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Tajuk : Potential new dengue virus type discovered

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NEWS

Potential new dengue virus type discovered

JUMPING SPECIES BARRIER: Fifth variant may have emerged due to deforestation

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THE spread of a fifth dengue virus, known as DENV-5, in humans, first detected in Sarawak about nine years ago, could be due to deforestation.

A team of researchers from Universiti Malaysia Sarawak (Unimas) said the DENV-5 virus had jumped from monkeys to humans as a result of massive clearing of forests. The team, led by its Health and Community Medicine Institute (IHCM) director Associate Professor Dr David Perera, will carry out further tests on the prevalence of the potential fifth variant.

"The victim, who was found with the serotype, was sick enough to go to hospital for treatment, but was not hemorrhagic.

"Since the preliminary laboratory evidences for the potential discovery of the new virus was presented, researchers from the institute, together with our collaborators, have been conducting more tests and analyses to provide more evidences that differentiate this serotype from



the present variants of the dengue virus," Dr Perera said.

The team's initial findings were presented at the Third International Conference on Dengue and Dengue Hemorrhagic Fever in Bangkok, Thailand, three years ago by the institute's co-collaborator, Nikos Vasilakis, a virologist at the University of Texas Medical Branch in Galveston, United States.

"At the moment, our team, together with the university's collaborators, are preparing a draft on their tests over the potential new serotype," Dr Perera said.

Unimas Vice-Chancellor Prof Datuk Dr Mohamad Kadim Suaidi said the serotype was the first new subtype of dengue virus to be discovered in 50 years.

"The fifth serotype of the dengue virus, if verified, will demand a new approach in diagnosing and treating patients.

The initial findings on the serotype have been published in medical journals and the verification process is still ongoing and time consuming. It will be very interest-

New Dengue virus

Serotype: DENV-5
Identified: 2013
Initial Detection: 2007
Location: Sarawak, Malaysia
Patient Zero: 37-year-old farmer

Phylogenetic: Distinct from four other serotypes: DENV-1, DENV-2, DENV-3, DENV-4
Source: DENV-5 has been circulating among non-human primates in the forests of Southeast Asia

Reasons For Emergence: Co-circulation of multiple dengue serotypes and increased human activity increase genetic changes and recombination



an exclusive interview with the *New Sunday Times*.

According to the World Health Organisation (WHO) website, there are four distinct serotypes of the dengue virus — namely DENV-1, DENV-2, DENV-3 and DENV-4 — which cause different interactions with antibodies in human blood serums.

The new serotype was detected during a screening of viral samples from a farmer who was admitted to the Sarawak General Hospital here in 2007. The farmer was in his late 30s when he sought treatment.

His infection was initially classified as an ordinary case of "sylvatic" dengue, caused by DENV-4, which circulates among primates and *Aedes nivalis* mosquitoes in the forests of South East Asia.

"Sylvatic" is a scientific term, referring to diseases affecting only wild animals.

Four years later, the institute's researchers conducted genome sequencing on the virus samples and found something suspicious.

"When a full genetic sequence was completed, it was observed that the virus was phylogenetically distinct from three forms of sylvatic DENV-4 and bore some similarity to DENV-2," said the report presented at the Bangkok conference.

Phylogeny refers to the evolution of a genetically related group of organisms, as distinguished from the development of individual organisms.

"Since no new serotype of the dengue virus had been reported in the last 50 years, it was initially believed that the new virus could be a variant of the DENV-4 serotype.

"However, when rhesus macaques, which were pre-infected

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with the other four serotypes and had already recovered from the infection, were infected with DENV-5, they produced a significantly different set of antibodies.

"This proved beyond a doubt that the new virus was indeed a new serotype and not a variant of DENV-4," researchers declared in the preliminary findings.

In the same report, researchers discussed the possible reasons for the emergence of the new serotype.

It was suggested that DENV-5 had been circulating among non-human primates in the forests of South East Asia for centuries before "jumping across the human barrier".

Researchers also did not rule out that deforestation activities might be one of the reasons why the serotype was transmitted to humans from monkeys.

"Deforestation effects such as uncontrolled population movement, unplanned and substandard housing, poor water storage facilities and improper waste disposal management systems provide ideal conditions for the emergence of DENV-5 by disturbing the ecological niche."