

## The Lab Identified Methods and Clinical Application for Current Corona Virus Issue

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### Abstract

Currently Coronavirus infection is in epidemic and pandemic in the broad world, the infection is from the New Coronavirus 19, as other Coronaviruses, there are RNA viruses with an envelope and a linear single-stranded positive strand in their genome and three types of glycoproteins on the surface of the membrane. Coronavirus are a large class of viruses that exist widely in nature, related to many diseases of human and animals. Since the First International Coronavirus Symposium was held in Germany in 1980, it has received increasing attention in Medicine related.

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This year 2020, new coronavirus 19 infection disease (COVID 19) presented main in respiratory symptoms as fever, cough or shortness of breath, and there do not have effective therapy now. By classification for infection diseases, COVID 19 don't belong to any type, however, the infection in exposed broad transfection, on Jan 20, the National Health and Health Commission of China had issued Announcement No.1 and decided the new type of coronavirus into the legal management of Class B of infectious diseases, and take measures to prevent and control Class A infectious diseases. The mission of WHO's health Emergencies program have built up capacity of member states to manage the public health threats and health emergency risk according to area difference and requirement.

For the current issue, I have invited by the Press in United kingdom to write the analysis for the lab identification methods and clinical application, my response is positive for the fight in the world area [1].

### The lab identified methods

For identification virus infection, there have some methods, samples can work out from cell, tissue and serum in aim to isolate virus particle and evaluate virus protein and genome RNA expression. The lab methods I would analysis from virus imagine detect, and go to antigen serologic assays and molecular methods detect membrane protein till genome RNA expression; in the adverse direction, reconfirm the disease induced virus which need seed back virus to special tissue, all these methods when use in clinical application, we can identify

the virus infection among different patient, population or area epidemic in order that the management in controlling the virus epidemic and pandemic in the world.

### 1. Micrography imagine in the virus particle detection

Micrography imagine detecting virus particle is the direct method to identify the virus through it's form, shape and move character under micrography lens, as current Coronavirus particle under micrography, it likes a round shape with crowny spikes outside membrane, the movable is not much active; and the exam samples can prepare from cell, tissue or lung lavage specimens.

Except common or electron micrography with special histochemical staining, atomic force microscopy (AFM) is the method to see the inner structure of microorganism as virus, it is at high resolution technique for current development[2].

### 2. Virus serological assays in current infection issue

The serological assays use specific reaction of antigen and antibody to identify virus infection, through antigen reaction with provided virus antibody. The methods have neutralization experiment, erythrocyte agglutination experiments, enzyme-linked immunosorbent assay(ELISA), immunohistochemistry or radioimmunochemistry assays in the virus antigen detection[3, 4]. In the assays. neutralization test has strong specificity in the most classic methods for detecting viruses infection and identifying newly isolated virus strains, the assay can be performed on cell culture, chicken embryos or animal, and the main part in the method is from diluted antibody to mix a certain amount of virus to seed in cells, and then test the value for infectivity in cell culture at in vitro level, the method is common used in epidemiological study. For current COVID, since lack specific antibody for the new coronavirus 19, there is no special serological assays to use for identify coronavirus infection now, then with effort on the lab methods development, some virus serological assay will have required to work out.

### 3. WesternBlot in the virus membrane protein test

Western blot analysis is in molecular method to detect specific biological protein. For virus identify, the specific protein may from virus membrane protein or from inner collapsed released protein, the critical step to test the protein value which is to make the protein specific antibody firstly, then use the antibody to detect the protein through electric running device, and the detected protein can visualize in x-ray radio imagine. For current cononavirus issue, it has not made the special antibody for membrane protein test, so that the western blot is in limited used, however, westernblot methos is higher specific method as micrography imagine, once detectable, the virus proten was detected; the westernblot samples can prepare from cell, tissue, organ, or body fluid, also westernblot kit has commercial in market for many labotary exam.

### 4. Molecular genome RNA expression

Real Time PCR is to detect molecular genome RNA expression for virus infection; for current coronavirus infection, PCR analysis exam is used frequent at varied hospital and national area. Coronavirus is RNA genome virus, through reverse transcription-polymerase chain reaction enhanced technique to detect RNA expression and identify virus, the critical is to make viral prime or probe to induce RNA enhance expression till detectable in fluorescent device measurement or by advanced PCR technique as muyltiplexed PCR[4]. While molecular methods to directly detect the viral genetic material are available for the diagnosis of acute infection, so that with required combining with other lab exams and clinical presentation to diagnosis COVID 19. Now the US Centers for Disease Control and Prevention (CDC) has designed RT-PCR assays and published a protocol for the detection of the 2019-nCoV. IDT provides primers and probes for these CDC assays for the identification of virus.

### Clinical application

In order that determine the epidemic character and affect for virus infection, lab exam methods is in critical role to identify the virus's toxic, spread and clinical invasion type. Current coronavirus infection is outbreaking in pandemic as named the disease COVID 19, and the new cononavirus have easy stick to the cell at respiratory system to induce respiratory symptoms. Depending on the different situation of hospital and national area to manage coronavirus infection, there have required standard methods to identify the virus existence, no matter of using imagine method to catch virus, or using molecular method to detect virus genome mutation, the aim is for correct identify the diseases. For current issue, the coronavirus virus have mutation ratio in genome, it is required attention when using lab exam methods to detect the virus occurrence, the COVID 19 have brought highly ratio of morbidity and mortality in persons, the therapy is in the non effective choice with observation[5], however, the lab methods to identify the virus infection and character is more important to summery for guide clinical application.

### Conclusion

According to clinical observation, some people infected with the COVID-19 virus will experience mild to moderate respiratory illness and recover without requiring special treatment, since there's no specific treatment for COVID-19, the current aim is to relieve the symptoms until recover. Coronavirus has a very high recombination rate between RNA and RNA, and the virus mutates due to this high recombination rate, after recombination, the RNA sequence and protein composed of amino acids has changed accordingly and till antigenicity changed, so the original vaccine and immunity has in difficult to make vaccine incubation now.

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