

## COVID-19 Ag Test

### Analytical Specificity Test Report

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Prepared by	Lu Qiyong
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Approved by	Chen Lizhu
Approval date	2021.01.14

## 1. Test purpose

Detecting potentially interfering substances to determine the analytical specificity of "COVID-19 Ag Test" produced by Core Technology Co., Ltd.

### Researchers and responsibilities

Coordinator: Lu Qiyong

Responsibilities: Project leader, report drafter and product performance evaluation reviewer.

Investigator: Cui Weina

Responsibilities: Product testing.

Performance evaluation location: Core Technology Internal laboratory.

## 2. Reagents and materials:

### 2.1 Test

Product name: COVID-19 Ag Test

Manufacturer: Core Technology Co., Ltd.

Storage conditions: 2-30°C

According to "Product manufacturing operation procedure-COVID Ag", three batches for two rapid test types of strip and cassette were produced to test the analytical specificity .

The product information is shown in the following table:

Model	Lot
Strip	20200525
	20200526
	20200527
Cassette	20200525
	20200526
	20200527

### 2.2 Specimen to be tested:

Control specimen: The lysate from the negative swabs

Specific reference substance group A: The names and concentrations of the interfering

substances are shown in the following table:

Table 1-1 Specific reference group A

	Potential Cross-Reactant	Test Concentration
Virus	Adenovirus	1.0 x 10 <sup>5</sup> TCID <sub>50</sub> /mL
	Human metapneumovirus (hMPV)	1.0 x 10 <sup>5</sup> TCID <sub>50</sub> /mL
	Rhinovirus	1.0 x 10 <sup>5</sup> PFU/mL
	Enterovirus/Coxsackievirus B4	1.0 x 10 <sup>5</sup> TCID <sub>50</sub> /mL
	Human coronavirus OC43	1.0 x 10 <sup>5</sup> TCID <sub>50</sub> /mL
	Human coronavirus 229E	1.0 x 10 <sup>5</sup> TCID <sub>50</sub> /mL
	Human coronavirus NL63	1.0 x 10 <sup>5</sup> TCID <sub>50</sub> /mL
	Human coronavirus HKU1	1.0 x 10 <sup>5</sup> TCID <sub>50</sub> /mL
	Human parainfluenza virus 1	1.0 x 10 <sup>5</sup> TCID <sub>50</sub> /mL
	Human parainfluenza virus 2	1.0 x 10 <sup>5</sup> TCID <sub>50</sub> /mL
	Human parainfluenza virus 3	1.0 x 10 <sup>5</sup> TCID <sub>50</sub> /mL
	Human parainfluenza virus 4	1.0 x 10 <sup>5</sup> TCID <sub>50</sub> /mL
	Influenza A	1.0 x 10 <sup>5</sup> TCID <sub>50</sub> /mL
	Influenza B	1.0 x 10 <sup>5</sup> TCID <sub>50</sub> /mL
	Respiratory Syncytial Virus A	1.0 x 10 <sup>5</sup> PFU/mL
	MERS-CoV	1.0 x 10 <sup>5</sup> TCID <sub>50</sub> /mL
Bacteria	Bordetella pertussis	1.0 x 10 <sup>6</sup> cells/mL
	Chlamydia pneumoniae	1.0 x 10 <sup>6</sup> IFU/mL
	Haemophilus influenzae	1.0 x 10 <sup>6</sup> cells/mL
	Legionella pneumophila	1.0 x 10 <sup>6</sup> cells/mL
	Mycoplasma pneumoniae	1.0 x 10 <sup>6</sup> U/mL
	Streptococcus pneumoniae	1.0 x 10 <sup>6</sup> cells/mL
	Streptococcus pyogenes (group A)	1.0 x 10 <sup>6</sup> cells/mL
	Mycobacterium tuberculosis	1.0 x 10 <sup>6</sup> cells/mL
	Staphylococcus aureus	1.0 x 10 <sup>6</sup> org/mL
	Staphylococcus epidermidis	1.0 x 10 <sup>6</sup> org/mL
	Pooled human nasal wash	N/A
Yeast	Candida albicans	1.0 x 10 <sup>6</sup> cells/mL

Table 1-2 Specific reference group B

Substance	Active Ingredient	Concentration
Endogenous	Mucin	2% w/v
	Whole Blood	1% v/v
OTC Nasal Drops	Phenylephrine	15% v/v
OTC Nasal Gel	Sodium Chloride (i.e. NeilMed)	5% v/v
OTC Nasal Spray 1	Cromolyn	15% v/v
OTC Nasal Spray 2	Oxymetazoline	15% v/v
OTC Nasal Spray 3	Fluconazole	5% w/v
Throat Lozenge	Benzocaine, Menthol	0.15% w/v
OTC Homeopathic Nasal Spray 1	Galphimia glauca, Sabadilla,	20% v/v
OTC Homeopathic Nasal Spray 2	Zincum gluconium (i.e., Zicam)	5% w/v
OTC Homeopathic Nasal Spray 3	Alkalol	10% v/v
OTC Homeopathic Nasal Spray 4	Fluticasone Propionate	5% v/v
Sore Throat Phenol Spray	Phenol	15% v/v
Anti-viral Drug	Tamiflu (Oseltamivir Phosphate)	0.5% w/v
Antibiotic, Nasal Ointment	Mupirocin1	0.25% w/v
Antibacterial, Systemic	Tobramycin	0.0004% w/v

2.3 Testing equipment: straw, stopwatch, buffer.

### 3. Test method

#### 3.1 Test method:

A sufficient number of products were randomly selected from three batches of each type (strip and cassette) for COVID-19 Ag Test developed by Core Technology Co., Ltd. Group A and Group B of Control samples and specific reference were tested separately by 5 tests of each batch and type. Observe and record the test results. For specific testing operation methods, please refer to the product manual.

#### 3.2 Test requirement:

The control sample test result should be negative;

The test results of specific reference group A should all be negative;

The test results of the specific reference group B should all be negative.

### 3.3 Interpretation of results:

**Positive:**Control line and T line appear in the show window.

**Negative:**Only one line appears in Control area, no line appears in T area.

**Invalid:**If no line appears in the control area,the test results are invalid regardless of the presence or absence of line in the test area.The direction may not been followed correctly or the test may be deteriorated.It is recommended that repeat the test using a new device.If the problem persist,please stop to use the product and contact local distributor.

## 4. Test result

Table 2-1 Analyze specific test results

Model	Lot	Adenovirus		Human metapneumovirus (hMPV)		Rhinovirus		Enterovirus/Coxsackievirus B4	
		1.0 x 10 <sup>5</sup> TCID <sub>50</sub> /mL		1.0 x 10 <sup>5</sup> TCID <sub>50</sub> /mL		1.0 x 10 <sup>5</sup> PFU/mL		1.0 x 10 <sup>5</sup> TCID <sub>50</sub> /mL	
		-	+	-	+	-	+	-	+
Strip	20200525	5	0	5	0	5	0	5	0
	20200526	5	0	5	0	5	0	5	0
	20200527	5	0	5	0	5	0	5	0
Cassette	20200525	5	0	5	0	5	0	5	0
	20200526	5	0	5	0	5	0	5	0
	20200527	5	0	5	0	5	0	5	0

Table 2-2 Analyze specific test results

Model	Lot	Human coronavirus OC43		Human coronavirus 229E		Human coronavirus NL63		Human parainfluenza virus 1		Human coronavirus HKU1	
		1.0 x 10 <sup>5</sup> TCID <sub>50</sub> /mL		1.0 x 10 <sup>5</sup> TCID <sub>50</sub> /mL		1.0 x 10 <sup>5</sup> TCID <sub>50</sub> /mL		1.0 x 10 <sup>5</sup> TCID <sub>50</sub> /mL		1.0 x 10 <sup>5</sup> TCID <sub>50</sub> /mL	
		-	+	-	+	-	+	-	+	-	+
Strip	20200525	5	0	5	0	5	0	5	0	5	0
	20200526	5	0	5	0	5	0	5	0	5	0

	20200527	5	0	5	0	5	0	5	0	5	0
Cassette	20200525	5	0	5	0	5	0	5	0	5	0
	20200526	5	0	5	0	5	0	5	0	5	0
	20200527	5	0	5	0	5	0	5	0	5	0

Table 2-3 Analyze specific test results

Model	Lot	Human parainfluenza virus 2		Human parainfluenza virus 3		Human parainfluenza virus 4		Influenza A	
		1.0 x 10 <sup>5</sup> TCID <sub>50</sub> /mL		1.0 x 10 <sup>5</sup> TCID <sub>50</sub> /mL		1.0 x 10 <sup>5</sup> TCID <sub>50</sub> /mL		1.0 x 10 <sup>5</sup> TCID <sub>50</sub> /mL	
		-	+	-	+	-	+	-	+
Strip	20200525	5	0	5	0	5	0	5	0
	20200526	5	0	5	0	5	0	5	0
	20200527	5	0	5	0	5	0	5	0
Cassette	20200525	5	0	5	0	5	0	5	0
	20200526	5	0	5	0	5	0	5	0
	20200527	5	0	5	0	5	0	5	0

Table 2-4 Analyze specific test results

Model	Lot	Influenza B		Respiratory Syncytial Virus A		<i>Bordetella pertussis</i>		<i>Chlamydia pneumoniae</i>		<i>MERS-coronavirus</i>	
		1.0 x 10 <sup>5</sup> TCID <sub>50</sub> /mL		1.0 x 10 <sup>5</sup> PFU/mL		1.0 x 10 <sup>6</sup> cells/mL		1.0 x 10 <sup>6</sup> IFU/mL		1.0 x 10 <sup>5</sup> TCID <sub>50</sub> /mL	
		-	+	-	+	-	+	-	+	-	+
Strip	20200525	5	0	5	0	5	0	5	0	5	0
	20200526	5	0	5	0	5	0	5	0	5	0
	20200527	5	0	5	0	5	0	5	0	5	0
Cassette	20200525	5	0	5	0	5	0	5	0	5	0
	20200526	5	0	5	0	5	0	5	0	5	0
	20200527	5	0	5	0	5	0	5	0	5	0

Table 2-5 Analyze specific test results

Model	Lot	<i>Haemophilus influenzae</i>		<i>Legionella pneumophila</i>		<i>Mycoplasma pneumoniae</i>		<i>Streptococcus pneumoniae</i>	
		1.0 x 10 <sup>6</sup> cells/mL		1.0 x 10 <sup>6</sup> cells/mL		1.0 x 10 <sup>6</sup> U/mL		1.0 x 10 <sup>6</sup> cells/mL	
		-	+	-	+	-	+	-	+
Strip	20200525	5	0	5	0	5	0	5	0
	20200526	5	0	5	0	5	0	5	0
	20200527	5	0	5	0	5	0	5	0
Cassette	20200525	5	0	5	0	5	0	5	0
	20200526	5	0	5	0	5	0	5	0
	20200527	5	0	5	0	5	0	5	0

Table 2-6 Analyze specific test results

Model	Lot	<i>Streptococcus pyogenes</i> (group A)		<i>Mycobacterium tuberculosis</i>		<i>Staphylococcus aureus</i>		<i>Staphylococcus epidermidis</i>	
		1.0 x 10 <sup>6</sup> cells/mL		1.0 x 10 <sup>6</sup> cells/mL		1.0 x 10 <sup>6</sup> org/mL		1.0 x 10 <sup>6</sup> org/mL	
		-	+	-	+	-	+	-	+
Strip	20200525	5	0	5	0	5	0	5	0
	20200526	5	0	5	0	5	0	5	0
	20200527	5	0	5	0	5	0	5	0
Cassette	20200525	5	0	5	0	5	0	5	0
	20200526	5	0	5	0	5	0	5	0
	20200527	5	0	5	0	5	0	5	0

Table 2-7 Analyze specific test results

Model	Lot	Pooled human nasal wash		<i>Candida albicans</i>	
		N/A		1.0 x 10 <sup>6</sup> cells/mL	
		-	+	-	+
Strip	20200525	5	0	5	0

	20200526	5	0	5	0
	20200527	5	0	5	0
Cassette	20200525	5	0	5	0
	20200526	5	0	5	0
	20200527	5	0	5	0

Table 2-8 Analyze specific test results

Model	Lot	Endogenous		Endogenous		OTC Nasal Drops		OTC Nasal Gel	
		Mucin		Whole Blood		Phenylephrine		Sodium Chloride (i.e. NeilMed)	
		2% w/v		1% v/v		15% v/v		5% v/v	
		-	+	-	+	-	+	-	+
Strip	20200525	5	0	5	0	5	0	5	0
	20200526	5	0	5	0	5	0	5	0
	20200527	5	0	5	0	5	0	5	0
Cassette	20200525	5	0	5	0	5	0	5	0
	20200526	5	0	5	0	5	0	5	0
	20200527	5	0	5	0	5	0	5	0

Table 2-9 Analyze specific test results

Model	Lot	OTC Nasal Spray 1		OTC Nasal Spray 2		OTC Nasal Spray 3		Throat Lozenge	
		Cromolyn		Oxymetazoline		Fluconazole		Benzocaine, Menthol	
		15% v/v		15% v/v		5% w/v		0.15% w/v	
		-	+	-	+	-	+	-	+
Strip	20200525	5	0	5	0	5	0	5	0
	20200526	5	0	5	0	5	0	5	0
	20200527	5	0	5	0	5	0	5	0
Cassette	20200525	5	0	5	0	5	0	5	0



	20200526	5	0	5	0	5	0	5	0
	20200527	5	0	5	0	5	0	5	0

Table 2-10 Analyze specific test results

Model	Lot	OTC Homeopathic Nasal Spray 1		OTC Homeopathic Nasal Spray 2		OTC Homeopathic Nasal Spray 3		OTC Homeopathic Nasal Spray 4	
		Galphimia glauca, Sabadilla,		Zincum gluconium (i.e., Zicam)		Alkalol		Fluticasone Propionate	
		20% v/v		5% w/v		10% v/v		5% v/v	
		-	+	-	+	-	+	-	+
Strip	20200525	5	0	5	0	5	0	5	0
	20200526	5	0	5	0	5	0	5	0
	20200527	5	0	5	0	5	0	5	0
Cassette	20200525	5	0	5	0	5	0	5	0
	20200526	5	0	5	0	5	0	5	0
	20200527	5	0	5	0	5	0	5	0

Table 2-11 Analyze specific test results

Model	Lot	Sore Throat Phenol Spray		Anti-viral Drug		Antibiotic, Nasal Ointment		Antibacterial, Systemic	
		Phenol		Tamiflu (Oseltamivir Phosphate)		Mupirocin <sup>1</sup>		Tobramycin	
		15% v/v		0.5% w/v		0.25% w/v		0.0004% w/v	
		-	+	-	+	-	+	-	+
Strip	20200525	5	0	5	0	5	0	5	0
	20200526	5	0	5	0	5	0	5	0
	20200527	5	0	5	0	5	0	5	0
Cassette	20200525	5	0	5	0	5	0	5	0
	20200526	5	0	5	0	5	0	5	0

	20200527	5	0	5	0	5	0	5	0
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From the above test results, it can be seen that the test results of the same model and batch of products are the same for the same sample; the test results of the same model and three batches of products are the same. The above results show that the specificity of this product is good, and there are no intra-assay and inter-assay differences.

#### 5. Test conclusion:

The above test results can be concluded that the test result is negative for interference substances with concentrations less than or equal to the following concentrations.

It show that the specificity of this product is good, and there are no intra-assay and inter-assay differences.

Potential Cross-Reactant		Test Concentration
Virus	Adenovirus	1.0 x 10 <sup>5</sup> TCID <sub>50</sub> /mL
	Human metapneumovirus (hMPV)	1.0 x 10 <sup>5</sup> TCID <sub>50</sub> /mL
	Rhinovirus	1.0 x 10 <sup>5</sup> PFU/mL
	Enterovirus/Coxsackievirus B4	1.0 x 10 <sup>5</sup> TCID <sub>50</sub> /mL
	Human coronavirus OC43	1.0 x 10 <sup>5</sup> TCID <sub>50</sub> /mL
	Human coronavirus 229E	1.0 x 10 <sup>5</sup> TCID <sub>50</sub> /mL
	Human coronavirus NL63	1.0 x 10 <sup>5</sup> TCID <sub>50</sub> /mL
	Human parainfluenza virus 1	1.0 x 10 <sup>5</sup> TCID <sub>50</sub> /mL
	Human parainfluenza virus 2	1.0 x 10 <sup>5</sup> TCID <sub>50</sub> /mL
	Human parainfluenza virus 3	1.0 x 10 <sup>5</sup> TCID <sub>50</sub> /mL
	Human parainfluenza virus 4	1.0 x 10 <sup>5</sup> TCID <sub>50</sub> /mL
	Influenza A	1.0 x 10 <sup>5</sup> TCID <sub>50</sub> /mL
	Influenza B	1.0 x 10 <sup>5</sup> TCID <sub>50</sub> /mL
	Respiratory Syncytial Virus A	1.0 x 10 <sup>5</sup> PFU/mL
	MERS-coronavirus	1.0 x 10 <sup>5</sup> TCID <sub>50</sub> /mL
Bacteria	Bordetella pertussis	1.0 x 10 <sup>6</sup> cells/mL
	Chlamydia pneumoniae	1.0 x 10 <sup>6</sup> IFU/mL
	Haemophilus influenzae	1.0 x 10 <sup>6</sup> cells/mL
	Legionella pneumophila	1.0 x 10 <sup>6</sup> cells/mL
	Mycoplasma pneumoniae	1.0 x 10 <sup>6</sup> U/mL
	Streptococcus pneumoniae	1.0 x 10 <sup>6</sup> cells/mL

	Streptococcus pyogenes (group A)	1.0 x 10 <sup>6</sup> cells/mL
	Mycobacterium tuberculosis	1.0 x 10 <sup>6</sup> cells/mL
	Staphylococcus aureus	1.0 x 10 <sup>6</sup> org/mL
	Staphylococcus epidermidis	1.0 x 10 <sup>6</sup> org/mL
	Pooled human nasal wash	N/A
Yeast	Candida albicans	1.0 x 10 <sup>6</sup> cells/mL

Substance	Active Ingredient	Concentration
Endogenous	Mucin	2% w/v
	Whole Blood	1% v/v
OTC Nasal Drops	Phenylephrine	15% v/v
OTC Nasal Gel	Sodium Chloride (i.e. NeilMed)	5% v/v
OTC Nasal Spray 1	Cromolyn	15% v/v
OTC Nasal Spray 2	Oxymetazoline	15% v/v
OTC Nasal Spray 3	Fluconazole	5% w/v
Throat Lozenge	Benzocaine, Menthol	0.15% w/v
OTC Homeopathic Nasal Spray 1	Galphimia glauca, Sabadilla,	20% v/v
OTC Homeopathic Nasal Spray 2	Zincum gluconium (i.e., Zicam)	5% w/v
OTC Homeopathic Nasal Spray 3	Alkalol	10% v/v
OTC Homeopathic Nasal Spray 4	Fluticasone Propionate	5% v/v
Sore Throat Phenol Spray	Phenol	15% v/v
Anti-viral Drug	Tamiflu (Oseltamivir Phosphate)	0.5% w/v
Antibiotic, Nasal Ointment	Mupirocin1	0.25% w/v
Antibacterial, Systemic	Tobramycin	0.0004% w/v