

M'sian scientists develop next-level antigen test kit for Covid-19

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COVID-19 | A team of local scientists has developed a new Covid-19 antigen rapid test kit (RTK) which claimed to have an accuracy at par with tests done in a laboratory.

The team led by Dr Wan Wardatul Amani Wan Salim, who is the first Malaysian to launch a National Aeronautics and Space Administration (Nasa) satellite to space, recently made it as one of the 15 finalists of a competition organised by the Massachusetts Institute of Technology (MIT).

In a phone interview with two of the team members including Amani, Malaysiakini learned that the technology the team is developing might be able to provide a quicker and cheaper solution to Covid-19 screening compared to what the world has today.

Amani said the project was initially an attempt to develop a next-level glucose

reader that can detect sugar levels in humans through a non-invasive way, where only a saliva sample is needed instead of blood.

"When Covid-19 hit globally and our country started imposing the movement control order in March, my team and I turned to brainstorming how we could be of help in facing this pandemic.

"That was when we thought of modifying the technology to be used for Covid-19 screening," she said in the teleconference together with teammate Iqbal Shamsul, who is the CEO of NanoSkunkWorkX Sdn Bhd.

The company is a business startup that aims at developing new technologies and was responsible for rallying the scientists for the project.

For the record, Amani was the principal investigator in a team of scientists, technologists and engineers to work on Nasa's first device able to measure extracellular ions from a single cell in microgravity.

She had been featured in Malaysiakini's Malaysianskini in 2018 for her achievement. Amani had since chosen to return to Malaysia, citing that she wanted to contribute to the country.

'Non-invasive and cheaper solution'

Amani and Iqbal explained further that the antigen RTK can detect the presence of the novel coronavirus in any bodily fluid including saliva, thus enabling its user to do away with the current obtrusive nasal swab method.

The test kit is said to be similar to the do-it-yourself device that is available today to check blood sugar levels but only requires spit on a test strip.

"The result time would be almost immediate, as the glucose test. It also uses technology that is similar to the diabetes meter," Amani said.

According to Iqbal, the RTK was developed using Amani's experience in Nasa, where she worked on sensors that were sent by the agency to space.

"Her technology can amplify the signal of the virus so that it can be picked up (for detection). This means that the virus can be detected no matter how small the amount is.

"This makes the accuracy of this RTK comparable to the lab test that we use today," he said.

Health authorities in Malaysia and at the global level mainly rely on real-time RT-PCR (reverse transcription polymerase chain reaction) test, which is costly and consumes hours to return a result.

Clinical test plan hampered by lack of funding

As a cheaper and quicker alternative, the Health Ministry also uses a type of RTK made by a South Korean company. It is said that this RTK has 84.4 percent accuracy.

However, there have been cases where individuals tested using the RTK were given negative results, only to be found with the virus days later. These include three overseas returnees who arrived to Sarawak between June and July, whose RTK tests returned negative but tested positive when their nasal swabs were later sent for RT-PCR testing.

Health director-general Dr Noor Hisham Abdullah had at the time told CodeBlue health news portal that the ministry was reviewing the RTK they were using.

Iqbal said that the proposal for their RTK, which they submitted for the competition, had yet to go into clinical trial due to budget constraints.

They were hoping that the competition would bring the spotlight to their effort and attract sponsors to fund their project, after attempts to get fundings locally had failed. Their attempts include applications for research funds from several ministries, which have yet to receive any positive response.

According to the team's press release, their proposal was submitted for the Health Security and Pandemic category in the MIT Solve 2020 Global Challenges competition.

A total of over 2,600 solutions from 135 countries were submitted, out of which 90 were selected across six categories to be presented at the Virtual Solve Challenge Finals on Sept 29, the statement said.

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