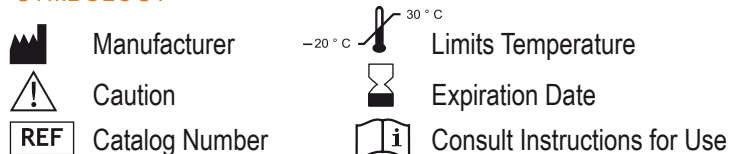


HumPCR™ SARS CoV-2 Detection Kit

SYMBOLOLOGY



1. DESCRIPTION

The SARS-CoV-2 is a new virus that belongs to the coronavirus family. It is formed by a positive single stranded RNA. It can cause acute respiratory disease and severe pneumonia in humans. The SARS-CoV-2 virus sequence shows similarities with the beta-coronaviruses found in bats, but they are genetically distinct from other coronaviruses such as SARS Co-V and MERS-CoV but they have similarities that can cause Severe Acute Respiratory Syndrome and even death. Today there are several reported sequences of this virus and our kits are designed to detect them all.

The HumPCR™ SARS CoV-2 Detection Kit is the direct detection of SARS CoV-2 on the basis of a genetic database, so it can diagnose very fast and accurately. It can amplify only specific gene using the PCR (Polymerase Chain Reaction) method, and take only 3 hours for detection. Therefore, it is a very fast, accurate, and reliable technique.

2. STORAGE

The HumPCR™ SARS CoV-2 Detection Kit is shipped at room temperature (15–25°C) because contains a chemical stabilizer. The HumPCR™ SARS CoV-2 Detection Kit should be stored immediately upon receipt at –20°C in a constant temperature freezer. For routine use should be stored at 4°C. When stored under these conditions and handled correctly, these products can be kept at least until the expiration date without showing any reduction in performance.

3. KIT CONTENTS

| KIT | 48 | 96 | |
|--------------------------------------|----|-----|------|
| HumPCR™ SARS CoV-2 RT-PCR Premixture | 1 | 1 | vial |
| HumPCR™ SARS CoV-2 PCR Premixture | 1 | 1 | vial |
| Brig™ RT-PCR solution | 1 | 1 | vial |
| Biotech™ Transcriptase solution | 1 | 1 | vial |
| DNase/Rnase free water | 1 | 1 | vial |
| SARS CoV-2 PCR Positive control | 1 | 1 | vial |
| PCR Negative control | 1 | 1 | vial |
| PCR Internal Control (white cap) | 1 | 1 | vial |
| Mineral Oil solution | 1 | 2 | vial |
| Brig™ Molecular Weight marker | 1 | 1 | vial |
| RNA purification Kit | 50 | 100 | test |

4. MATERIALS

Materials required but not provided:

- Microcentrifuge and PCR tubes, Disposable gloves powderless, Pipettes, Sterile pipette tip, Vortex mixer, Centrifuge for microcentrifuge tubes, Thermal cycler, Tube racks, Electrophoresis kit, UV transilluminator, Biohazard waste container.

5. PROCEDURE

Please read through the entire procedure before starting.

5.1 RNA PREPARATION

This kit includes all reagents necessary for purification of RNA from different samples. Carry out the RNA isolation according to the instructions available inside the kit, the instructions also can be downloaded of our website www.bioingentech.com. If you need an additional RNA Purification kit, use only the following kits that are standardized for the process: See Item

9. ADDITIONAL PRODUCTS.

Note: Completely thaw the components of the kit prior to use; homogenize the solutions for several seconds prior to pipetting.

5.2 PREPARATION OF SARS CoV-2 RT-PCR MIXTURE

1) Prepare the reaction mixture for sample by combining the reagents as shown in the table 1. The final reaction volume should be 10.5µl.

Notes:

- The mineral oil is necessary, even when using a thermal cycler that employs a top heating method.

Table 1. Reaction components for RT-PCR

| Kit components | Samples |
|--------------------------------------|---------|
| HumPCR™ SARS CoV-2 RT-PCR Premixture | 4.5µL |
| DNase/RNase free water | 4µl |
| RNA isolated from the sample | 2µl |
| Mineral Oil Solution | 11µl |

2) Place the tubes in a thermal cycler and perform RT-PCR according to the program outlined in Table 2.

Table 2. RT-PCR cycling parameters

| PCR cycle | | | Temp | Time |
|---|---------|----------------------|-------|---------|
| RT-PCR 1 | 1 cycle | Initial denaturation | 65 °C | 10 min. |
| | 1 cycle | Stop | 4 °C | 5 min. |
| Add 1.0 µl of Brig™ RT-PCR solution | | | | |
| Add 1.0 µl of Biotech™ Transcriptase solution | | | | |
| RT-PCR 2 | 1 cycle | Annealing | 25 °C | 10 min. |
| | 1 cycle | Extension | 37°C | 60 min. |
| | 1 cycle | Denaturation | 70 °C | 10 min. |

3) Prepare the reaction mixture for sample, positive control, negative control, and internal control by combining the reagents as shown in the table 3. The final reaction volume should be 13.5µl.

Notes:

- Run a positive control, a negative control, and an internal control each 12 samples.
- The mineral oil is necessary, even when using a thermal cycler that employs a top heating method.

Table 3. Reaction components for PCR

| KIT | Sample | Positive control | Negative control | Internal control |
|-----------------------------------|--------|------------------|------------------|------------------|
| HumPCR™ SARS CoV-2 PCR Premixture | 5.5 µl | 5.5 µl | 5.5 µl | |
| PCR Internal Control (white cap) | | | | 5.5 µl |
| DNase/Rnase free water | 6 µl | 6 µl | 6 µl | 6 µl |
| cDNA from the sample | 2 µl | | | 2 µl |
| SARS CoV-2 PCR Positive control | | 2 µl | | |
| PCR Negative control | | | 2 µl | |
| Mineral Oil solution | 11 µl | 11 µl | 11 µl | 11 µl |

4) Place the tubes in a thermal cycler and perform amplification according to the program outlined in Table 4.

Table 4. PCR cycling parameters

| PCR cycle | | Temp. | Time |
|-----------|----------------------|-------|---------|
| 1 cycle | Initial Denaturation | 94°C | 2 min. |
| 30 cycles | Denaturation | 94°C | 30 sec. |
| | Annealing | 57°C | 30 sec. |
| | Extension | 72°C | 30 sec. |
| 1 cycle | Final extension | 72°C | 5 min. |

5.3 DETECTION OF AMPLIFIED PRODUCTS

- 1) Prepare 1.5% agarose gel containing Ethidium bromide (Et-Br).
- 2) Load 7µl of PCR product, 7µl of positive control, 7µl of negative control, 7µl of internal control and 2µl of Brig™ Molecular Weight marker on agarose gel without adding a loading-dye buffer and perform electrophoresis.
- 3) Run electrophoresis by 100V (required about 30~40 minutes).
- 4) Identify the result on ultra-violet (UV) transilluminator.

5.4 INTERPRETATION OF THE TEST RESULTS

- Expected PCR product size: 226bp

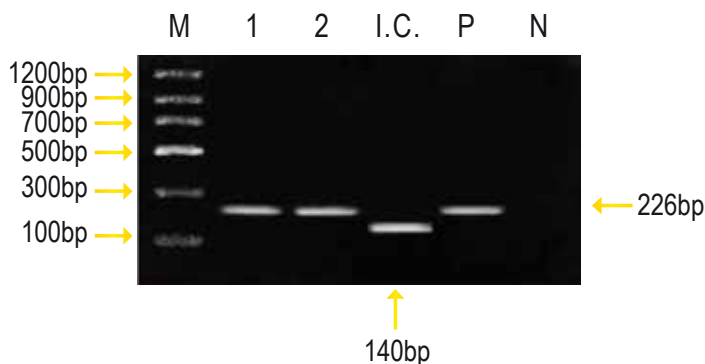


Fig. 1 Results:
 Lane M: Brig™ Molecular Weight Marker (Bioingentech Ltd.)
 Lane 1~2: SARS CoV-2 Positive samples
 Lane I.C.: Internal control
 Lane P: Positive control
 Lane N: Negative control

6. TROUBLESHOOTING

- 1.No band in positive control
 - Check Internal control band: If internal control band is seen, PCR has been performed properly.
 - Check PCR machine: check the temperature and make sure to check that the machine is working properly.
- 2.No internal control band
 - Check template cDNA concentration: Competition can occur by high template concentration. Proceed with a lower concentration of cDNA.
 - Check template RNA quality: Even tough RNA is isolated from the sample, the RT-PCR reaction can be inhibited depending on RNA purity in some cases. In this case, extracted RNA should be diluted 10 times with distilled water and used to run the RT-PCR reaction again. If still no band is seen, please inquire with our technical support staff.
- 3.Amplicon bands in the negative control
 - Check contamination of distilled water: Distilled water can be contaminated. Perform PCR again with fresh sterile water.
 - Check contamination of laboratory instruments and other environments: We recommend that you use filter tips and a pipette after sterilization to reduce contamination. Proceed with all procedures on a clean bench and keep the location where you procedures are performed sterile.
- 4.Poor resolution on agarose gel
 - We recommend using a 1.5~2% agarose gel and run electrophoresis for 40 minutes at 100 V.

7. TECHNICAL ASSISTANCE

At Bioingentech we pride ourselves on the quality and availability of our technical support. Our Technical Service Departments are staffed by experienced scientists with extensive practical and theoretical expertise in molecular biology and the use of Bioingentech products. If you have any questions or experience any difficulties regarding Bioingentech Genomic RNA Detection Kits or Bioingentech products in general, please do not hesitate to contact us.

8. SAFETY INFORMATION

When working with chemicals, always wear a suitable lab coat, disposable gloves, and protective goggles. For more information, please consult the appropriate material safety data sheets (MSDS), available online in our website, where you can find, view, and print the MSDS for each Bioingentech kit and kit component.

9. ADDITIONAL PRODUCTS

| Product | Product Code | Manufacturer |
|---|--------------|--------------|
| Bioingentech™ Genomic RNA Purification Kit (50 test) | PU-A004 | Bioingentech |
| Bioingentech™ Genomic RNA Purification Kit (100 test) | PU-A005 | Bioingentech |

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 All prices and specifications are subject to change without prior notice.
 Product claims are subject to change. Please contact Bioingentech technical services or access the Bioingentech online catalog for the most up-to-date information on Bioingentech products.