

IIT Delhi launched low cost COVID-19 test kit

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New Delhi, Jul 15 (India Science Wire): According to World Health Organisation (WHO) testing is the key to combat novel coronavirus. With large population testing in large number is prohibitive in Indian conditions. Keeping this in mind a low-cost COVID-19 test kit developed by Indian Institute of Technology (IIT) Delhi has been launched. According to the researchers the current testing methods available are “probe-based”, while the one developed by them is a “probe-free” method, which reduces the testing cost even while the accuracy is not compromised.

Normal RT-PCR technology uses custom-synthesised probe that looks for a specific region of the particular viral RNA, in this case novel coronavirus. The primer and the probe bind to specific locations along the specific viral genome. When the PCR reactions takes place, the florescent signal indicate the presence or absence the novel coronavirus.

“Whenever there is an amplification of genetic material in a small tube that is the PCR part. It is usually detected by a florescent signal that signal usually comes from a florescent probe in almost all RT-PCR assays. For this product we are using a florescent dye as the signal, it is an old technology we have used” said Prof Vivekanandan Perumal, lead researcher, IIT Delhi while speaking with *India Science Wire*.

They compared the genome sequence of SARS COV-2 and other human coronaviruses. The researchers identified specific regions of the novel coronavirus genome that function like the fingerprint of the virus. These short stretches of genome are unique signature of the novel coronavirus. “These unique regions are not present in other human coronaviruses providing an opportunity to specifically detect COVID-19,” said Prof Perumal. Spike protein of novel coronavirus is unique and hence the researchers chose primers that could target the genome stretches on the spike proteins. “Primer sets, targeting unique regions in the spike protein of COVID-19, were designed and tested using real-time polymerase chain reaction” says Prof Perumal. With the elapse of six months several mutations have taken place and a number of variants of the virus have emerged. Wont they each differ? To ensure that their primer is able to capture the most conserved regions of the genome sequence, the researchers tested it with about 200 fully sequenced novel coronavirus genomes. As their assay uses only the primer and no probe is required, naturally the cost of the test was reduced drastically. They also ensured that their assay is robust and have the sensitivity of probe-based RT-PCR. “The sensitivity of this in-house assay is comparable to that of commercially available kits,” said Prof Perumal. The research team started working on the kit from the end of January.

The institute gave non-exclusive open licence to companies for commercialising the test, but with a price rider. “This should change the paradigm of COVID-19 testing in the country, both in terms of scale and cost. The product, approved by ICMR (Indian Council of Medical Research) and DCGI (Drug Controller General of India), is being launched now” said Dr V Ramgopal Rao, Director, IIT Delhi. “The company Newtech Medical Devices, using IIT Delhi technology, can do two million tests per month at an extremely affordable cost. This is a true example of lab to market,” said Rao.

While the institute had kept a price rider of Rs 500 per kit, the company Newtech Medical Devices, which is launching the kit named ‘corosure’ has not announced the price yet. Union Human

Resource Development (HRD) Minister Ramesh Pokhriyal 'Nishank and Minister of State for HRD Sanjay Dhotre launched the kit. (India Science Wire)

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