



## RT-nPCR Test

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### Why in News

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Researchers at the **Centre for Cellular and Molecular Biology (CCMB)** have developed a **new test** to detect **novel coronavirus (SARS-CoV-2)** named '**Reverse Transcription nested Polymerase Chain Reaction (RT-nPCR) test**'.

CCMB, one of the **Council of Scientific & Industrial Research (CSIR) laboratories**, is situated in Hyderabad (Telangana).

### Key Points

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- **RT-nPCR Test:**
  - **It does not depend on RT-qPCR** (testing approved by the ICMR) **but uses standard RT-PCR** as part of an endpoint assay (i.e. to measure biochemical activity of a sample).
  - It has been developed on a **low-cost** and **low-tech** model.
  - This new test is **awaiting approval from the Indian Council of Medical Research (ICMR)**.
- **RT-qPCR Test:**

The ICMR has recommended only **Reverse Transcription Polymerase Chain Reaction (RT-qPCR) test** for novel coronavirus testing.

  - **PCR** is an enzymatic reaction used to amplify DeoxyRibonucleic Acid (DNA).
  - Unlike conventional PCR, which relies on end point analysis, **qPCR** enables the analyst to **monitor DNA amplification in real time**, as the reaction proceeds. This allows quantification of DNA.
  - However, coronavirus is made up of Ribonucleic Acid (RNA). Therefore to detect coronavirus, **RNA is converted into DNA using a technique called Reverse Transcription (RT)**.

- **RT-qPCR vs RT-nPCR:**

- In RT-qPCR, the viral RNA is quantified, whereas in RT-nPCR, the viral RNA that nests is studied.
- RT-qPCR is costly, takes longer, needs special apparatus and can be performed only in a lab with sophisticated equipment. It requires a real time thermal cycler, which is an expensive instrument.
- RT-nPCR is economical, can be tested on a large scale, does not require special apparatus and can be done in a lab with basic equipment. It needs a simple PCR machine.
- Further, the CCMB scientists found a high percentage of false negative cases while comparing RT-qPCR with the new test.

The RT-nPCR test was able to identify 90% of the detected samples as positive by RT-qPCR. It also detected 13% samples as positive among samples that were negative by the standard RT-qPCR test (likely false negatives).

**Source: PIB**