

Council of Scientific and Industrial Research

CSIR-CCMB's Dry Swab direct RT-PCR method for Coronavirus detection receives ICMR approval; can scale up testing by two to three-fold immediately with no additional resources

New Delhi, 26th November 2020: The simple and fast method of Dry Swab-Direct RT-PCR, developed by CSIRs constituent lab Centre for Cellular and Molecular Biology (CCMB) Hyderabad for scaling up of SARS-CoV-2 detection has now been approved by ICMR based on their independent validation. This method developed by CSIR-CCMB is a simple variation of the existing gold standard RT-PCR method and can easily scale up the testing by 2 to 3 fold with no new investment of resources. After evaluating this method and finding an overall concordance of 96.9%, ICMR has now issued an advisory for the use of CSIR-CCMB dry swab method, considering its lesser cost and quick turn-around time.

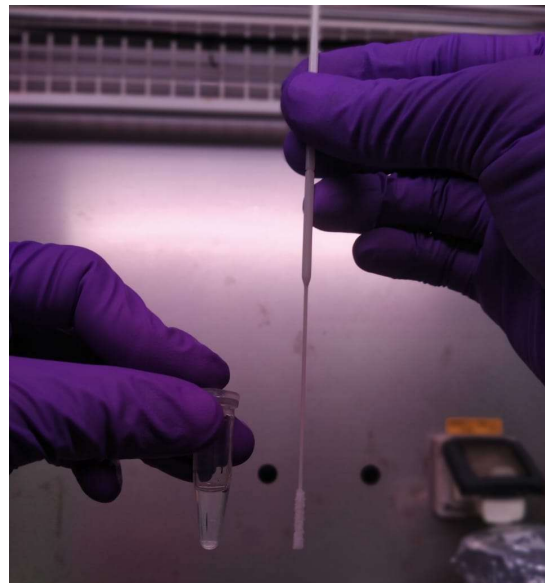


Figure 1: Dry swab and reagents for carrying out the test in a tube

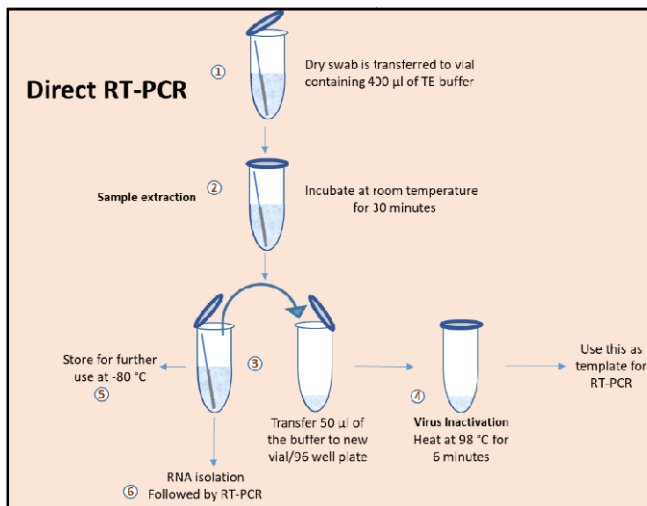


Figure 2: Schematic for dry swab RNA extraction free coronavirus testing

CSIR-CCMB, Hyderabad has been testing samples for coronavirus since April 2020. Having worked closely with the healthcare workers of Telangana, it identified some of the key issues that slow the testing process. In response to it, the researchers here developed the Dry Swab RNA-extraction free testing method for the COVID-19 virus.

More specifically, the Dry Swab-Direct RT-PCR method involves collecting and transporting the nasal swab in dry state (as opposed to using the viral transport

medium VTM) which makes the transportation and handling of the samples easy and less prone to spillage and spread of infection. Secondly, the step of RNA isolation from the sample is omitted and involves only simple processing of the sample followed by direct RT-PCR using the kit recommended by ICMR. Omitting the step of RNA isolation offers a huge benefit over the conventional method, as the RNA isolation is a major bottleneck in terms of time, cost and trained manpower. Given this, with the same resources and no additional cost more samples can be tested and can be easily scaled up at least 2-3 times immediately.

DG-CSIR, Dr Shekhar C Mande, commenting the development said that the Dry-Swab Direct RT-PCR method is easy to implement with no requirement of new kits and existing manpower can perform this with no additional training and hence could make a significant contribution to ramping up the testing capacity in the country quickly.

Dr Rakesh Mishra, Director, CCMB adds, "RNA extraction, even with automation, takes 4 hours for roughly 500 samples. VTM and RNA extraction both add a significant burden on money and time required for mass testing for coronavirus. We believe the technique's merit holds for all kinds of settings and has the potential of bringing the costs and time of testing by 40-50%".

Significantly, the modified method of CSIR-CCMB has also been independently corroborated by multiple premier institutes and hospitals such as Centre for DNA Fingerprinting and Diagnostics (CDFD), IISER-Berhampur, CSIR-NEERI, GMCH-Nagpur, Genepath based in Pune, IGGMSH and MAFSU, Nagpur and also Apollo Hospitals, Hyderabad. Further, this modified method has been published in peer reviewed journal by CSIR-CCMB and by other scientific groups in several prestigious scientific journals across the world.