



In the research team are (from left) Ms Emmanuelle Kumaran and Prof Paul Macary of NUS' Yong Loo Lin School of Medicine, and Dr Laura Rivino of Duke-NUS Graduate Medical School. PHOTO: MIKE LEE FOR THE STRAITS TIMES

Dengue-infected cells can be destroyed by T cells: Study

By CAROLYN KHEW

SOME 390 million people worldwide are infected with the dengue virus each year but there is no cure or vaccine for the endemic disease so far.

But a recent finding by scientists here could pave the way for an effective vaccine to target the dengue virus.

Dengue-infected cells can be destroyed and prevented from multiplying by a type of white blood cell called T lymphocyte (T cell), a team from the Duke-NUS Graduate Medical School and National University of Singapore's Yong Loo Lin School of Medicine has found.

In the study, which began about five years ago, blood samples were collected from 200 patients aged 21 to 67 who were treated here for dengue. These patients were infected with Den-1 and Den-2 types of the virus.

The T cells collected from the patients were then tested in vitro, or outside patients' bodies, and found to have successfully killed the cells infected with the dengue virus.

"The T cells recognise dengue virus... They have all characteristics that an anti-viral cell would have," said the principal investigator of the study, Dr Laura Rivino of the Duke-NUS Graduate

Medical School.

Most of these T cells were found in the skin of dengue patients, supporting the idea of a dengue vaccine that is administered with an injection into the skin layers.

One of the ways that a vaccine is produced is by introducing a small dose of the virus into the body to trigger an immune response.

In this case, the dengue vaccine jab should be injected into

“

SKIN AS STARTING POINT

So far, there has been no indication that skin is an important site for immunity in dengue until now. And if you think about it, it kind of makes sense because a dengue infection starts with a mosquito bite in the skin.

— Associate Professor Paul Macary, of the Yong Loo Lin School of Medicine

”

the skin layers if the T cells are found mainly in the skin.

Injections are usually administered into the muscles.

One of the researchers, Associate Professor Paul Macary of the Yong Loo Lin School of Medicine, said: "If you do a standard jab, you won't be able to get the skin immune response you are looking for."

"So far, there has been no indication that skin is an important site for immunity in dengue until now. And if you think about it, it kind of makes sense because a dengue infection starts with a mosquito bite in the skin."

While no licensed dengue vaccine is available, several vaccine candidates are being evaluated in clinical studies, said the World Health Organisation on its website.

Apart from T cells, another type of white blood cell known as B cell also targets viruses by producing antibodies.

While most of the vaccines being tested are targeted at these cells, Dr Rivino said the study suggests that vaccines may need to target T cells as well for them to be effective.

Moving forward, researchers said more work needs to be done to find out how these T cells can be induced during a vaccination.

✉ kcarolyn@sph.com.sg