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Mosquitoes are important vectors of arboviruses

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Mosquitoes are important vectors of arboviruses but also harbour insect-specific viruses (ISVs), which replicate exclusively in insects. Although numerous ISVs have been identified, little is known about their interactions with arboviruses and mosquito hosts. ISVs closely related to arboviruses have been suggested to interfere with arbovirus replication, making them potential tools for vector control. In this study, we investigated the replication and dissemination of three Bunyaviricetes-class ISVs (Herbert, Gouléako, and Badu viruses) in *Aedes aegypti* mosquitoes and mosquito-derived cell lines. All three viruses successfully infected and replicated in mosquitoes, although differences in tissue tropism and dissemination were observed. Herbert virus was also detected in saliva, indicating its potential for horizontal transmission. Detailed analysis regarding in vitro interaction, Herbert virus significantly reduced intracellular RNA levels of Rift Valley fever virus (RVFV); however no significant effects on RVFV infection or transmission were detected in co-infected mosquitoes. These findings provide the first in vivo characterisation of Bunyaviricetes ISVs in *Ae. aegypti*, improve our understanding of ISV–arbovirus interactions, and highlight the need for further studies to evaluate their potential for arbovirus and vector control.

Keywords

ISVs, Arbovirus, mosquito, Bunyaviricetes

Registration ID

205

Professional Status of the Speaker

Professor

Junior Scientist Status

No, I am not a Junior Scientist.

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