



Dry Swab RT-PCR Covid-19 Test

Why in News

Recently, the [Council of Scientific and Industrial Research-Centre for Cellular and Molecular Biology](#) (CSIR-CCMB) has got the permission of the [Indian Council of Medical Research](#) (ICMR) to commercially use the **dry swab RNA-extraction free testing method** for the [Covid-19](#).

Key Points

▪ About:

- Dry swab method has a consistency of 96.9%.
- The comparison of **conventional** (swab-VTM-RNA extraction-RT-PCR) and the **simplified** (direct elution from dry swab-RT-qPCR) protocols suggested that dry swabs eluted directly into a simple buffered solution can support molecular detection of SARS-CoV-2 via endpoint RT-PCR without substantially compromising sensitivity.

▪ Conventional Method:

- In the conventional testing method, **nasopharyngeal or oropharyngeal** swab samples are **collected by sample collection centres** from the suspected coronavirus patients. These are **then transported to testing centres**, sometimes even hundreds of kilometres away.
 - The **nasopharynx** is the **upper part of the pharynx** (throat) **behind the nose**.
 - The **oropharynx** is the **middle part of the pharynx just beyond the mouth** and includes the back part of the tongue (base of tongue), tonsils, soft palate (back part of the roof of the mouth), and the sides and walls of the throat.
- The swab samples are generally placed in a liquid called **Viral Transport Medium** (VTM) and to avoid leakage, the samples are packed heavily that **adds on to sample processing times** at both the sample collection and testing centres.
- **RNA extraction**, even with automation, takes **four hours for roughly 500 samples**. VTM and RNA extraction both add a **significant burden on money and time required** for mass testing.

▪ New and Simplified Method:

- Dry swab technique **does not require VTM and RNA extraction process**, and can be directly used for RT-PCR testing.
- It has the **potential of bringing the costs and time of testing by 40-50%** and the **screening can also be enhanced several-fold** with immediate effect while, at the same time, **making the whole process safer**.
- It is **easy to implement** with **no requirement of new kits and existing manpower can perform this** with no additional training.

▪ Benefits:

- It will **scale up the testing**.
- More economical than **conventional** [RT-PCR tests](#).
- Quicker results

RT-PCR Test

- **Kary Mullis**, the **American biochemist** invented the PCR technique. He was awarded the **Nobel Prize for Chemistry in 1993**.
- Under the test, copies of a **segment of DNA** (deoxyribonucleic acid) are **created using an enzyme called Polymerase**.
 - The '**chain reaction**' signifies **how the DNA fragments are copied exponentially**, where one is copied into two, the two are copied into four, and so on.
- A **fluorescent DNA binding dye** called the "**probe**" is added to DNA, which shows the presence of the virus on a fluorometer.
- **Covid-19 is made of RNA** (ribonucleic acid), so to detect it, **RNA is converted into DNA** using a technique called reverse transcription.
 - Then the copies of the DNA are then made and amplified.

[Source: TH](#)

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