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Detection of Nairobi Sheep Disease Virus in Goats and Sheep and of Two Previously Unknown Nairoviruses in Rodents and Shrews in Uganda's Albertine Rift

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The genus Orthonairovirus contains tick-borne viruses with public and veterinary health importance, such as Nairobi Sheep Disease Virus (NSDV) which causes febrile illness in humans and lethal haemorrhagic gastroenteritis in goats and sheep with mortality rates of 90%. The aim of this study was to get insight into the genetic diversity of nairoviruses circulating in Uganda. Blood from cattle (n= 1064), goats (n= 1441), sheep (n=286), pigs (n=81), rodents and shrews (n=447) was collected in six areas in the Albertine rift valley in proximity to protected biodiversity hotspots and analysed using ultra-high-throughput sequencing and RT-PCR. NSDV was detected in 5 goats and 2 sheep from sampling sites across the rift valley, including Arua and Kasese Towns, as well as Semuliki and Bwindi Impenetrable National Parks. Complete NSDV genome analyses revealed nucleotide diversities of 0.5-25% to L, M and S segments of other NSDV strains. Further, two previously unknown nairoviruses were identified in rodents and shrews: one found in Bwindi Impenetrable National Park (n=3), and the others in Semuliki and Queen Elizabeth National Parks (n=5). The two novel viruses showed 85% pairwise nucleotide identities in their RdRp genes and maximal 65% pairwise identities to other rodent- and shrew-associated nairoviruses. These findings highlight the circulation of NSDV in goats and sheep and the presence of new nairoviruses in wildlife in Uganda, underscoring the need for an integrated One Health surveillance to prevent outbreaks.

Keywords

Arboviruses, Nairobi Sheep Disease Virus (NSDV), Nairovirus, Rodents, Shrews

Registration ID

22

Professional Status of the Speaker

PhD Student

Junior Scientist Status

Yes, I am a Junior Scientist.

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