

## *Editorial*

# **Invention of Dengue Vaccine !!**

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Virologist Stephen Whitehead and his research associates of National Institute of Allergy and Infectious diseases (NIAID) of USA claimed the invention of Dengue Vaccine. Their experiment based research papers heading is "The live attenuated Dengue Vaccine TV-003 elicits complete protection against Dengue in a human challenge model". The research paper is published in the recent issue of the Journal "Science Translational Medicine".

This research paper has created a great sensation worldwide. Because Dengue is not only the problem of third world, but it is a global issue. Dengue is endemic in at least 100 countries in Asia, the Pacific, the Americas, Africa, and the Caribbean. About 2.5 billion people, or 40% of the world's population, live in areas where there is a risk of dengue transmission. The World Health Organization (WHO) estimates that 50 to 100 million infections occur yearly, including 500,000 dengue hemorrhagic fever (DHF) cases and 22,000 deaths, mostly among children.

Experimentally it has been seen that Dengue could not attack those persons who has taken that Vaccine. This experiment was done in two places of USA- one is University of Vermont College of Medicine Burlington & another is Johns Hopkins Bloomberg School of Public Health of Baltimore. Experiment was done over 41 persons of whom 21 persons were vaccinated with the invented Vaccine. Resting 20 persons were given placebo.

After six months dengue virus were artificially introduced into their body. It was seen that the 21 persons who were vaccinated are not attacked with Dengue and the 20 persons who were introduced with placebo, though they were not attacked with fever but rashes were seen in their body. That means dengue affected them even in a small scale.

Madhuri Shing, Associate Professor of Virology of John Hopkins Bloomberg School of Public Health illustrated that there are four types of Dengue Virus- 'Den-1', 'Den-2', 'Den-3' and 'Den-4', which are called serotype. Infection with one serotype does not protect against the others, and sequential infections put people at greater risk for dengue hemorrhagic fever (DHF) and dengue shock syndrome (DSS).

Dengue virus is transmitted between people by the mosquitoes *Aedes aegypti* and *Aedes albopictus*, which are found throughout the world. The same *Aedes* Mosquito variety is responsible for transmission of Zika Virus too. The researchers were worked with 'Den-2' Virus. In comparable with other serotype, 'Den-2' is a bit weaker. These viruses are available in the African Kingdom of Tonga. During the vaccine research the scientist have produced a similar genetically modified version of that virus which was called 'GMD'.

The Vaccine was made from 'GMD' of that 'Den-2' which is named as 'TV-003'. To produce Vaccine, Research Group have taken 'GMD' of 'Den-2'. The experiment with it could be continued very safely & viremia could not cause a critical condition of the person who is introduced with the VIRUS.

In this case it was seen that who were vaccinated Dengue viruses were not attacked. Rest who were introduced placebo, severe fever could not make them weak but groups of rashes were seen in their body which is commonly seen in case of dengue fever. About 16 out of 20 (80%) showed rashes in their body who were introduced placebo. And in another 4 persons (20%) the count of WBC was reduced temporarily. As a result 'Den-2' virus has become 'home enemy' of dengue virus as the research group made vaccine with one of the four serotypes. Now they will work with more virulent serotypes 'Den-3'. But it is not the last for dengue prevention. Even it is not long lasting said by viral experts.

Renowned Virologist Indranil Bandopadddhai of Swiss Federal Institute of Technology (ETH, Zürich) said that "This Vaccine can fight against the virulence of a special serotype of dengue only. Secondly, the RNA restored in the genome of this virus mutates rapidly for which the behavior of these viruses also changes quickly". So, after two or three years it will be seen that this vaccine is not effective. Then there will be a requirement of another vaccine.

So, only vaccine is not sufficient enough for dengue prevention and control of the vector (*Aedes* mosquitoes) as well as public awareness will remain as important as vaccination to control Dengue.

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