Tropical medicine study finds most rapid way to detect dengue

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University of Hawaii Mānoa scientists have found that a commercially available, FDA-approved dengue detection kit bests the former "gold standard" test by producing results in under five hours.

A study conducted at the John A. Burns School of Medicine (JABSOM) sought to evaluate the use of the commercially available, Food and Drug Administration (FDA) approved InBios Dengue virus IgM ELISA kit for rapid diagnosis of dengue virus infection. This kit detects anti-dengue virus IgM antibodies, which are produced within three to five days after the onset of dengue fever.

Dengue virus clinical manifestations vary from asymptomatic infection, mild fever to a severe disease characterized by hemorrhage and shock. Dengue virus outbreaks occurred in Hawai`i in 2001 and 2011 with 153 and four dengue cases, respectively.

Rapid diagnosis of dengue virus infection is critical for effective patient management, thus can prevent the severe dengue disease. In addition, it also helps to prevent the spread of dengue virus infection, which can occur after the bite of dengue-virus infected mosquitoes.

In the study, published in the *Journal of Clinical Microbiology*, JABSOM's Department of Tropical Medicine, Medical Microbiology and Pharmacology tested 79 well characterized clinical serum samples collected from Hawai`i, Vietnam, Niue, Singapore and American Samoa, where dengue virus outbreaks occurred in the past, using InBios DENV

IgM ELISA kit and results were compared to that of "gold standard' DENV IgM antibody capture ELISA (MAC-ELISA). The agreement, sensitivity, and specificity of the InBios assay were 94, 92 and 94% respectively. The study found that InBios' DENV Detect IgM Capture ELISA is advantageous compared to the in-house MAC-ELISA, as the results can be obtained in less than five hours, whereas the in-house MAC-ELISA requires 2 to 3 days. We conclude that InBios DENV IgM Capture ELISA can be effectively used for rapid diagnosis of acute or recent DENV infection.

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About Dengue:

Dengue is a significant human pathogen of global importance. Today about 2.5 billion people, or 40% of the world's population, live in areas where there is a risk of dengue transmission. Dengue is endemic in at least 100 countries in Asia, the Pacific, the Americas, Africa and the Caribbean. Recent reports indicate that there are about 350 million people infected with the dengue virus annually worldwide, triple the World Health Organization (WHO) estimates of 50 to 100 million annual infections, mostly among children. Recently there have been reported outbreaks in Kenya (May 2013) and Angola (June 2013). Although most of the reported cases in the United States are acquired by travelers or immigrants, autochthonous dengue fever outbreaks have occurred in Brownsville, TX (2005), southern Florida (2009-2011) and Hawai`i (2011).

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