ExactSign®

COVID-19+Flu A&B+RSV Antigen Combo Rapid Test Cassette (Nasopharyngeal swab) Package Insert

REF IRCF-MC84 English

A rapid test for the qualitative detection of SARS-CoV-2 Antigen, Flu A&B Antigen, Respiratory Syncytial Virus (RSV) antigen in Nasopharyngeal swab.
For professional in vitro diagnostic use only.

【INTENDED USE】

The COVID-19+Flu A&B+RSV Antigen Combo Rapid Test Cassette (Nasopharyngeal swab) is a rapid chromatographic immunoassay for the qualitative detection of SARS-CoV-2, Influenza A&B, RSV Antigen in Nasopharyngeal swab. It is intended to aid in the rapid differential diagnosis of COVID-19, Influenza A and B, RSV infections.

【SUMMARY】

The novel coronaviruses belong to the β 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.

The COVID-19 Antigen Rapid Test is qualitatively detecting the presence of coronavirus COVID-19 antigen in Nasopharyngeal swab, providing results within 10 minutes. The test uses antibodies specific for coronavirus COVID-19 to selectively detect Nucleocapsid(N)protein of SARS-CoV-2 in Nasopharyngeal swab.

Influenza (commonly known as 'flu') is a highly contagious, acute viral infection of the respiratory tract. It is a communicable disease easily transmitted through the coughing and sneezing of aerosolized droplets containing live virus. Influenza outbreaks occur each year during the fall and winter months. Type A viruses are typically more prevalent than type B viruses and are associated with most serious influenza epidemics, while type B infections are usually milder.

The gold standard of laboratory diagnosis is 14-day cell culture with one of a variety of cell lines that can support the growth of influenza virus. Cell culture has limited clinical utility, as results are obtained too late in the clinical course for effective patient intervention. Reverse Transcriptase Polymerase Chain Reaction (RT-PCR) is a newer method that is generally more sensitive than culture with improved detection rates over culture of 2-23%. However, RT-PCR is expensive, complex and must be performed in specialized laboratories.

Human respiratory syncytial virus (HRSV) is a syncytial virus that causes respiratory tract infections. It is a major cause of lower respiratory tract infections and hospital visits during infancy and childhood. A prophylactic medication, palivizumab, can be employed to prevent HRSV in preterm (under 35 weeks gestation) infants, infants with certain congenital heart defects (CHD) or bronchopulmonary dysplasia (BPD), and infants with congenital malformations of the airway. Treatment is limited to supportive care (e.g., C-PAP), including oxygen therapy. In temperate climates there is an annual epidemic during the winter months. In tropical climates, infection is most common during the rainy season.

The COVID-19+Flu A&B+RSV Antigen Combo Rapid Test Cassette (Nasopharyngeal swab) is a rapid test to qualitatively detect the presence of SARS-CoV-2, Influenza A&B, RSV Antigen in Nasopharyngeal swab.

【PRINCIPLE】

The COVID-19+Flu A&B+RSV Antigen Combo Rapid Test Cassette (Nasopharyngeal swab) is a qualitative, lateral flow immunoassay for the detection of the RSV antigen, N protein of SARS-CoV-2, Influenza A and Influenza B nucleoproteins in Nasopharyngeal swab.

In this test, antibody specific to the Respiratory Syncytial Virus, antibody specific to the N protein of SARS-CoV-2,antibody specific to the Influenza A and Influenza B nucleoproteins are separately coated on the test line regions of the test cassette. During testing, the extracted specimen reacts with the antibody to N protein of antibody specific to the Respiratory Syncytial Virus, SARS-CoV-2, Influenza A and/or Influenza B nucleoproteins, that are coated onto particles. The mixture migrates up the membrane to react with the antibody specific to the Respiratory Syncytial Virus, antibody to N protein of SARS-CoV-2, Influenza A and/or Influenza B nucleoproteins on the membrane and generate one colored line in the test regions. The presence of this colored line of the test regions indicates a positive result. To serve as a procedural control, a colored line will always appear in the control region if the test has performed properly.

【REAGENTS】

The test cassette contains anti-Respiratory Syncytial Virus particles, anti-SARS-CoV-2 Nucleocapsid protein particles, anti-Influenza A&B virus particles and anti-Respiratory Syncytial Virus, anti-SARS-CoV-2 Nucleocapsid protein, anti- Influenza A & B Virus coated on the membrane.

【PRECAUTIONS】

Please read all the information in this package insert before performing the test.

1. For professional in vitro diagnostic use only. Do not use after the expiration date.
2. The test should remain in the sealed pouch until ready to use.
3. All specimens should be considered potentially hazardous and handled in the same manner as an infection agent.
4. The used test should be discarded according to the local regulations.
5. Avoid using bloody samples.
6. Wear gloves when handling the samples, avoid touching the reagent membrane and sample well.

【STORAGE AND STABILITY】

Store as packaged at room temperature or refrigerated (2-30℃). 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.

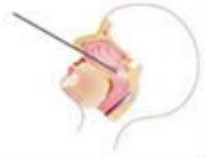
【SPECIMEN COLLECTION AND PREPARATION】

●Nasopharyngeal swab

Insert 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. 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 swab is saturated with fluid from the first collection. If a deviated septum or blockage create difficulty in obtaining the specimen from one nostril, use the same swab to obtain the specimen from the other nostril.

Do not return the Nasopharyngeal swab to the original paper packaging.

- For best performance, direct Nasopharyngeal swabs should be tested as soon as possible after collection.



【MATERIALS】

Materials provided

Test cassettes	Extraction Buffer Tubes	Sterile Swabs
Positive Control Swab	Negative Control Swab	Package Insert
Workstation		

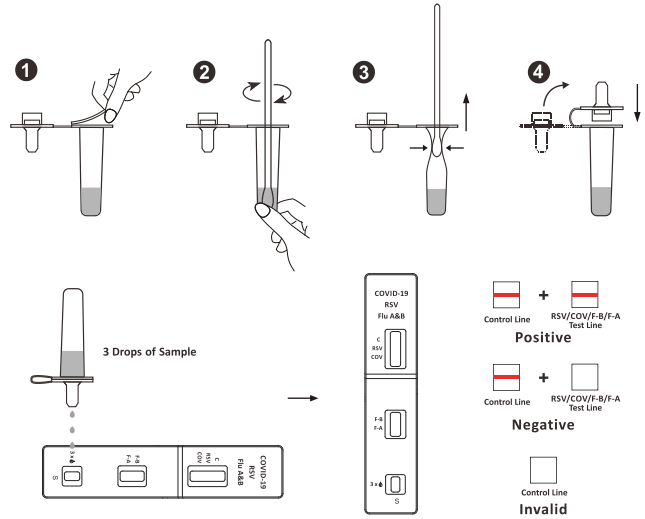
Materials required but not provided

Timer

【DIRECTIONS FOR USE】

Allow the test, specimen, extraction buffer to equilibrate to room temperature (15-30℃) prior to testing.

1. Remove the test cassette from the sealed foil pouch and use it within one hour. Best results will be obtained if the assay is performed immediately after opening the foil pouch.
2. Tear the aluminum foil on the extraction buffer tube. See illustration 1.
3. Place the swab specimen in the extraction buffer tube. Rotate the swab for approximately 10 seconds while pressing the head against the inside of the extraction buffer tube body to release the antigen in the swab. See illustration 2.
4. Remove the swab while squeezing the swab head against the inside of the individual tube as you remove it to expel as much liquid as possible from the swab. See illustration 3.
5. Fit the dropper tip on top of the extraction buffer tube. Place the test cassette on a clean and flat surface. Do not move the test cassette during the test. See illustration 4.
6. Hold the tube vertically and transfer 3 drops of the sample solution (approx.150μL) to the sample well and then start the timer. Read the result at 10 minutes. Do not interpret the result after 20 minutes.
7. Please dispose off the swab, extraction buffer tube and test cassette in the disposal bag provided inside the test kit package. Wash your hand after the test.



【INTERPRETATION OF RESULTS】

(Please refer to the illustration above)

POSITIVE: * A colored line appears in the Control region (C) and colored line(s) appears in the Test region (T (RSV, COV and F-B,F-A). A positive result in the RSV T region indicates that RSV was detected in the specimen, a positive result in the COV T region indicates that SARS-CoV-2 was detected in the specimen, a positive result in the F-B region indicates that Influenza B antigen was detected in the specimen, a positive result in the F-A region indicates that Influenza A antigen was detected in the specimen.

***NOTE:** The shade of the colored line(s) in the Test region(T (RSV, COV and F-B,F-A) may vary. The result should be considered positive whenever there is even a faint line.

NEGATIVE: One colored line appears in the control line region (C). No line appears in the test line region (T (RSV, COV and F-B,F-A). A negative result indicates that RSV, COVID-19, Influenza A&B are not present in the specimen, or is present below the detectable level of the test.

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 QUALITY CONTROL:

A procedural control is included in the test. A colored line appearing in the control line region (C) is considered an internal procedural control. It confirms adequate membrane wicking.

EXTERNAL QUALITY CONTROL: It is recommended that positive external controls be run every kit, and as deemed necessary by your internal laboratory procedures. External positive controls are supplied in the kit. Alternatively, other RSV, SARS-CoV-2, FLU A&B reference strains may be used as external controls. Some commercial controls may contain interfering preservatives; therefore, other commercial controls are not recommended.

PROCEDURE FOR EXTERNAL QUALITY CONTROL TESTING:

1. Tear the aluminum foil on the extraction buffer tube. See illustration 1.
2. Place the swab specimen in the extraction buffer tube. Rotate the swab for approximately 10 seconds while pressing the head against the inside of the extraction buffer tube body to release the antigen in the swab. See illustration 2.
3. Remove the swab while squeezing the swab head against the inside of the individual tube as you remove it to expel as much liquid as possible from the swab. See illustration 3.
4. Fit the dropper tip on top of the extraction buffer tube. Place the test cassette on a clean and flat surface. Do not move the test cassette during the test. See illustration 4.
5. Hold the tube vertically and transfer 3 drops of the sample solution (approx.150μL) to the sample well and then start the timer. Read the result at 10 minutes. Do not interpret the result after 20 minutes.
6. Please dispose off the swab, extraction buffer tube and test cassette in the disposal bag provided inside the test kit package. Wash your hand after the test.

【LIMITATIONS】

1. The COVID-19+Flu A&B+RSV Antigen Combo Rapid Test Cassette

(Nasopharyngeal swab) is for professional in vitro diagnostic use only. The test should be used for the detection of RSV, SARS-CoV-2, Influenza A&B Antigen Nasopharyngeal swab. Neither the quantitative value nor the rate of increase in SARS-CoV-2 virus, Influenza A&B virus, Respiratory Syncytial Virus concentration can be determined by this qualitative test.

2. The accuracy of the test depends on the quality of the swab sample. False negatives may result from improper sample collection or storage.
3. The COVID-19+Flu A&B+RSV Antigen Combo Rapid Test Cassette (Nasopharyngeal swab) will only indicate the presence of SARS-CoV-2, Influenza A&B, RSV in the specimen from both viable and non-viable SARS-CoV-2 coronavirus, Influenza A and B strains Respiratory Syncytial Virus.
4. As with all diagnostic tests, all results must be interpreted together with other clinical information available to the physician.
5. A negative result obtained from this kit should be confirmed by PCR. A negative result may be obtained if the concentration of the SARS-CoV-2, Influenza A&B virus, Respiratory Syncytial Virus present in the swab is not adequate or is below the detectable level of the test.
6. Excess blood or mucus on the swab specimen may interfere with test performance and may yield a false positive result.
7. Positive result for COVID-19, Influenza A, Influenza B, Respiratory Syncytial Virus do not preclude an underlying co-infection with another pathogen, therefore the possibility of an underlying bacterial infection should be considered.
8. Negative results do not rule out SARS-CoV-2, Influenza A, Influenza B infection, RSV particularly in those who have been in contact with the virus. Follow-up testing with a molecular diagnostic should be considered to rule out infection in these individuals.
9. The use of over-the-counter and prescription nasal sprays at high concentrations can interfere with results, leading to either invalid or incorrect test results.
10. COVID-19 positive results may be due to current infection with acute non-SARS-CoV-2 coronavirus strains, such as coronavirus HKU1, NL63, OC43 or 229E.
11. Results from antigen testing should not be used as the sole basis to diagnose or exclude SARS-CoV-2, Influenza A &B, RSV infection or to inform infection status.
12. Extraction reagent has the ability to kill the virus, but it cannot inactivate 100% of the virus. The method of inactivating the virus can be referred to: what method is recommended by WHO/CDC, or it can be handled according to local regulations.

【PERFORMANCE CHARACTERISTICS】

Sensitivity, Specificity and Accuracy

The COVID-19+Flu A&B+RSV Antigen Combo Rapid Test Cassette (Nasopharyngeal swab) has been evaluated with specimens obtained from the patients. PCR is used as the reference method for the COVID-19+Flu A&B+RSV Antigen Combo Rapid Test Cassette (Nasopharyngeal swab). Specimens were considered positive if PCR indicated a positive result.

COVID-19+Flu A&B+RSV Antigen Combo Rapid Test Cassette	RSV			COVID-19		
	PCR		Total	PCR		Total
	Positive	Negative		Positive	Negative	
Positive	71	3	74	80	1	81
Negative	4	448	452	3	442	445
Total	75	451	526	83	443	526
Relative Sensitivity	94.7%(95%CI*:86.9%~98.5%)			96.4%(95%CI*:89.8%~99.2%)		
Relative Specificity	99.3%(95%CI*:98.1%~99.9%)			99.8%(95%CI*:98.7%~100.0%)		
Accuracy	98.7%(95%CI*:97.3%~99.5%)			99.2%(95%CI*:98.1%~99.8%)		
COVID-19+Flu A&B+ RSV Antigen Combo Rapid Test Cassette	FLU B			FLU A		
	PCR		Total	PCR		Total
	Positive	Negative		Positive	Negative	
Positive	53	8	61	101	5	106
Negative	3	462	465	6	414	420
Total	56	470	526	107	419	526
Relative Sensitivity	94.6%(95%CI*:85.1%~98.9%)			94.4%(95%CI*:88.2%~97.9%)		
Relative Specificity	98.3%(95%CI*:96.7%~99.3%)			98.8%(95%CI*:97.2%~99.6%)		
Accuracy	97.9%(95%CI*:96.3%~99.0%)			97.9%(95%CI*:96.3%~99.0%)		

Detection Limit of RSV

The minimum detection limit of RSV Antigen Rapid Test is as follows:

Subtype	VP/mL
A2	$1.12X10^2$ $TCID_{50}$/mL
B WV/14617/85	$3.67 X 10^4$ PFU/mL
18537	32 PFU/mL

Detection Limit of COVID-19

The LOD for the COVID-19 Antigen Rapid Test (Nasopharyngeal swab) was established using limiting dilutions of a viral sample inactivated. The material (ZeptoMetrix, 0810587CFHI) was supplied at a concentration of 1.15×10^7 $TCID_{50}$/mL. The Estimated LOD is 1000 $TCID_{50}$/mL.

Detection Limit of Human Influenza Strain

Strain	Concentration of LOD
A/Mal/302/54	5×10^4 $CEID_{50}$/mL
A/NWS/33	7.4×10^4 $CEID_{50}$/mL
A/Hong Kong/8/68	1.6×10^4 $CEID_{50}$/mL
A/Aichi/2/68	2.3×10^4 $CEID_{50}$/mL
A/Port Chalmers/1/73	2.5×10^5 $CEID_{50}$/mL
A/New Jersey/8/76	8.9×10^4 $CEID_{50}$/mL
A/WS/33	1.6×10^4 $CEID_{50}$/mL
A/Anhui/1/2013	95ng HA/mL
Hong Kong/2671/2019	64ng HA/mL
Guangdong-Maonan/SWL1536/2019	770ng HA/mL
Influenza Antigen A/mallard/Netherlands/12/2000 (H7N3)	1.55μg HA/mL
Influenza Antigen A/Cambodia/RO405050/2007 (H5N1)	930ng HA/mL
B/Lee/40	1.6×10^4 $CEID_{50}$/mL
B/Brigit	1.6×10^5 $CEID_{50}$/mL
B/R5	1.6×10^3 $CEID_{50}$/mL
R/Russia/69	8.9×10^3 $CEID_{50}$/mL
B/Hong Kong/5/72	8.9×10^4 $CEID_{50}$/mL
Influenza B Virus B/Wisconsin/1/2010	2.8×10^3 $CEID_{50}$/mL
Influenza B Virus B/Florida/78/2015	7.8×10^3 $TCID_{50}$/mL
Phuket/3073/2013	0.6μg HA/mL
Washington/02/2019	0.76μg/mL

Cross Reactivity

The COVID-19 Antigen Rapid Test (Nasopharyngeal swab) has been tested for Influenza A virus, Influenza B virus, Adenovirus, Coxsackie virus, Parainfluenza Virus Type1, Parainfluenza Virus Type2, Parainfluenza Virus Type3, Parainfluenza Virus Type4a, Enterovirus, Mumps virus, Respiratory syncytial virus, Rhinovirus, Bordetella pertussis, Haemophilus parainfluenzae, Staphylococcus aureus, Streptococcus agalactiae, Neisseria meningitides, Streptococcus sp. group A, Streptococcus sp. group B, Streptococcus sp. group C, Candida albicans, Human Metapneumovirus (hMPV), Legionella pneumophila, Mycobacterium tuberculosis, Mycoplasma pneumoniae, Pneumocystis jirovecii(PJP)-S cerevisiae Recombinant, Pseudomonas aeruginosa, Staphylococcus epidermis, Streptococcus pneumoniae, Streptococcus pyogenes, Streptococcus salivarius, Human coronavirus 229E, Human coronavirus OC43, Human coronavirus NL63, MERS-coronavirus positive specimens.The results showed no cross reactivity.

The FLU A&B Antigen Rapid Test (Nasopharyngeal swab) has been tested for Adenovirus, Coxsackie virus, Cytomegalovirus, Parainfluenza Virus Type1,2,3,4a, Enterovirus, Mumps virus, Respiratory syncytial virus, Rhinovirus, Bordetella pertussis, Haemophilusparainfluenzae, Staphylococcus aureus, Streptococcus agalactiae, Neisseria meningitides, Streptococcus sp. group A, B, C. The results showed no cross reactivity.

The RSV Antigen Rapid Test (Nasopharyngeal swab) has been tested for Adenovirus, Coxsackie virus, Cytomegalovirus, Parainfluenza Virus Type1,2,3,4a, Enterovirus, Mumps virus, Influenza A virus, Influenza B virus, Rhinovirus, Bordetella pertussis, Haemophilusparainfluenzae, Staphylococcus aureus, Streptococcus agalactiae, Neisseria meningitides, Streptococcus sp. group A, B, C. The results showed no cross reactivity.

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Index of Symbols

	Consult Instruction for use	Σ	Tests per kit	EC REP	Authorized Representative
IVD	For in vitro diagnostic use only		Use by		Do not reuse
2°C 30°C	Store between 2-30°C	LOT	Lot Number	REF	Catalog #
	Do not use if package is damaged				

Manufacturer
Hangzhou Biotest Biotech Co., Ltd.
17#, Futai Road, Zhongtai Street,
Yuhang District, Hangzhou, P. R. China

CE

EC REP
Shanghai International
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20537 Hamburg, Germany