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S'pore could start vaccine human trials this week

108 to receive Lunar-Cov19 to determine its safety, if it coaxes desired immune response

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Human trials for a Covid-19 vaccine could begin in Singapore as early as this week.

The trial will involve 108 healthy volunteers of various ages in Singapore who will be injected with the vaccine developed by Duke-NUS Medical School and United States pharmaceutical company Arcturus Therapeutics.

Called Lunar-Cov19, the vaccine is one of 25 vaccine candidates worldwide that either have been tested on humans, or have received approval to do so. Some 141 others are still at a pre-clinical phase.

Professor Ooi Eng Eong, deputy director of Duke-NUS Medical School's emerging infectious diseases programme, told The Sunday Times that the aim of the trial is to determine the safety of the vaccine, and whether it could coax the desired immune response in the body against Sars-CoV-2, the virus that causes Covid-19.

Blood samples will be taken from the volunteers several times after vaccination for analysis.

As immune system elements such as antibodies and T-cells are found in blood, the data will help scientists determine if the vaccine is successful in stimulating the body to produce the "soldiers" critical for helping the body fight off an infection.

Recently published results from human trials for other vaccine candidates have already shown encouraging signs on these fronts.

The findings released publicly last Monday were from the early phases of clinical trials for vaccines being developed by Oxford University and multinational drugmaker AstraZeneca; CanSino Biologics and China's military research unit; and German biotech company BioNTech and US drugmaker Pfizer.

Prof Ooi said he was optimistic that the results from the Singapore trial would yield similarly encouraging results.

Preliminary studies on animal models had already shown that the Lunar-Cov19 vaccine was safe and did not have any side effects, he said.

This data had allowed the vaccine to receive approval for clinical trials ahead of the expected September timeline, making it the first in-human clinical trial in Singapore.

"When news got out that we were doing a vaccine, we were thrilled that many members of the public said they wanted to volunteer for it," Prof Ooi said. "And I think that's encouraging, because the faster the volunteers come forward, the faster we can complete the trial."

The clinical trial will be conducted at the SingHealth Investigational Medicine Unit, located in the Singapore General Hospital.

Prof Ooi said that volunteers of all ages are needed.

Those interested should contact the SingHealth Investigational Medicine Unit by e-mail at imu@singhealth.com.sg or call 6323-7544/8318-0685.

He said that if things go according to plan, results from the trial – known in medical circles as a Phase I/II trial – could be available by around October or November.

The next phase of the clinical development process involves inoculating a much larger pool of thousands of volunteers in Singapore and abroad, said Prof Ooi.

This could start before the end of the year, he said, adding: "In Phase III, we want to know whether the vaccine actually prevents them from getting Covid-19."

A vaccine works by "showing" the immune system an important part of the virus and "training" it to recognise and remember a pathogen without exposing the patient to the risk of disease.

Traditional vaccines do this by injecting a killed or weakened form of the virus into the human body, so the immune system recognises the invader, and begins summoning its "soldiers" – antibodies and T-cells – to get rid of it.

But the Lunar-Cov19 vaccine involves a newer type of technology.

Similar to a front runner vaccine candidate being developed by American firm Moderna, the vaccine contains only fragments of the virus' genetic material, instead of the whole virus.

When these viral genetic fragments enter the human cell after injection, the genome fragments commandeer the cell to begin producing the signature spike protein of the coronavirus.

This trains the body to recognise a key part of the virus – the spike protein – without exposing it to the whole virus.

But while the Moderna vaccine is a non-replicating vaccine, which means it does not enable the spike protein to replicate in the body, Lunar-Cov19 can.

This replication simulates an actual viral infection, said Prof Ooi.

A non-replicating vaccine, on the other hand, merely provides the body with a mugshot of the invader.

"By mimicking the replication, the body sees a 'video' of an invasion, rather than just a snapshot.

"This allows the infection to play out for the immune system, and we can see how best to target the virus," he said.

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VOLUNTEERS APLENTY

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