

COVIRAP

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In news: Recently, the Indian Council of Medical Research (ICMR) has validated the efficacy of the Covid-19 method called COVIRAP

What is COVIRAP?

It is a cuboid-shaped portable testing device that can deliver results in an hour, making it an effective tool to scale up coronavirus screening in peripheral and rural areas

Who developed it?

A new **diagnostic test for Covid-19 called COVIRAP was developed by IIT Kharagpur**

How does it work?

- COVIRA has an **automated pre-programmable temperature control unit, a special detection unit on genomic analysis, and a customised smartphone app** for results.
- Three master mixes work as markers of different genes to confirm the presence of SARS-CoV-2
- Samples collected react with these mixes.
- When paper strips are dipped into these reaction products, coloured lines indicate the presence of the virus.

Why is it unique?

- Current tests include RT-PCR, which are highly accurate but require advanced lab infrastructure, and antigen tests that can give results in minutes but have a lower accuracy.
- COVIRAP process is completed within an hour
- The test is conducted in a **ultra-low-cost portable unit** that can be handled by unskilled operators outside the

lab environment and is an alternative to high-end RTPCR machines. It can test samples even on open fields.

- The same unit can be used for a large number of tests on replacement of the paper cartridge after each test.
- This means that other than COVID-19 testing, many other tests, falling under the category of isothermal nucleic acid-based tests (INAT), can be performed in the same machine
- For instance **it can perform tests beyond Covid-19, for influenza, malaria, dengue, Japanese encephalitis, TB etc, under the category of isothermal nucleic acid-based tests.**

COVIRAP & FELUDA:

- FELUDA, named after Satyajit Ray's fictional detective as an acronym for FNCAS9 Editor-Limited Uniform Detection Assay, is a test developed by the Institute of Genomics and Integrative Biology. This too detects genes specific to SARS-CoV-2, but uses CRISPR-CAS technology.
- With FELUDA, too, the need for technical expertise is minimal. While the current FELUDA prototype requires a PCR machine for processing, COVIRAP uses its own detection technology, patented by IIT-KGP.

Advantages of using COVIRAP:

- This innovation has made high-quality and accurate COVID testing affordable for the common people with a testing cost of around Rs 500 which can further be reduced through government intervention.
- This machine can be developed at a cost of less than Rs 10,000 with minimal infrastructural requirement making the technology affordable to common people.
- The testing process in this new machine is completed within one hour