COVID-19 RAPID SALIVA ANTIGEN

CE-IVD TEST

REF
V2103S001

CE
IVD

VISION Biotechnology Ltd.

Merdivenköy Dis. Dikyol Sk. No:10 Business Istanbul B block Floor 6, offices 58-59-60

Kadıköy, İstanbul 34732 Turkey

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COVID-19 SALIVA ANTIGEN RAPID CE-IVD TEST

User Manual

REF : V2103S001

Antigen Lateral Flow Assay Kit

This manual must be read attentively and completely before using this product.

If you have any problems, please contact our Technical Service Center for help.

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Kadıköy, İstanbul 34732 Turkey

Context

1. Intended Use 4
2. Product Description 4
3. Kit Content 6
4. Specimen Collection, Handling, And Storage 7
4. 1 Collecting The Specimen 7
5. Procedure 11
6. Results 13
7. Disclaimer and use limitations 16
8. Sensivity and Specifity 17
9. Quality Control 18

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Kadıköy, İstanbul 34732 Turkey

INTENT OF USE

The Vision COVID-19 Saliva Antigen Rapid Test is a lateral flow immunoassay intended to detect protein antigen from the SARS-CoV-2 virus that causes COVID-19 in sputum or posterior oropharyngeal saliva from individuals age 2 years and older symptomatic individuals who are suspected of COVID-19 by a healthcare provider, or individuals with or without symptoms or other epidemiological reasons to suspect COVID-19 infection. Persons who test positive with the Vision COVID-19 Antigen Rapid Test should seek to follow up care with their physician or healthcare provider as additional testing and public health reporting may be necessary. Positive results do not rule out a bacterial infection or co-infection with other viruses. Persons who test negative and continue to experience COVID-19 like symptoms of fever, cough and/or shortness of breath may still have SARS-CoV-2 infection and should seek to follow up care with their physician or healthcare provider. All test results shall be reported to healthcare providers and relevant public health authorities by local, state, and nation requirements. The Vision COVID-19 Saliva Antigen Rapid Test is intended for professional-use or, as applicable for a medically trained user testing another person in a non-laboratory setting and, as applicable for healthcare provider testing of another person in laboratories certified to perform moderate or high complexity tests and as applicable, Point of Care (POC) testing at patient care settings.

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Kadıköy, İstanbul 34732 Turkey

SUMMARY AND EXPLANATION

The novel coronaviruses belong to the β genus. SARS-CoV-2, also known as the COVID-19 virus, 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 diarrhoea are found in a few cases.

PRINCIPLE OF THE TEST

The detection of SARS-COV-2 adopts the principle of double antibody sandwich method and colloidal gold immunochromatography to qualitatively detect SARS-COV-2 antibodies in human sputum, posterior oropharyngeal saliva, bronchoalveolar lavage fluid, etc., with two highly specific and highly sensitive SARS-COV-2 N antigen monoclonal antibodies, wherein monoclonal antibody I is a capture antibody, fixed in the detection area on the NC membrane, monoclonal antibody II is a colloidal gold-labelled antibody, sprayed on the binding pad, and the NC membrane quality control area C is coated with rabbit anti-mouse IgG antibody. The double antibody sandwich method is used in the detection area, and the antigen-antibody reaction is used in the quality.

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control area, combined with colloidal gold immunochromatography technology to detect the SARS-COV-2 in the human body. During detection, the sample is chromatographed under the capillary effect. If the tested sample contains SARS-COV-2, the gold-labelled SARS-COV-2 N antigen monoclonal antibody I combines with SARS-COV-2 to form a complex, and combines with the anti-human IgG antibody fixed at the detection line during the chromatography process, which will form the "Au-antibody I-N antigen-antibody II" sandwich, so that a purple band appears in the detection area (T); Otherwise, no magenta bands appear in the detection area (T). Regardless of whether there is a SARS-COV-2 antibody in the sample, the complex will continue to be chromatographed up to the control area (C), and a purple band appears when reacting with the rabbit anti-mouse IgG antibody. The purple-red band presented in the control area (C) is a standard for judging whether the chromatographic process is normal, and also serves as an internal control standard for reagents. Please note that if applicable, an in-silico analysis against available reference protein sequences for different strains of the target pathogen is requested as part of the cross-reactivity evaluation (Section J)

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MATERIALS	COVID-19 AG SALIVA TEST SP	COVID-19 AG SALIVA TEST BULK
Tests Cassettes *Individually foil pouch packed	1	25
Extraction Vials with Tap *Filled with extraction reagent	1	25
Extraction Reagents	1 (400µL)	25 (400µL)
Saliva Collectors	1	25
Cap with Dropper function	1	25
Package Insert	1	1

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MATERIALS NOT SUPPLIED IN KIT

Timer or watch

Note: External Negative and Positive Controls are not supplied with this kit. However, external positive and negative controls should be tested by good laboratory practice to confirm the test procedure and to verify proper test performance. Additional testing may be required according to guidelines or local, state, and/or national regulations or accrediting organizations. The SARS-COV-2 Ag External Control Kit can be purchased separately. Please contact Vision Biotechnology or your distributor for information on purchasing these controls.

WARNINGS AND PRECAUTIONS

Section I

■ Please read the instruction manual carefully before use. It requires professionally trained inspectors to operate, and strictly follow the kit instructions for test operations.

■ This product is a one-time use in vitro diagnostic product, please use it within the validity period.

■ Do not use the aluminium foil bag if it is damaged. Do not open the sealed foil pouch before use and use it as soon as possible after opening the aluminium foil bag.

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■ The temperature has a greater influence on the test results. The high temperature of the experimental environment should be avoided. The test kit which was stored at low temperature needs to be restored to room temperature before opening to prevent moisture absorption.

Section II

■ Clinical performance was evaluated with frozen samples, and test performance may be different from fresh samples. Do not use repeatedly freeze-thaw samples. Specimen stability recommendations are based upon stability data from influenza testing and performance may be different from SARS-CoV-2. Users should test specimens as quickly as possible after specimen collection, and within one hour after specimen collection, if not please follow the “specimen collection and preparation” section.

■ The contents of this kit are to be used for the qualitative detection of COVID-19 Antigens from sputum or posterior oropharyngeal saliva specimens only

■ Please use the extraction reagent solution provided in this kit when sampling. Do not mix test cassettes and extraction reagent solutions from different batches.

■ It indicates an error if no line appears in the quality control area (C) and test area (T). Please retest.

■This device has been evaluated for use with human specimen material only.

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Section III

■ The performance of this test has been evaluated for use in patients with signs and symptoms of respiratory infection only, performance may differ in asymptomatic individuals.
■ Positive and negative predictive values are highly dependent on prevalence rates. Positive test results are more likely to represent false-positive results during periods of little/no SARS-CoV-2 activity when disease prevalence is low. False-negative test results are more likely when the prevalence of disease caused by SARS-CoV-2 is high.
■ The sensitivity of the test after the first five days of the onset of symptoms has been demonstrated to decrease as compared to an RT-PCR SARS-CoV-2 assay.
■ Results from the COVID-19 Antigen Rapid Test should be correlated with the clinical history, epidemiological data, and other data available to the clinician evaluating the patient.
■ A false-negative test result may occur if the level of viral antigen in a sample is below the detection limit of the test or if the sample was collected or transported improperly; therefore, a negative test result does not eliminate the possibility of SARS-CoV-2 infection.
■ The negative test result should be treated as presumptive and confirmed with an approved molecular assay, if necessary, for clinical management, including infection control. If the test result is negative and there are clinical symptoms, it is recommended using other clinical methods for

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testing.
■ The validity of the COVID-19 Antigen Rapid Test has not been proven for identification/confirmation of tissue culture isolates and should not be used in this capacity.
■ Negative test results are not intended to rule in other non-SARS-CoV-2 viral or bacterial infections.
■ Monoclonal antibodies may fail to detect or detect with less sensitivity, SARS-CoV-2 viruses that have undergone minor amino acid changes in the target epitope region.negative test result does not eliminate the possibility of SARS-CoV-2 infection.
■ The negative test result should be treated as presumptive and confirmed with an approved molecular assay, if necessary, for clinical management, including infection control. If the test result is negative and there are clinical symptoms, it is recommended using other clinical methods for testing.
■ The validity of the COVID-19 Antigen Rapid Test has not been proven for identification/confirmation of tissue culture isolates and should not be used in this capacity.
■ Negative test results are not intended to rule in other non-SARS-CoV-2 viral or bacterial infections.
■ Monoclonal antibodies may fail to detect or detect with less sensitivity, SARS-CoV-2 viruses that have undergone minor amino acid changes in the target epitope region.

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TEST PROCEDURE

(Please refer to the guide illustration)

Specimen collection and preparation

1. Posterior oropharyngeal saliva: Perform hand hygiene with soap and water-alcohol-based hand rub. Install the saliva collector into the extraction vial. Make a"Kruuua" noise from the throat to clear the saliva from deepthroa, then spit saliva into the extraction vial till the300µL fill line, if the volume of saliva is too much, use the dropper to remove the excess saliva to make it reaches the 300 µL fill line on the extraction vial. Avoid any saliva contamination of the outer surface of the container. Optimal timing of specimen collection: After getting up and before brushing teeth, eating or drinking.

Specimen extraction

2. Remove the saliva collector. Unscrew the lid of an extraction reagent to open, add all of the extraction reagent (approximately 400 µL) into the assembled extraction vial.

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3. Close the vial with the cap and push firmly onto the vial. Shake the extraction vial for 5 seconds, wait one minute to let the sample dissolve in the extraction reagent as much as possible.

Detection operations

Note! Before testing, the unopened reagents and specimens should be placed at room temperature (15~30°C) to make the temperature of the reagents reach equilibrium.

4. Tear the sealed foil pouch along the incision and take the test kit flat on a clean and dry table.

5. Reverse the specimen extraction vial, holding the vial upright, drop 4 drops (approximately 100 µL) slowly into the "S" well and start timing.

6. Observe the results showed within 10-15 minutes, and the results are shown after 15 minutes have no clinical significance for quantitative testing.

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Interpretation of results

■ **Positive (+)**: Two red lines appear. One is in the test area (T) and the other is in the quality control area (C).

***Note:** The colour intensity in the test region will vary depending on the amount of SARS-CoV-2 nucleocapsid protein antigen present in the sample. Any faint coloured line(s) in the test region(s) should be considered as positive.

■ **Negative (-):** Only a red line appears in the quality control area (C), and no line appears in the test area (T).

■ **Invalid:** No red line displays in the quality control area (C). This indicates that the incorrect operation or the test cassette has deteriorated or damaged.

LIMITATIONS

The Vision COVID-19 Antigen Rapid Test is designed for the primary test of COVID-19 Antigen and only provided for use by clinical laboratories or to healthcare workers for point-of-care testing, and not for at-home testing.

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PERFORMANCE CHARACTERISTICS

■

To evaluate diagnostic performance, COVID-19 positive samples from 300 people and COVID-19 negative samples from 300 people were introduced into this study.

Method		PCR		Total Results
farmagen Clinical Research Center	Results	Positive	Negative	
	Positive	296	1	297
	Negative	4	299	303
Total Result		300	300	600

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Sensitivity = 98.67% (95% CI = 96.62% to 99.64%)

Specificity = 99.67% (95% CI = 98.16% to 99.99%)

Accuracy = 99.17% (95% CI = 98.07% to 99.73%)

■ Detection limit

LOD studies determine the lowest detectable concentration of SARS-CoV-2 at which around 95% of all (genuinely positive) replicates test positive. Heat-inactivated SARS-CoV-2 virus with an initial concentration of 1.15x107 TCID50/ml (tissue culture infection dose of 50%) was transferred to negative samples and serially diluted. Each dilution was tested in triplicate with the Vision COVID-19 Saliva Antigen Rapid Test. The detection limit of the coronavirus antigen rapid test is $5.75x10^2$ TCID50/ml.

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Concentration (TCID50/ml)	Number Positive / overall	Positive accordance
5.75x102	200/200	100%

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■ Hook effect

In the investigation with heat-inactivated SARSCoV-2 virus, no Hook effect was found up to a concentration of 4.6x105TCID /ml.

■ Cross-reactivity

The following organisms were examined for cross-reactivity

Samples that tested positive for the following organisms were found negative when tested with the Vision COVID-19 Saliva Antigen Rapid Test:

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Potential Cross-Reactant	Concentration
Respiratory Syncytial Virus Type A	5,5 x 10^7 PFU/ml
Respiratory Syncytial Virus Type B	2,8 x 10^5 TCID50/ml
Novel Influenza AH1N1 Virus 2019	1 x 10^6 PFU/ml
Seasonal influenza A H1N1	1 x 10^5 PFU/ml
Influenza A H3N2	1 x 10^6 PFU/ml
Influenza A H5N1	1 x 10^6 PFU/ml
Influenza B Yamagata	1 x 10^5 PFU/ml
Influenza B Victoria	1 x 10^6 PFU/ml
Rhinovirus	1 x 10^6 PFU/ml
Adenovirus 3	5 x $10^{7,5}$ TCID50/ml
Adenovirus 7	2,8 x 10^6 TCID50/ml
EV-A71	1 x 10^5 PFU/ml
Mycobacterium tuberculosis	1 x 10^3 Bacteria/ml
Mumps virus	1 x 10^5 PFU/ml
Human coronavirus 229E	1 x 10^5 PFU/ml
Human coronavirus OC43	1 x 10^5 PFU/ml
Human coronavirus NL63	1 x 10^6 PFU/ml
Human coronavirus HKU1	1 x 10^6 PFU/ml

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Parainfluenza virus 1	7,3 x 10^6 PFU/ml
Parainfluenza virus 2	1 x 10^6 PFU/ml
Parainfluenza virus 3	5,8 x 10^6 PFU/ml
Parainfluenza virus 4	2,6 x 10^6 PFU/ml
Haemophilus influenzae	5,2 x 10^6 CFU/ml
Streptococcus pyogenes	3,6 x 10^6 CFU/ml
Streptococcus pneumoniae	4,2 x 10^6 CFU/ml
Candida albicans	1 x 10^7 CFU/ml
Bordetella pertussis	1 x 10^4 Bacteria/ml
Mycoplasma pneumoniae	1,2 x 10^6 CFU/ml
Chlamydia pneumoniae	2,3 x 10^6 IFU/ml
Legionella pneumophila	1 x 10^4 Bacteria/ml

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■ Interfering Substances

The following substances, which occur naturally in respiratory samples or which can be artificially introduced into the nasal cavity or the nasopharynx, were examined with the coronavirus antigen rapid cassette test in the concentrations listed below and classified as not impairing performance.

Substance	Concentration
Human blood (EDTA)	20% (v/v)
Mucin	5 mg/ml
Oseltamivir phosphate	5 mg/ml
Ribavirin	5 mg/ml
Levofloxacin	5 mg/ml
Azithromycin	5 mg/ml
Meropenem	5 mg/ml
Tobramycin	2 mg/ml
Phenylephrine	20% (v/v)
Oxymetazoline	20% (v/v)
0.9% sodium chloride	20% (v/v)
A natural, calming ALKALOL	20% (v/v)
Beclomethasone	20% (v/v)
Hexadecadrol	20% (v/v)
Flunisolide	20% (v/v)
Triamcinolone	20% (v/v)
Budesonide	20% (v/v)
Mometason	20% (v/v)
Fluticasone propionate	20% (v/v)
Fluticasone	20% (v/v)

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Merdivenköy D

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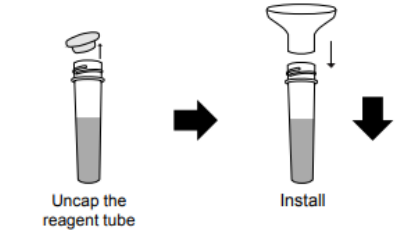
TEST PROCEDURE
(Please refer to the guide illustration)



For individual Buffer Pack Unscrew the lid of an extraction reagent to open, add all of the extraction reagent into an extraction vial.

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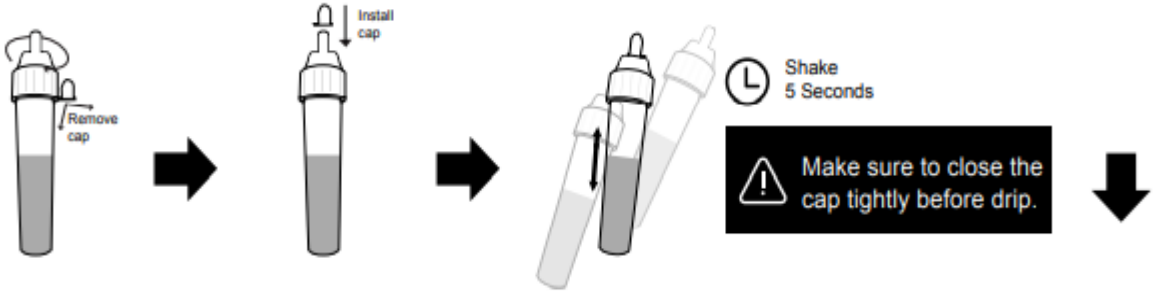

Close the vial with the cap and push firmly onto the vial. Shake the extraction vial for 5 seconds, wait one minute to let the sample dissolve in the extraction reagent as much as possible.

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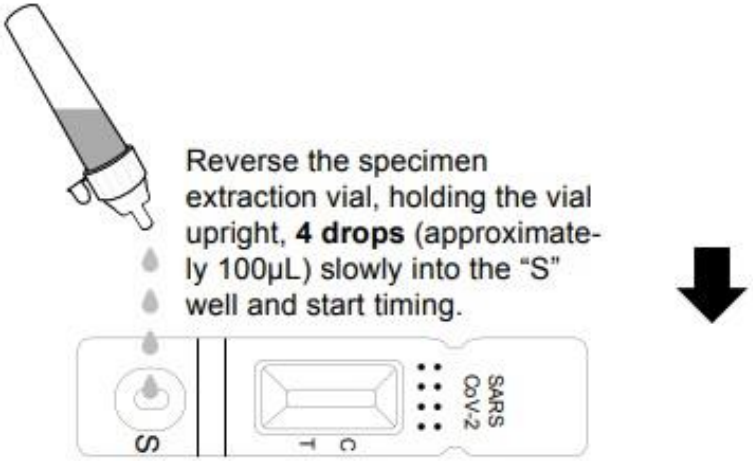

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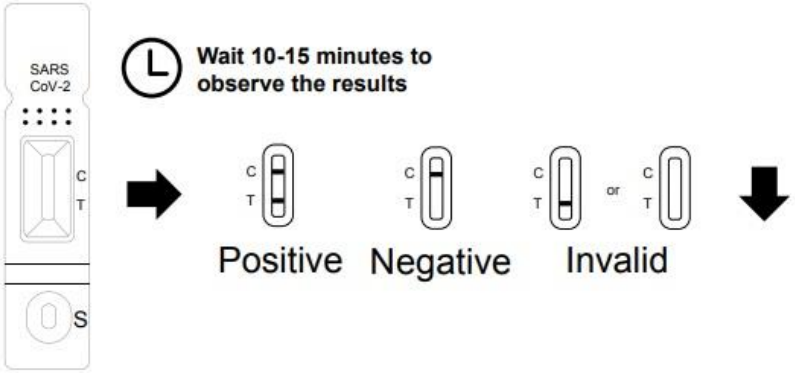

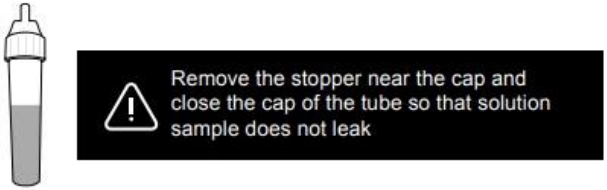

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REFERENCE

- Templeton, K.E., Scheltinga, S.A., et al. (2004). Rapid and sensitive method using multiplex real-time PCR for diagnosis of infections by influenza A and influenza B viruses, respiratory syncytial virus, and parainfluenza viruses 1, 2, 3 and 4 [J]. Journal of clinical microbiology 42(4): 1564-1569.
- Smith, A.B., Mock, V., et al. (2003). Rapid detection of influenza A and B viruses in clinical specimens by Light Cycler real-time RT-PCR [J]. Journal of Clinical Virology 28(1): 51-58

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Kadıköy, İstanbul 34732 Turkey

ISO 15223 Symbols

CE	This product fulfils the requirements of the Directive 98/79/EC on in vitro diagnostic medical device
	Read instructions for use
	Use by
	Do not re- use
	Do not use if package is damaged
2℃ 30℃	Temperature limit
	Keep away from sunlight
LOT	Batch code
IVD	In vitro diagnostic medical
	Manufacturer
	Date of manufacture
	For Use by Qualified Personnel Only
	Protect from moisture
	Biohazade