

## Nucleic Acid Extraction for Covid-19 Virus by Kurabo

On March 4, 2020, the National Health Commission issued the <Diagnosis and treatment of pneumonitis

caused by Covid-19 Virus (trial edition 7)>, some changes have been made as below:

1. From “ Nucleic acid of Covid-19 virus can be detected in nasopharyngeal swabs, sputum and other lower respiratory tract secretions, blood, stool and other specimens” to “Nucleic acid of Covid-19 virus can be detected in nasopharyngeal swabs, sputum and other lower respiratory tract secretions, blood, stool and other specimens using RT-PCR or NGS”.
2. Addition of “More accurate detection can be obtained using lower respiratory tract specimens (sputum or airway extracts) ”
3. Deletion of “In order to ensure the accuracy of nucleic acid detection, it is recommended to take as much sputum as possible and perform tracheal intubation on patients to collect lower respiratory tract secretions”
4. Addition of “Evidence from serological tests shows that most of the Covid-19 specific IgM antibodies begin to show positive result 3-5 days after onset, and the recovery period of IgG antibody titers is 4 times higher than that of the acute phase.



Nucleic acid detection has played an important role as the key technology for the final diagnosis. But recently, how to improve the efficiency and accuracy of testing, how to reduce the likelihood of false negatives / false positives, and aerosol pollution have become an important problem that puzzles testing workers. Techcomp provides a series of complete solutions from nucleic acid extraction to sample detection --- safety guarantee, efficiency first.

### Frequently Asked Questions for Nucleic Acid Extraction:

As for the very first step of nucleic acid detection, whether the nucleic acid of the virus can be efficiently and securely extracted from the sample could be a crucial step for the entire nucleic acid detection. In most nucleic acid extraction processes, technical would face the following problems:

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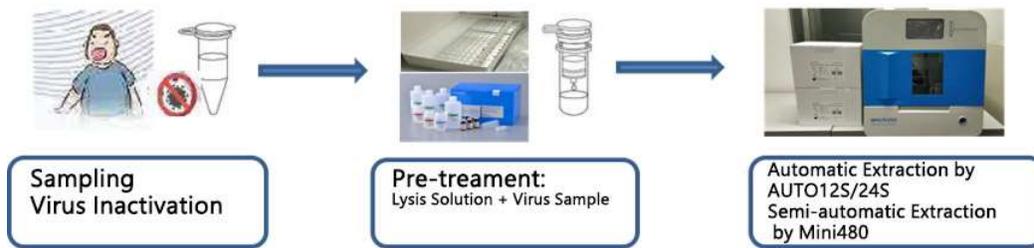
1. Insufficient samples: Insufficient sample loading volume of throat swabs, serum, plasma, etc., insufficient virus sample size (~200  $\mu$ L) could result false negative results;
2. tedious steps: The manual extraction process is complicated, requiring multiple steps of centrifugation, which increases the probability of cross-contamination and leads to false positive results;
3. The yield is not high: low virus enrichment efficiency and insufficient lysis, leading to false negative results caused by low yield of nucleic acid products;
4. Low purity: The extracted product is rich in residues of PCR inhibitors such as high concentration of salt and organic matter, and has low purity, which will inhibit the following quantitative PCR detection and produce false negative results;
5. Incomplete nucleic acid fragment: Excessive shearing force during the extraction process will break the original low level of viral nucleic acid, and the integrity of the viral nucleic acid is poor, which cannot be used as a false negative result caused by the subsequent fluorescent quantitative PCR template;
6. Magnetic bead residue and poor repeatability: The magnetic bead method automatic nucleic acid extraction instrument caused magnetic bead residue due to the decrease of the magnetic force of the magnetic rod, and the repeatability was poor (the viscosity of each sample was different), which led to false positive / false negative results of cross contamination.

KURABO solutions:

Nucleic acid extraction products from KURABO provide a series of complete solutions from nucleic acid extraction to sample detection.

KURABO has a history of more than 30 years. Its QuickGene series has a patented ultra-thin porous membrane technology, which has the advantages of high yield, complete fragments (175bp-97kb), high purity, and no need for centrifugation.

Two solutions are provided for the nucleic acid extraction of Covid-19: the semi-automatic extraction model Mini480 series (can be placed directly in the safety cabinet) and the fully-automatic extraction model Auto12S / 24S series:



### 1. Semi-automatic extraction model Mini480 series

Directly put in a safety cabinet for operation, without the need for tedious centrifugation steps, to protect the environment, samples, personnel and to prevent cross-contamination such as aerosol.



### 2. Automatic extraction model Auto12S / 24S series

The automatic extractor only needs samples addition (no need to manually add reagents), select the corresponding extraction program (with heating, UV disinfection functions), and press "Start" to easily obtain high yield, fragments Complete, pure nucleic acid.



Should you have any questions, please feel free to contact Techcomp Limited.