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Climate change and tick-borne bacteria (*Rickettsia* spp., *Anaplasma* spp., and *Ehrlichia* spp.) in ticks collected in the Karoo regions of Eastern Cape, South Africa

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Background: There has been a projected global increase in the distribution and prevalence of infectious diseases with climate change thus suggesting a pending societal crisis. Global warming causes a wide spectrum of consequences on the human health, including changes in the spread of tick borne pathogens. Ticks generally play an important role in the transmission and ecology of infectious diseases. Climatic factors (temperature, rainfall and humidity) strongly influenced the ecology, development, behavior and survival of ticks and the transmission dynamics of the diseases they transmit.

Objective: The objective of this study was to determine the prevalence of tick-borne bacterial pathogens of the genera *Rickettsia* spp., *Ehrlichia* spp., and *Anaplasma* spp. among ticks collected from domesticated ruminants in some selected localities in the Eastern Cape Province of South Africa where there has been a decreased precipitation and slight increase in temperature recently.

Methods: Between February and May, 2016, a total of 1200 ticks were collected from domesticated ruminant heads in some selected communities' within the Nkonkonbe and Chris Hanne District Municipalities in the Eastern Cape, South Africa. Ticks were identified based on morphological criteria. Genetic detection of tick-borne bacteria belonging to *Rickettsia*, *Anaplasma* and *Ehrlichia* genera was performed by PCRs. Positive amplicons were sequenced and phylogenetically analyzed.

Results: The ticks were identified as belonging to the genera *Rhipicephalus* (980) and *Amblyomma* (220) respectively. Genetic screening for *Rickettsia* spp., *Ehrlichia* spp. and *Anaplasma* spp. revealed the presence of *Rickettsia* spp. and *Ehrlichia* spp. respectively while none was positive for *Anaplasma* spp. in the tick samples collected. Ticks from cattle were highly infected with *Rickettsia* spp. while *Ehrlichia* spp. was isolated mainly from ticks collected from sheep. No positive result was obtained from ticks collected from goats.

Conclusion: The observation that these pathogens are present in ticks on animals within homesteads suggests that inhabitants of these communities could be infected and tourists visiting the areas should be cautious of tick-biting. The findings of this study show that zoonotic pathogens are present in ticks in the studied localities. This information will be helpful in the epidemiology of tick-borne zoonotic diseases in the country as well as in creating awareness about such diseases in the veterinary, medical and tourism sectors, as they may be the mostly affected.

Biography

Benson C Iweriebor is working at AIDS Virus Research Laboratory, Department of Microbiology, University of Venda, South Africa. His research interest include AIDS and Microbiology.

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