Vector competence of Malaysian Aedes species to Zika virus and impact of sequential arbovirus infections

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ABSTRACT

Background: The Asia pacific region, especially Malaysia, has been experiencing an outbreak of Zika virus since 2015. This study aimed to determine the vector competence of Aedes aegypti, Aedes albopictus, and Aedes albopictus var. japonicus for Zika virus. The study also assessed the impact of Zika virus infection on the transmission of dengue virus.

Methods: Aedes aegypti, Aedes albopictus, and Aedes albopictus var. japonicus were collected from urban and rural areas of Selangor, Malaysia. The infection rate of Zika virus was determined using RT-PCR. The infection rate of dengue virus was determined using IgM enzyme-linked immunosorbent assay (ELISA).

Results: The infection rate of Zika virus was found to be 1% in Aedes aegypti, 2% in Aedes albopictus, and 1% in Aedes albopictus var. japonicus. The infection rate of dengue virus was found to be 5% in Aedes aegypti, 3% in Aedes albopictus, and 4% in Aedes albopictus var. japonicus.

Conclusion: The study showed that Aedes aegypti and Aedes albopictus var. japonicus are competent vectors of Zika virus in Malaysia. The impact of Zika virus infection on the transmission of dengue virus was also observed in the study.