

Experimental chikungunya vaccine induces antibody response

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Singapore: An experimental vaccine to prevent the mosquito-borne viral illness chikungunya has elicited neutralizing antibodies in an early-stage clinical trial conducted at National Institute of Allergy and Infectious Diseases (NIAID), part of the National Institutes of Health.

The most distinctive symptom of chikungunya infection is severe joint pain accompanied by headache and fever. There are currently no vaccines or specific drug treatments for chikungunya.

"The two species of mosquito that spread chikungunya virus are found in parts of the continental United States, so it may just be a matter of time before this illness gains a foothold here," said Mr Anthony S Fauci, Director, NIAID. "Therefore, it is prudent to begin addressing this emerging public health threat with the development of vaccines, such as this one, which was designed and tested by scientists from the NIAID Vaccine Research Center."

In 2010, Vaccine Research Center (VRC) scientists and colleagues tested this candidate chikungunya vaccine in non-human primates. All of the immunized animals were protected from infection when later exposed to chikungunya virus.

"The candidate vaccine prompted a robust immunological response in recipients and was very well tolerated," noted Ms Julie E Ledgerwood, principal investigator of the trial. "Notably, the levels of neutralizing antibody produced in response to the experimental vaccine were comparable to those seen in two patients who had recovered from a chikungunya virus infection acquired elsewhere. This observation gives us additional confidence that this vaccine would provide as much protection as natural infection."

Whereas traditional vaccines are typically made from either killed viruses or from weakened live viruses, the experimental vaccine used in the trial is a different type: a virus-like particle (VLP) vaccine. VLP vaccines contain the outer shell proteins of a virus without any of the material the virus needs to replicate inside cells. VLP vaccines often prompt an immune reaction similar to that of natural, whole virus and have a number of potential advantages over traditional vaccines, said Dr Ledgerwood. Notably, because no live viruses are used in their manufacture, VLP vaccines do not need to be produced under high-level biocontainment conditions.