Concise Estimation for Detection of Coronavirus COVID19

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Abstract

The panic from the outbreak of the new coronavirus make the rapid and accurate detection of the virus a crucial issue. The growing increase in number of the infected people forced a global desire toward the rapid detection. The accurate detection can participate in saving the life of many people. The number of people with novel coronavirus disease 2019 (COVID-19) has risen above 75000 globally, over 99% of whom are in China, with more than 900 cases in 25 other countries as of Feb 20, 2020. Science, however, is stepping up to the challenge. Consider the example of Africa's efforts to scale up its capacity to detect any cases of infection [1,2].

Short Communication

Serology Rapid Tests

The common IgG/IgM test depend on antibodies detection. It is difficult to say that the rapid tests are accurate because COVID 19 share laboratory features with other viruses. So, the false positive results are expected to certain extent [3]. This represents a problem not only to the patients but also to the public health. However, the test is suitable for screening purposes in large gathering.

The Molecular Methods

PCR Amplification Technique

RT-PCR (Reverse Transcriptase PCR): RT-PCR is the golden test for the most laboratory diagnosis purposes. PCR depends on amplification of the DNA strand using polymerase enzyme. Since this test can amplify the small quantity of Nucleic acid it is considered the test of the high accuracy and high sensitivity for detection of the viral infection [4,5].

Real time RT-PCR: Real-time reverse transcriptase-PCR (RT-PCR) detection now is common for the detection of coronavirus because of its high specificity, simplicity and quantitative assay. Real-time RT-PCR is more sensitive than the conventional than RT-PCR

assay, and this show more help in the diagnose in early stages of the viral infection [6,7]. For these reasons a real time RT-PCR assay is a predominant method to be applied for the detection of all kinds of coronaviruses [8,9]. In spite of this advantages the real time is time consuming because of the need for careful handling and the chance of contamination. Another problem is the rapid mutating nature of the coronavirus . Utilization of the multiplex Real time PCR mad reduce the ration of false negative during detection of the new corona virus. Hadjinicolaou, et al. [10] develop a real time PCR test depending on detection of four genes and use an internal control and this can reduce the false negative problem.

Other Nucleic Acid Amplification Techniques

Isothermic Amplification Methods: LAMP test is isothermal amplification technic uses single tube for amplification of DNAs and RNAs. The test has high sensitivity and high specificity because of the exponential amplification feature and 6 different sequences can be identified by 4 different primers simultaneously, respectively [11]. Lower cost than PCR tests and rapidity of the test may make it as a good choise for detection coronavirus [12].

Rolling Circle Amplification-Based Methods: Anther isothermal amplification method is(RVA) . This is a time saving meth-

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od able to detect the target nucleic acid . The RCA is able to amplify the nucleic acid 109 -fold signal amplification of each circle within 90 min. It is an efficient test for detection of SARS-CoV . Only few reagents is required for carrying up RCA and false positive is rare in contrast to PCR method [13,14]. For RCA an antibody coated microplate as a signal enhancement strategy is an excellent biosensing platform. That cleverly avoided the using of complex instruments and offered a visual detection of the molecular binding events under an ordinary experiment conditions [15].

Microarray Based Methods: The microarray is a rapid and efficient method. cDNA labeled id produced from the RNA templet of the virus through reverse transcription. Then these labeled cDNAs will be loaded into each well and hybridize with solid phase oligonucleotides fixed on the microarray followed by a series of washing steps to remove free DNAs. Finally, the coronavirus RNA can be detected by the detection of specific probes. Due to its efficiency, the microarray assay is widely used for detection of coronavirus. Microarray requires instrument of high cost a [16].

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