

Abstract

Uganda Arboviruses Surveillance Activities

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Background: Arboviruses research in Uganda dates before the 1930s. More than 38 arboviruses and over 224 mosquito species together with many other insect vectors are documented to occur in Uganda. However, arboviruses research activities came to a virtual standstill in the 1980s. Surveillance for arboviruses was reinstated in 2007 through the Uganda Arbovirus Program 2007 to collect new information on arboviruses in Uganda.

Objectives: The program set out to establish a vector based surveillance network for emerging and re-emerging arboviral pathogens, including epidemic alert, response and prevention. The program carries out field and laboratory research on arboviral infections at the human/wild animal interface and maps human and animal populations at risk.

Methodology: The program collects, identifies and evaluates arthropod vectors in the varied ecosystems of Uganda for known and unknown human and veterinary viral pathogens. It carries out isolation of novel viruses of unknown medical and veterinary importance; and also genetically and serologically characterizes arboviral isolates made from arthropods. Mitochondrial genes from blood-engorged mosquitoes are sequenced to determine vertebrate hosts. In collaboration with other groups collect bats and rodents/ receive tissue and blood samples from animals for virus isolations and antibodies tests.

Results: Over 250,000 mosquitoes in 88 species, 6 subspecies and 7 species groups in 10 genera have so far been pooled by species, divided into engorged, gravid and unfed and tested for viruses. Over 40 virus isolates of 14 different viruses have been made. Over 530 blood hosts of engorged mosquitoes have identified by Cytochrome Oxidase I sequencing.

Conclusions: At least 50 species collected in this study have previously been implicated in the transmission of arboviruses of public health importance suggesting a high potential for maintenance and transmission of a wide variety of arboviruses in Uganda. When combined with published arbovirus isolation and serological survey data our results suggest vector-reservoir relationships for several arboviruses.

Key words: Arboviruses, mosquitoes, blood meals, vectors, reservoirs

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