



**SCREEN TEST COVID-19 RBD-IGG**  
**(Whole Blood/Serum/Plasma)**  
**Package Insert**

REF: SC-1415-20 English

A rapid test for the qualitative detection of IgG antibodies to SARS-CoV-2 S-RBD and/or Nucleocapsid protein in human whole blood, serum or plasma specimen.  
For professional in vitro diagnostic use only.

**INTENDED USE**

The COVID-19 IgG Rapid Test (Whole Blood/Serum/Plasma) is a lateral flow chromatographic immunoassay for the qualitative detection of IgG antibodies to SARS-CoV-2 spike (S) protein receptor binding domain (RBD) and/or Nucleocapsid protein in human whole blood, serum or plasma specimen. The COVID-19 IgG Rapid Test (Whole Blood/Serum/Plasma) is intended for use as an aid in identifying individuals with an adaptive immune response to SARS-CoV-2.  
False positive results may occur due to cross-reactivity from pre-existing antibodies or other possible causes. Due to the risk of false positive results, confirmation of positive results should be considered using second, different IgG assay.

**SUMMARY**

The novel coronaviruses belong to the  $\beta$  genus. COVID-19 is an acute respiratory infectious disease. People are generally susceptible. Currently, the patients infected by the novel coronavirus are the main source of infection; asymptomatic infected people can also be an infectious source. Based on the current epidemiological investigation, the incubation period is 1 to 14 days, mostly 3 to 7 days. The main manifestations include fever, fatigue and dry cough. Nasal congestion, runny nose, sore throat, myalgia and diarrhea are found in a few cases.

**PRINCIPLE**

The COVID-19 IgG Rapid Test (Whole Blood/Serum/Plasma) is a qualitative membrane-based immunoassay for the detection of IgG antibodies to SARS-CoV-2 in whole blood, serum or plasma specimen. Anti-human IgG is coated in test line region. During testing, the specimen reacts with SARS-CoV-2 antigen-coated particles in the test. The mixture then migrates upward on the membrane chromatographically by capillary action and reacts with the anti-human IgG in test line region. If the specimen contains IgG antibodies to SARS-CoV-2, a colored line will appear in test line region as a result of this. If the specimen does not contain IgG antibodies to SARS-CoV-2, no colored line will appear in the test line region, indicating a negative result. To serve as a procedural control, a colored line will always appear in the control line region, indicating that the proper volume of specimen has been added and membrane wicking has occurred.

**REAGENTS**

The test contains anti-human IgG as the capture reagent, SARS-CoV-2 antigen as the detection reagent. A goat anti-mouse IgG is employed in the control line system.

**PRECAUTIONS**

- This package insert must be read completely before performing the test. Failure to follow directions in insert may yield inaccurate test results.
- For professional in vitro diagnostic use only. Do not use after expiration date.
- Do not eat, drink or smoke in the area where the specimens or kits are handled.
- Do not use test if pouch is damaged.
- Handle all specimens as if they contain infectious agents. Observe established precautions against microbiological hazards throughout all procedures and follow the standard procedures for proper disposal of specimens.
- Wear protective clothing such as laboratory coats, disposable gloves and eye protection when specimens are assayed.

- Please ensure that an appropriate amount of samples are used for testing. Too much or too little sample size may lead to deviation of results.
- The used test should be discarded according to local regulations.
- Humidity and temperature can adversely affect results.

**STORAGE AND STABILITY**

Store as packaged in the sealed pouch at room temperature or refrigerated (2-30°C). The test is stable through the expiration date printed on the sealed pouch. The test must remain in the sealed pouch until use. **DO NOT FREEZE**. Do not use beyond the expiration date.

**SPECIMEN COLLECTION AND PREPARATION**

- The COVID-19 IgG Rapid Test (Whole Blood/Serum/Plasma) can be performed using whole blood (from venipuncture or fingerstick), serum or plasma.
- Separate serum or plasma from blood as soon as possible to avoid hemolysis. Use only clear non-hemolyzed specimens.
- Testing should be performed immediately after the specimens have been collected. Do not leave the specimens at room temperature for prolonged periods. Serum and plasma specimens may be stored at 2-8°C for up to 7 days, for long term storage, serum/plasma specimens should be kept below -20°C. Whole blood collected by venipuncture should be stored at 2-8°C if the test is to be run within 2 days of collection. Do not freeze whole blood specimens. Whole blood collected by fingerstick should be tested immediately.
- Bring specimens to room temperature prior to testing. Frozen specimens must be completely thawed and mixed well prior to testing. Specimens should not be frozen and thawed repeatedly.
- If specimens are to be shipped, they should be packed in compliance with local regulations covering the transportation of etiological agents.
- EDTA K2, Heparin sodium, Citrate sodium and Potassium Oxalate can be used as the anticoagulant for collecting the specimen.

**MATERIALS**

- |                  |                   |                |            |
|------------------|-------------------|----------------|------------|
| • Tests          | • Package insert  | • Buffer       | • Droppers |
| • Procedure Card | • Sterile lancets | • Alcohol pads |            |
- Materials required but not provided**
- |                                  |              |
|----------------------------------|--------------|
| • Specimen collection containers | • Centrifuge |
| • Capillary tubes                | • Timer      |
| • Pipette                        |              |

**DIRECTIONS FOR USE**

**Allow the test, specimen, buffer and/or controls to reach room temperature (15-30°C) prior to testing**

- Remove the test from the foil pouch and use it within one hour. Best results will be obtained if the test is performed immediately after opening the foil pouch.
- Place the test on a clean and level surface.
- Add Specimen and Buffer to the test cassette and read results according to illustrations below.

**Note:** When adding specimen and buffer, add them to specific well only.

**For Venous Whole Blood Specimen, Serum or Plasma Specimen.**

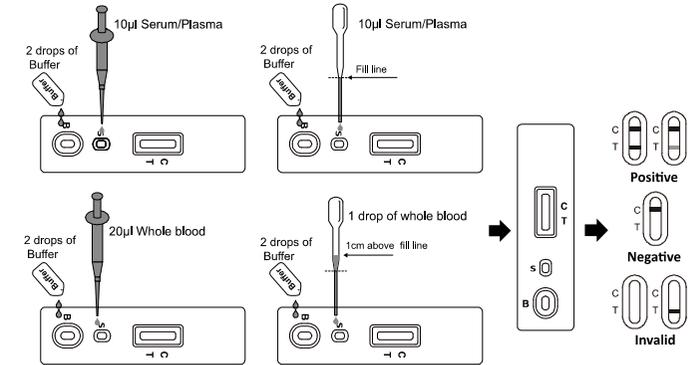
**For Serum or Plasma specimen:**

- Use a dropper: Hold the dropper vertically, draw the specimen to the **fill line** (approximately 10 $\mu$ L), and transfer the specimen to the **Specimen well (S)**, then add **2 drops of buffer** (approximately 80 $\mu$ L) to **Buffer well (B)**, and start the timer.
- To use a pipette: To transfer **10  $\mu$ L** of specimen to the **Specimen well(S)**, then add **2 drops of buffer** (approximately 80 $\mu$ L) to **Buffer well (B)**, and start the timer.

For **Venous Whole Blood** specimen:

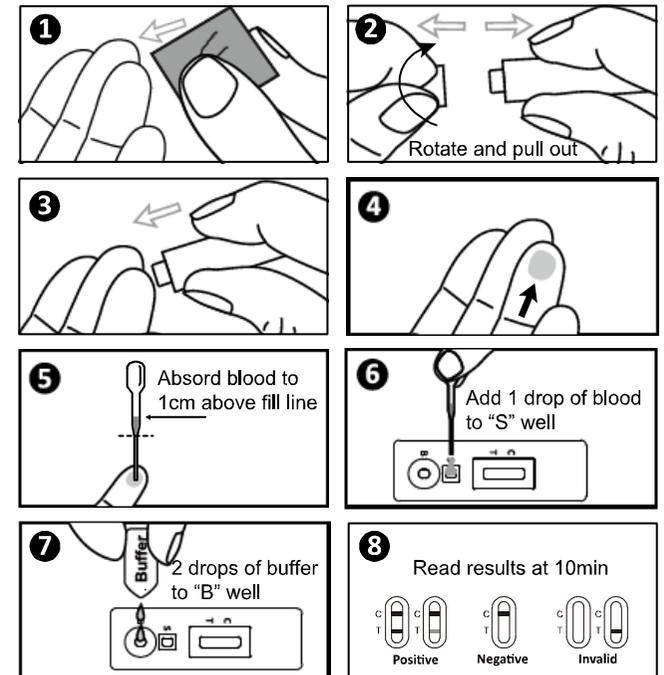
- Use a dropper: Hold the dropper vertically, draw the specimen about **1 cm above the fill line** and transfer **1 full drop** (approx. 20 $\mu$ L) of specimen to the **Specimen well (S)**. Then add **2 drops of buffer** (approximately 80 $\mu$ L) to **Buffer well (B)** and start the timer.

- Use a pipette: To transfer **20  $\mu$ L** of whole blood to the **Specimen well (S)**, then add **2 drops of buffer** (approximately 80 $\mu$ L) to **Buffer well (B)**, and start the timer.
- Wait for the colored line(s) to appear. **Read results at 10 minutes**. Do not interpret the result after 20 minutes.



**For Fingerstick Whole Blood**

- Use alcohol pad to clean the fingertip of the middle finger or ring finger as the puncture site.
- Carefully rotate and pull off the lancet cap.
- Push the sterile lancet firmly into the fingertip of the middle finger.
- Wipe off the first drop of blood. To increase blood flow, use the thumb and forefinger to gently apply pressure around the puncture site.
- Hold the dropper vertically, draw the blood to **1cm above the fill line** and transfer **1 full drop of blood** (approximately 20 $\mu$ L) to the **specimen well (S)**, then add **2 drops of buffer** (approximately 80  $\mu$ L) to the **buffer well (B)**, and start the timer.
- Wait for the colored line(s) to appear. **Read results at 10 minutes**. Do not interpret the result after 20 minutes.



## INTERPRETATION OF RESULTS

**POSITIVE:** \* Two colored lines appear. One colored line should always appear in the control line region (C) and another line should be in the test line region (T).

\*NOTE: The intensity of the color in the test line region may vary depending on the concentration of IgG antibodies to SARS-CoV-2 present in the specimen. Therefore, any shade of color in the test line region should be considered positive.

**NEGATIVE:** One colored line appears in the control line region (C). No line appears in the test region.

**INVALID:** Control line fails to appear. Insufficient specimen volume or incorrect procedural techniques are the most likely reasons for control line failure. Review the procedure and repeat the test with a new test. If the problem persists, discontinue using the test kit immediately and contact your local distributor.

## QUALITY CONTROL

Internal procedural controls are included in the test. A colored line appearing in the control region (C) is an internal procedural control. It confirms sufficient specimen volume and correct procedural technique. Control standards are not supplied with this kit; however, it is recommended that positive and negative controls be tested as a good laboratory practice to confirm the test procedure and to verify proper test performance<sup>1</sup>.

## LIMITATIONS

- The test Procedure and the Interpretation of test Result must be followed closely when testing for the presence of SARS-CoV-2 virus specific antibodies in the serum, plasma or whole blood specimen from individual subjects. For optimal test performance, proper sample collection is critical. Failure to follow the procedure may give inaccurate results.
- The COVID-19 IgG Rapid Test (Whole Blood/Serum/Plasma) is for *in vitro* diagnostic use only. This test should be used for detection of IgG antibody to SARS-CoV-2 in whole blood, serum or plasma specimens. Neither the quantitative value nor the rate of increase in the concentration of IgG antibodies to SARS-CoV-2 can be determined by this qualitative test.
- The COVID-19 IgG Rapid Test (Whole Blood/Serum/Plasma) will only indicate the presence of IgG antibodies to SARS-CoV-2 in the specimen.
- The results obtained with the test should be considered with other clinical findings from other laboratory tests and evaluations.
- The hematocrit level of the whole blood can affect the test results. Hematocrit level needs to be between 25% and 65% for accurate results.
- The test will show negative results under the following conditions: The titer of the novel coronavirus antibodies in the sample is lower than the minimum detection limit of the test, or the virus has undergone minor amino acid mutation(s) in the epitope recognized by the antibody utilized in the test, or the novel coronavirus antibody has not appeared at the time of sample collection. It is recommended to re-sample the patient a few days later and test again.
- The continued presence or absence of antibodies cannot be used to determine the success or failure of therapy.
- Results from immunosuppressed patients should be interpreted with caution.
- Positive results may be due to past or present infection with non-SARS-CoV-2 coronavirus strains or other interference factors.
- Not for the screening of donated blood.

## PERFORMANCE CHARACTERISTICS

### Sensitivity and Specificity

The COVID-19 IgG Rapid Test (Whole Blood/Serum/Plasma) was compared with RT-PCR/CLIA result; the results were tabulated as below.

Clinical study for immune response to SARS-CoV-2 infection:

Method	RT-PCR			Total Results
	Results	Positive	Negative	
	COVID-19 IgG Rapid Test	Positive	153	
	Negative	6	189	195
Total Results		159	191	350

Relative Sensitivity: 96.2% (95%CI\*: 92.0%-98.6%) \* Confidence Interval

Relative Specificity: 99.0% (95%CI\*: 96.3%-99.9%)

Accuracy: 97.7% (95%CI\*: 95.6%-99.0%)

Clinical study for immune response to vaccination:

Method	CLIA		Total Results	
	Positive	Negative		
	COVID-19 IgG Rapid Test	Positive		22
	Negative	1	25	26
Total Results		23	25	48

Relative Sensitivity: 95.7% (95%CI\*: 78.1%-99.9%) \* Confidence Interval

Relative Specificity: 100% (95%CI\*: 86.3%-100%)

Accuracy: 97.9% (95%CI\*: 88.9%-99.9%)

## PRECISION

### Intra-Assay

Within-run precision has been determined by using 3 replicates of two specimens: a negative, a IgG positive. The negative, IgG positive values were correctly identified >99% of the time.

### Inter-Assay

Between-run precision has been determined by 3 independent assays on the same two specimens: a negative, a IgG positive. Three different lots of the COVID-19 IgG Rapid Test (Whole Blood/Serum/Plasma) have been tested over a 3-days period using negative, IgG positive specimens. The specimens were correctly identified >99% of the time.

### Cross-reactivity

The COVID-19 IgG Rapid Test (Whole Blood/Serum/Plasma) has been tested for anti-influenza A virus, anti-influenza B virus, anti-RSV, anti-Adenovirus, Anti-Measles, HAMA, RF, non-specific IgG, non-specific IgM, anti-EV71, anti-Parainfluenza virus, HBsAg, anti-Syphilis, anti-H.Pylori, anti-HIV and anti-HCV positive specimens. The results showed no cross-reactivity.

### Interfering Substances

The following compounds have been tested using the COVID-19 IgG Rapid Test (Whole Blood/Serum/Plasma) and no interference was observed.

Triglyceride: 100 mg/dL    Ascorbic Acid: 20mg/dL    Hemoglobin: 1000mg/dL  
Bilirubin: 60mg/dL    Total cholesterol: 15mmol/L

## BIBLIOGRAPHY

- Westgard JO, Barry PL, Hunt MR, Groth T. A multi-rule Shewhart for quality control in clinical chemistry, Clinical Chemistry 1981;27:493-501

## INDEX OF SYMBOLS

	For in vitro Diagnostic use only		Test per kit		Catalog #
	Store between 2-30°C		Use by		Do not reuse
	Do not use if package is damaged		Lot Number		Authorized Representative
	Manufacturer		Consult Instruction For Use		

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