

Preliminary Confirmation of Crimean-Congo Hemorrhagic Fever Virus in *Rhipicephalus annulatus* from the Southern Region of Kazakhstan

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The climate and geographical location of the southern region of Kazakhstan are favorable for tick populations, making continuous monitoring of tick-borne infections necessary, as they pose significant public health risks. The Crimean-Congo hemorrhagic fever (CCHF) virus, a tick-borne Nairovirus from the Bunyaviridae family, spreads through tick bites or contact with infected patients and livestock, and is particularly relevant for southern Kazakhstan, where it is endemic. Previously, CCHF virus circulation was primarily associated with tick species such as *Hyalomma marginatum*, *H. anatolicum*, *H. asiaticum*, and *H. scupense*. However, the detection of *Rhipicephalus annulatus* in the Atyrau region in 2019, along with this tick being CCHF virus-positive (Sayakova et al., 2021), suggests an expanding distribution area of this tick species, historically registered only in the south of Kazakhstan, where it was never associated with CCHF.

To study the potential of *R. annulatus* to carry CCHF virus in southern Kazakhstan, a total of 21 ticks among the 1063 ticks collected in 2022-2023 were morphologically identified as *R. annulatus* (*Boophilus calcaratus*): 1 adult female from Turkestan oblast and 20 adults (11 males, 9 females) from Zhambyl oblast. RNA was extracted using MAGNO-sorb kit, and viral RNA was detected via real-time RT-PCR with TaqMan™ Fast Virus 1-Step Master Mix as described by D'Addiego et al. (2023). We confirmed the presence of a CCHF virus-positive *R. annulatus* tick in the Turkestan region (Maktaaral district), with a detection rate of 0.13% (1/21; 95% CI: 0.04–0.13). Our study further highlights an alarming trend: besides confirmation of regularly recorded CCHF-positive ticks in Turkestan oblast, it underscores the growing public health threat posed by the expanding distribution range of *R. annulatus* across different regions and increasing the risk of virus transmission, enhancing its potential virulence, and raising the likelihood of infection in both humans and animals.

Biography

Dosmagambet Zhaniya is an early-career specialist in molecular biology and infectious disease diagnostics with experience gained during the COVID-19 pandemic. She has also conducted research on various infectious diseases, including Crimean-Congo hemorrhagic fever, tick-borne encephalitis, and tuberculosis, while participating in training programs on biosafety and biosecurity. She is trained in biosafety and biosecurity regulations, has relevant laboratory experience working with pathogens, and undergoes annual training.

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