

Instructions for use

Prodct name: SARS-CoV-2 antigen IVD kit SWAB

Manufacturer: Shenzhen Reagent Technology Co.,Ltd.

The COVID-19 Antigen test is intended for use by healthcare professionals or trained operators who are familiar with performing rapid antigen tests.

This kit is a qualitative test and is only for in vitro auxiliary diagnosis.

INTENDED USE

The SARS-CoV-2 Antigen IVD Kit SWAB is an in vitro diagnostic rapid test for the qualitative detection of novel coronavirus nucleocapsid antigens in human nasopharyngeal, oropharyngeal swab and nasal swab samples using an immunochromatographic method.

Positive test results suggest the presence of viral antigens, but further clinical evaluation is needed to determine infection status. Bacterial infection or co-infection with other viruses can also produce positive results.

Negative test results do not completely rule out COVID-19 and should be considered in the context of the presence of clinical signs and symptoms.

The test must be carried out by medical professionals.

SUMMARY

COVID-19 is an acute respiratory infectious disease caused by the novel coronavirus SARS-CoV-2. The novel coronavirus SARS-CoV-2 belongs to the β genus, which is an enveloped, non-segmented RNA virus. Currently, the patients infected with the novel coronavirus are the main source of infection, but asymptomatic infected people can also be a source of infection. Based on current epidemiological studies, the incubation period is 1 to 14 days, in most cases 3 to 7 days. The main manifestations are fever, loss of smell and taste, malaise and fatigue, and dry cough. In some cases, there is a runny nose, shortness of breath, muscle pain, and diarrhea.

PRINCIPLE

SARS-CoV-2 Antigen IVD Kit SWAB is an immunochromatographic membrane assay that uses highly sensitive monoclonal antibodies to qualitatively determine the presence of nucleocapsid protein (N-Protein) antigen from SARS-CoV-2 in direct nasopharyngeal swab. When the sample is dropped into the sample well, SARS-CoV-2 antigens in the sample are bound by colloidal gold-labeled monoclonal antibodies against the nucleocapsid protein of SARS-CoV-2. This complex migrates on the membrane via capillary action to the test region (T), where it is captured by the mouse monoclonal anti-SARS-CoV-2. If the SARS-CoV-2 antigens are present in the sample, a colored test line becomes visible in the T line. To serve as a procedural control, a colored line always appears in the control region (C), if the test has performed properly.

REAGENTS

The reagent membrane contains the colloidal-gold conjugated with the monoclonal antibodies against Novel coronavirus; the reaction membrane contains the secondary antibodies for Novel coronavirus, and the polyclonal antibodies against the mouse globulin, which are pre- immobilized on the membrane.

PRECAUTIONS

- For in vitro diagnostic use only.
- Do not use after the expiration date.
- Ensure foil pouch containing test device is not damaged before opening for use.
- Perform test at room temperature 15 to 30°C.
- Wear gloves when hanging the samples, avoid touching the reagent membrane and sample window.
- All samples and used accessories should be treated as infectious and discarded according to local regulations.
- Avoid using bloody samples.

STORAGE AND STABILITY

Store The SARS-CoV-2 antigen IVD kit SWAB at room temperature or refrigerated (4-30°C). Do not freeze. All reagents are stable until the expiration dates marked on their outer packaging and buffer vial.

SPECIMEN COLLECTION AND PREPARATION

1. Specimen collection:

The swab sample should be collected using the collection tools provided with the kit. Follow the instructions detailed below. No other collection tool should be used with this test. The swab collected at any time of the day can be used.

2. Specimen preparation:

When the swab sample is collected, follow the direction to prepare the specimen with buffer provided with the kit.

COMPONENTS

•SARS-Cov-2 Test Card •Sterile Swab •Sample Extraction Tube •Instruction for use

DIRECTIONS FOR USE

Allow the test device, specimen, sample extraction buffer to equilibrate to room temperature (15- 30°C) prior to testing. Do not place anything in the mouth including food, drink, gum, tobacco, water and mouth cleaning products for at least 10 minutes prior to collection of oropharyngeal swab.

Nasopharyngeal Swab Specimen Collection :

- 1.Remove the swab from the package.
- 2.Tilt patient's head back about 70°.
- 3.Insert the swab through the nostril parallel to the palate(not upwards) until resistance is encountered or the distance is equivalent to that from the ear to the nostril of the patient, indicating contact with the nasopharynx. (Swab should reach depth equal to distance from nostrils to outer opening of the ear.) Gently rub and roll the swab. Leave swab in place for several seconds to absorb secretions.



4.Slowly remove swab while rotating it. Specimens can be collected from both sides using the same swab, but it is not necessary to collect specimens from both sides if the tip of swab is saturated with fluid from the first collection. If a deviated septum or blockage creates difficulty in obtaining the specimen from one nostril, use the same swab to obtain the specimen from the other nostril.

Nasal Swab Specimen Collection :



1.While gently rotating the swab, insert swab about 2.5 cm(1 inch) into nostril until resistance is met at turbinates.



2.Rotate the swab several times against nasal wall and repeat in other nostril using the same swab.

Oropharyngeal Swab Specimen Collection :



Insert swab into the posterior pharynx and tonsillar areas. Rub swab over both tonsillar pillars and posterior oropharynx and avoid touching the tongue, teeth, and gums.

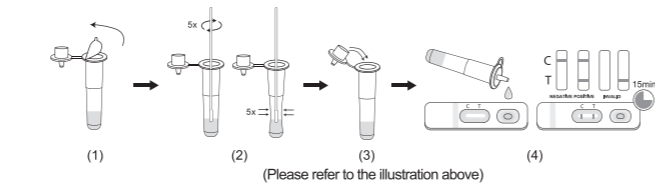
Specimen Transport and Storage :

Do not return the swab to the original swab packaging. Freshly collected specimens should be processed as soon as possible, but no later than one hour after specimen collection. Specimen collected may be stored at 2-8 °C for no more than 24 hours; Store at 70 °C for a long time, but avoid repeated freeze-thaw cycles.

Testing Procedure :

- 1.Peel off the aluminum foil seal from a sample extraction tube.
- 2.Immerse the sampled swab into the sample extraction tube to make the sample extraction buffer completely penetrate the swab, rotate and squeeze the swab 5 times, take out and discard the swab.
- 3.Insert the tube cap firmly on the sample extraction tube.Gently shake the extraction tube for about 5 seconds to make sure sample mix well with extraction buffer.
- 4.Transfer 2-3 drops of mixed sample into the test card vertically, start the timer. Read the result at 15 minutes. Don't interpret the result after 20 minutes.

**Read the result at 15 minutes. Result after 20 mins will not be valid.



POSITIVE: Two red lines appear. One red line appears in the control region(C), and one red line in the test region(T). The shade of color may vary, but it should be considered positive whenever there is even a faint line.

NEGATIVE: Only one red line appears in the control region(C), and no line in the test region(T). The negative result indicates that there are no Novel coronavirus particles in the sample or the number of viral particles is below the detectable range.

INVALID: No red line appears in the control region(C). The test is invalid even if there is a line on test region(T). Insufficient sample volume or incorrect procedural techniques are the most likely reasons for control line failure. Review the test procedure and repeat the test using a new test device. If the problem persists, discontinue using the test kit immediately and contact your local distributor.

LIMITATIONS

•The SARS-CoV-2 antigen IVD kit SWAB is an acute-phase screening test for qualitative detection. Sample collected may contain antigen concentration below the reagent's sensitivity threshold, so a negative test result does not exclude infection with novel coronavirus.

•The Novel Coronavirus SARS-CoV-2 antigen IVD kit SWAB detects viable and non-viable novel coronavirus antigen. Test performance depends on antigen load in the sample and may not correlate with cell culture performed on the same sample. A positive test does not rule out the possibility that other pathogens may be present, therefore, the results must be compared with all other available clinical and laboratory information to make an accurate diagnosis.

•A negative test result may occur if the level of extracted antigen in a specimen is below the sensitivity of the test or if poor quality specimen is obtained.Performance of the test has not been established for monitoring antiviral treatment of novel coronavirus.

•Positive test results do not rule out co-infections with other pathogens.

•Negative test results are not intended to rule in other coronavirus infection except the SARS- Cov-2.

•Children tend to shed virus for longer periods of time than adults, which may result in differences in sensitivity between adults and children List.

•A negative result may occur if the concentration of antigen in a specimen is below the detection limit of the test or if the specimen was collected or transported improperly, therefore a negative test result does not eliminate the possibility of SARS-Cov-2 infection, and should be confirmed by viral culture or PCR.

PERFORMANCE CHARACTERISTICS

Clinical Evaluation

Under in the test sample, there are 105 positive and 155 negative confirmed by RT-PCR A clinical evaluation was carried out to compare the results obtained from Novel Coronavirus, SARS-CoV-2 Antigen IVD Kit SWAB and PCR. The results have been summarized below:

Table: SARS CoV-2 antigen IVD kit SWAB vs PCR

Method	COVID-19 Nucleic Acid Test Kit (RT-PCR)		Total Results
	Positive	Negative	
The SARS-CoV-2 antigen IVD kit SWAB	100	2	102
Nasopharyngeal	5	153	158
Total Results	105	155	260

Clinical sensitivity = 100/105= 95.23 % (95%CI:85.56%-98.28%)

Clinical specificity =152/155=98.71% (95%CI:86.75%-99.42%)

Accuracy: (100+153)/(100+2+5+153) *100%=97.31%

Method	COVID-19 Nucleic Acid Test Kit (RT-PCR)		Total Results
	Positive	Negative	
The SARS-CoV-2 antigen IVD kit SWAB	101	3	104
Oropharyngeal	4	152	156
Total Results	105	155	260

Clinical sensitivity = 101/105= 96.19 % (95%CI:85.25%-98.46%)

Clinical specificity =152/155=98.06% (95%CI:85.32%-99.65%)

Accuracy: (101+152)/(101+3+4+152) *100%=97.31%

Limit of detection (LoD)

COVID-19 Strain Tested	REAGEN				
Unit	TCID ₅₀ /mL				
Concentration	5.0X10 ²	4.0X10 ²	3.0X 10 ²	2.0X10 ²	1.0 X 10 ²
Call rates of 20 replicates near cut-off	100(20/20)	100(20/20)	100(20/20)	100(20/20)	25(5/20)
Limit of detection (LoD) per Virus Strain	2.0 X 10 ² TCID ₅₀ /mL				

Cross Reaction

The test results are below the corresponding concentration of the substances in the table below, which has no effect on the negative and positive test results of this reagent, and there is no cross-reaction.

Species	Name of pathogen	Concentration
	Coronavirus HKU1	1.0 x 10 ⁶ copies/mL
	Coronavirus OC43	1.0 x 10 ⁶ copies/mL
	Coronavirus 229E	1.0 x 10 ⁶ copies/mL
Coronavirus	Coronavirus NL63	1.0 x 10 ⁶ copies/mL
	Type 1	1.0 x 10 ⁶ copies/mL
Adenovirus	Type 2	1.0 x 10 ⁶ copies/mL
	Type 3	1.0 x 10 ⁶ copies/mL
	Type 4	1.0 x 10 ⁶ copies/mL
	Type 5	1.0 x 10 ⁶ copies/mL
	Type 7	1.0 x 10 ⁶ copies/mL
	Type 55	1.0 x 10 ⁶ copies/mL
	Influenza A	Novel Influenza A (H1N1) Virus
H5N1		1.0 x 10 ⁶ copies/mL
H3N2		1.0 x 10 ⁶ copies/mL
H7N9		1.0 x 10 ⁶ copies/mL
Seasonal H1N1 influenza virus		1.0 x 10 ⁶ copies/mL
Influenza B	Yamagata	1.0 x 10 ⁶ copies/mL
	Victoria	1.0 x 10 ⁶ copies/mL
Respiratory virus	Parainfluenza virus type 1	1.0 x 10 ⁶ copies/mL
	Parainfluenza virus type 2	1.0 x 10 ⁶ copies/mL
	Parainfluenza virus type 3	1.0 x 10 ⁶ copies/mL
Pneumonia virus	Respiratory syncytial virus type A	1.0 x 10 ⁶ copies/mL
	Respiratory syncytial virus type B	1.0 x 10 ⁶ copies/mL
Rhinovirus	Rhinovirus A	1.0 x 10 ⁶ copies/mL
	Rhinovirus B	1.0 x 10 ⁶ copies/mL
	Rhinovirus C	1.0 x 10 ⁶ copies/mL
Metapneumovirus	Human metapneumovirus	1.0 x 10 ⁶ copies/mL
Enterovirus	Enterovirus A	1.0 x 10 ⁶ copies/mL
	Enterovirus B	1.0 x 10 ⁶ copies/mL
	Enterovirus C	1.0 x 10 ⁶ copies/mL
	Enterovirus D	1.0 x 10 ⁶ copies/mL
Lymphophilic viruses	EB virus	1.0 x 10 ⁶ copies/mL
Measles virus	Measles virus	1.0 x 10 ⁶ copies/mL
Cytomegalovirus	Human cytomegalovirus	1.0 x 10 ⁶ copies/mL

Rotavirus	Rotavirus	1.0 x 10 ⁶ copies/mL
Norovirus	Norovirus	1.0 x 10 ⁶ copies/mL
Mumps virus	Mumps virus	1.0 x 10 ⁶ copies/mL
Herpes virus	Herpes zoster virus	1.0 x 10 ⁶ copies/mL
Mycoplasma	Mycoplasma pneumoniae	1.0 x 10 ⁶ CFU/mL

Interfering Substances Reaction

When tested using the SARS-CoV-2 antigen IVD kit SWAB, there was no interference between the device reagents and the Potential interference substances listed in below table that would create.

false positive or negative results for SARS- Cov-2 antigen.

Substance	Concentration	Substance	Concentration
Mucin	120mg/dL	Azithromycin	2mg/mL
Human Blood	20% (v/v)	Tobramycin	1.2mg/mL
Phenylephrine	4mg/mL	Histamine	10 mg/mL
		Dihydrochloride	
Oxymetazoline	4mg/mL	Lopinavir	1000mg/mL
Sodium Chloride	40mg/mL	Ritonavir	120mg/mL
Beclomethasone	40mg/mL	Arbidol	1400ng/mL
Dexamethasone	40mg/mL	Ceftriaxone	80µg/mL
Flunisolide	40µg/mL	Meropenem	400mg/mL
Triamcinolone Acetonide	4mg/mL	Peramivir	2mg/mL
Budesonide	4mg/mL	Interferon-α	1600IU/mL
Mometasone	4mg/mL	Ribavirin	20mg/mL
Fluticasone	4mg/mL	Oseltamivir	120ng/mL
Zanamivir	40mg/mL	Levofloxacin	20µg/mL

SIMBOLO

Symbol	Meaning	Symbol	Meaning
	In vitro diagnostic medical device		Storage temperature limit
	Manufacturer		Authorized representative in the European Community
	Date of Manufacture		Use by date
	Do not reuse		Consult instruction for use
	Batch code		Meet the requirements of EC Directive 98/79/EC



Shenzhen Reagent Technology Co., Ltd.
R7777, Hangcheng Wisdom Science Park,
Hangcheng street,Bao'an District,Shenzhen
518128,China.



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