

Chikungunya virus in non-mammalian species: a possible new reservoir

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Abstract

Chikungunya virus (CHIKV) is an arbovirus distributed widely in tropical regions of the world that causes a febrile and often painful disease in adults and children. Recent outbreaks of CHIKV infection in the Caribbean have raised concerns about establishment of this virus in North America. A significant question about the transmission cycle of CHIKV is whether non-human reservoir hosts are important in maintenance or transmission of the virus. We conducted experimental infections with CHIKV and discovered that several reptiles and amphibians developed viremia of sufficient magnitude to possibly serve as reservoir hosts. One or two strains of CHIKV were inoculated into a variety of ball pythons, Burmese pythons, Northern garter snakes, American alligators, green iguanas, painted turtles, leopard frogs, Bufo species toads and cane toads. Viremia was not detected in alligators or cane toads but all other species developed viremia at variable magnitude. Peak viremia in the other species varied from 2.8 (Burmese pythons) to 4.7 (leopard frogs) log₁₀ pfu/ml. We also conducted experiment to evaluate the effect of ambient temperature changes to monitor the “over wintering” capabilities of CHIKV in snakes. Northern garter snakes were inoculated a South African strain of CHIKV at temperatures of 16 C versus 26 C and tested for viremia.

Keywords:

The snakes kept at 26 C developed a short term viremia whereas in snakes kept at 16 C