

Researchers develop 20-minute saliva-based COVID-19 test

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Researchers at the University of Waterloo are developing a new COVID-19 test that can be administered at home using saliva, aiming to deliver a positive or negative result in less than 20 minutes.

It's a possible solution to the current delays in receiving test results and a much more pleasant option for those requiring frequent tests, researchers said. They hope the tests will become available over the counter at pharmacies across Canada.

"The use of paper devices coated with nanoparticles for COVID detection is a game changer.

Right now, COVID tests can take two to three business days to come back, and we know that's too long," said Sushanta Mitra, Professor of Mechanical & Mechatronics Engineering and co-lead researcher on the project. "This test will provide an immediate positive or negative so that folks who are infected can isolate immediately."

The detection platform is made of paper, which is extremely inexpensive and would require minimal reagents—thereby making it a mass-deployable, cost-effective and rapid diagnostic solution, Mitra said.

The Waterloo Institute for Nanotechnology at the University of Waterloo is working in collaboration with ChitoLytic Inc. on the research. The company has developed the chitosan nanoparticles, an important substrate for the microfluidic sensor that is needed to make the test effective for use in saliva testing.

The project is being co-led by Professor Juewen Liu of Waterloo's chemistry department.

"We are working on the test to detect two specific targets of the virus. This will bring the test to lab-like accuracy, making it more reliable than current rapid tests," Liu said. "Another unique aspect is that it uses saliva, which is more easily accessible than the current practice of using nasal or throat swabs."

The team will work towards making these rapid testing kits available to the public as soon as possible, targeting first-stage testing within six months.

"This test is literally a lab-in-your-hand that can be used to perform testing anywhere with speed and accuracy," said Michel Lockhart, chief executive of ChitoLytic. "Because of this, and that the tests are affordable, it can allow frequent [test](#) taking, which experts say is a key in helping monitor and keep down infections."

ChitoLytic is a supplier and manufacturer of chitosan, a natural biopolymer. They provide pure high-quality medical chitosan, and industrial grades for R&D and commercial projects, and chitosan-based technologies for various applications.

Provided by University of Waterloo

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