А.А., Мели М.Л., Канисарес Э.В., Ариас Л.Р., Дорта Й.Л., Риверо Э.Л., Хофманн-Леманн Р. Встречаемость возбудителей клещевого энцефалита у бродячих собак г. Гавана (Куба). Acta biomedica scientifica, 3 (4), 158-159, DOI 10.29413/ABS.2018-3.4.25.

Infectious diseases caused by pathogens transmitted by ticks and other vectors are an important cause of morbidity and mortality in both humans and dogs. Tick-borne pathogens remain an important cause of disease among canine populations worldwide. In Cuba there are not many published studies on tick-borne pathogens affecting dogs, the only hemoparasite molecularly confirmed in dogs, is *Anaplasma platys* and in tick collected from dog's molecular detection of *Ehrlichia canis* and *Babesia* spp. in *Rhipicephalus sanguineus* sensu lato was published. The **aim** of this research was to screen, identify and characterize selected tick-borne pathogens in stray dogs from Havana, Cuba.

MATERIALS AND METHODS

Blood samples from 107 stray dogs with and without clinical signs associated with tick-borne diseases, were analyzed by real-time PCR for *E. canis*, *A. platys*, *Anaplasma phagocytophilum*, *Borrelia* spp., *Hepatozoon canis* and *Rickettsia* spp. Real-time PCR positive samples for different pathogens were further analyzed by PCR and sequencing.

RESULTS AND DISCUSSION

Overall 107 dogs, 95 (89.09 %) were positive for one or more hemoparasite and 12 (10.91 %) were not infected. None of the dogs were detected infected

with *A. phagocytophilum* nor *Borrelia* spp., while 41 dogs (38.31 %), 66 (61.68 %), 28 (26.17 %) and 40 (37.38 %) were found to be infected with *A. platys*, *E. canis*, *Rickettsia* spp. and *H. canis*, respectively. Sequence analysis of 16S rRNA and *groEL* genes for *A. platys*, 16S rRNA and *gltA* for *E. canis* showed high identity with known sequences available in the GenBank database. In addition, *htrA* gene sequence analysis for *Rickettsia* spp. revealed 99 % identity with *Rickettsia felis*. This first molecular study of different tick-borne pathogens in stray dogs points to the need of more intensive epizootic investigation, for pathogens with zoonotic potential.

Статья опубликована в рамках международной юбилейной конференции, посвящённой 20-летию научного сотрудничества между Россией и Монголией «Разные страны – общие проблемы природно-очаговых инфекций».

Information about the authors

Corona Belkis Gonzáleza – PhD, Senior Research Officer, National Center for Animal and PlantHealth (CENSA), Carretera de Tapaste y Autopista Nacional (Cuba, CP 32700, Mayabeque, San José de las Lajas, P.O.B. 10; e-mail: bcorona@censa.edu.cu)

Díaz Sánchez Adrian Alberto – MSc, Junior Research Officer, National Center for Animal and PlantHealth (CENSA), Carretera de Tapaste y Autopista Nacional (Cuba, CP 32700, Mayabeque, San José de las Lajas, P.O.B. 10; e-mail: adiaz@censa.edu.cu)

Meli Marina L. – PhD, Senior Research Officer at Clinical Laboratory, Vetsuisse Faculty, Center for Clinical Studies, Vetsuisse Faculty, University of Zurich (Switzerland, CH-8006, Zürich, Rämistrasse, 71, e-mail: mmeli@vetclinics.uzh.ch)

Cañizares Ernesto Vega – PhD, Senior Research Officer, National Center for Animal and PlantHealth (CENSA), Carretera de Tapaste y Autopista Nacional (Cuba, CP 32700, Mayabeque, San José de las Lajas, P.O.B. 10; e-mail: evega@censa.edu.cu)

Arias Lisset Roblejo – Junior Research Officer, National Center for Animal and PlantHealth (CENSA), Carretera de Tapaste y Autopista Nacional (Cuba, CP 32700, Mayabeque, San José de las Lajas, P.O.B. 10; e-mail: lroblejo@censa.edu.cu)

Dorta Yanet López – MSc, Junior Research Officer, National Center for Animal and PlantHealth (CENSA), Carretera de Tapaste y Autopista Nacional (Cuba, CP 32700, Mayabeque, San José de las Lajas, P.O.B. 10; e-mail: ylopez@censa.edu.cu)

Rivero Evelin Lobo – PhD, Senior Research Officer, National Center for Animal and PlantHealth (CENSA), Carretera de Tapaste y Autopista Nacional (Cuba, CP 32700, Mayabeque, San José de las Lajas, P.O.B. 10; e-mail: elobo@censa.edu.cu)

Hofmann-Lehmann Regina – Professor, PhD, Senior Research Officer at Clinical Laboratory, Vetsuisse Faculty, Center for Clinical Studies, Vetsuisse Faculty, University of Zurich (Switzerland, CH-8006, Zürich, Rämistrasse, 71, e-mail: rhofmann@vetclinics.uzh.ch)