

NTU team finds faster way to detect Covid-19, dengue

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Researchers at the Nanyang Technological University's (NTU) Lee Kong Chian School of Medicine have come up with a way to tell if a person has Covid-19 or dengue in just 36 minutes.

This is just a quarter of the time taken by current testing methods for the same diseases, NTU said yesterday.

At the moment, the most sensitive way to detect Covid-19 is through a polymerase chain reaction (PCR) technique in a laboratory, which uses a machine to "amplify" viral genetic material by copying it over and over again so any trace of the Sars-CoV-2 virus, which causes Covid-19, can be detected.

While such a method is accu-



The team's method can tell if a person has Covid-19 in just 36 minutes, a quarter of the time taken by current testing methods. PHOTO: NTU LKCMEDICINE

rate, it can take a few hours to complete, partially due to a step known as RNA purification.

When a patient is swab tested, his RNA needs to be extracted from the swab sample

to remove any substances in the sample that inhibit the PCR test from working, such as mucin – a main component of mucus.

It also requires chemicals that are now in short supply world-

wide, and needs to be carried out by highly trained staff using expensive equipment.

But the NTU team's method, known as "direct-PCR", uses a series of commercially available enzymes and reagents that are resistant to inhibitor substances to overcome this obstacle.

SKIP

By mixing them together with patient swab samples in a test tube, the team is able to skip the RNA purification step and perform the test on the sample directly, producing accurate results in a shorter time.

The team's leader, Associate Professor Eric Yap, noted that further studies need to be done to see how effective the test method is in a real-world setting.

The team is aiming to use this method to carry out Covid-19 testing at the NTU Clinical Diag-

nostic Laboratory.

Prof Yap said the team's method works on the dengue virus as well, producing results in just 28 minutes.

"As Singapore battles the dual outbreak of dengue and Covid-19, both with similar early symptoms, our test could help in differentiating between the two infectious diseases," he said.

He added: "Our goal is to develop ultra-fast and automated tests that yield results in minutes, and that can be performed by healthcare workers in the clinic with similar accuracy and sensitivity as in specialised laboratories.

"This will allow us to take PCR testing out of conventional laboratories nearer to the point of care, and into the low-resource settings that need them the most."

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