

## **Molecular detection of rickettsiae in ticks (Acari: Ixodidae) from capybaras and in free-living ticks of an urban park of Uberlândia, Minas Gerais, Brazil**

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Ticks are the most important vectors transmitting pathogens to animals and are only second to mosquitoes in the case of human beings. Several species of tick-borne rickettsiae that were considered nonpathogenic for decades are now associated with human infections, and novel *Rickettsia* species of undetermined pathogenicity continue to be detected in or isolated from ticks around the world. The capybara is the primary host of *Amblyomma dubitatum* and it is also among the main hosts of the adult stage of *Amblyomma sculptum*.

The focus of the present investigation was to survey for rickettsias in ticks from capybaras and from the environment, that might be potentially responsible for zoonoses, in an urban park in Uberlândia city.

Ticks were collected from 15 naturally infested capybaras (*Hydrochoerus hydrochaeris*) and from the environment and stored at -70°C. DNA was extracted from 78 ticks of the species *A. dubitatum* (12 males; 23 females) and *A. sculptum* (30 males; 13 females) by using Trizol (Invitrogen) and the initial screening for presence of *Rickettsia* DNA was performed by testing individual samples by polymerase chain reaction (PCR) with primers CS-78 and CS-323, which target a partial sequence of the enzyme citrate synthase (*glTA*) gene.

Nine out of 35 samples (25.7%) of *A. dubitatum* (3 males; 6 females) and three out of 43 samples (7.0%) of *A. sculptum* (all males) ticks contained rickettsial DNA. The sequences of the PCR products obtained from two samples of *A. dubitatum* (one from capybara and the other from a free-living tick) showed high identity between them and 99% identity with sequences of *Rickettsia bellii*. This tick specie almost exclusively infests capybara and there hasn't been any evidence showing that *R. bellii* is pathogenic to humans or any other animal. The positive samples were further tested with primers Rr190.70p and Rr190.602n, which target a sequence of the outer membrane protein gene (*ompA*) that is present in pathogenic rickettsias of the spotted-fever-group (SFG), and three (two *A. dubitatum* and one *A. sculptum*) were also tested positive for *ompA* sequence, indicating that the rickettsias belonged to the SFG. Due to the large number of people that visit the park every day and to the possible role of these ixodids as an enzootic vectors, there is a need to establish a surveillance system to monitor the infestation of ticks and the distribution of rickettsias in the park, especially of those that are potentially pathogenic.

**Keywords:** *Amblyomma*, capybaras, rickettsias, ticks.

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