

# ichroma<sup>™</sup> Versatile respiratory solutions in COVID-19 era

Respiratory panels to overcome the risk of SARS-Cov-2 coinfections ; Influenza A+B, RSV, Influenza A+B/RSV, Adenovirus, Mycoplasma, Strep A

• Simple

Mix, drop and insert

### • Versatile

All representative respiratory tests Influenza A+B, RSV, Influenza A+B/RSV, Adenovirus, Mycoplasma, Strep A



Health officials are paying attention to respiratory infections that have similar symptoms to those of COVID-19.

Sniffles, cough, sore throat and fever - as the initial symptoms are often similar, the anxious question quickly arises:

**G** Do I just have a cold or am I infected with the SARS-CoV-2 virus?

ichroma<sup>™</sup> respiratory solutions can distinguish and diagnose with COVID-19 and other viral, bacterial infections with similar symptoms.

Symptoms	COVID-19	Influenza	Cold					
Dry cough	+++	+++	++					
Phlegmy cough			+++					
Fever	+++	+++	-					
Loss of smell / taste	+++							
Runny nose	++	++	+++					
Sneezing		-	+++					
Sore throat	++	++	+++					
Shortness of breath	++							
Headache	++	+++	-					
Body aches	++	+++	+++					
Exhaustion	++	+++	++					
Diarrhea	-	+						
+++ Frequent ++ Sometimes + Occasionally - Rare Not observed								

#### Symptoms of COVID-19, Influenza, Cold [1]

\* Ref. : WHO, CDC, [2]



Comparison of reported symptoms among individuals tested by seasonal respiratory viruses and SARS-CoV-2 coinfection; The clinical symptoms of single seasonal respiratory virus infection and co-infection with COVID-19 are highly overlapping<sup>[2]</sup>

#### Bacterial and viral coinfections in the SARS-CoV-2-positive populations



Single infection: one pathogen, one host Coinfection (mixed infection): when two or more antigenically distinct pathogens infect one host

- Secondary bacterial infection is a notable complication associated with worse outcomes in COVID-19 than influenza co-infected patients. Careful surveillance and prompt antibiotic treatment may benefit patients. <sup>[4]</sup>
- Coinfection can rise the difficulties of diagnosis, treatment, progression of COVID-19 and even increase the disease symptom and mortality.<sup>[5]</sup>



Increased risk of coinfection of COVID-19 with other respiratory infections

## Increased risk of coinfection of COVID-19 with other respiratory infections [4-7]

#### Misdiagnosis

If it is misdiagnosed due to lesions and symptoms similar to those of respiratory diseases, timely and appropriate treatment is not possible.

### Increased mortality

COVID-19 co-infected patients have a mortality rate of 5.92 times higher than those of negative people and 2.27 times higher than those with a single infection.

#### Contagion

Due to the delayed judgment for quarantine, the time to block the spread of the disease may be missed.

### Specifications

ichroma <sup>™</sup> Respiratory panels	Influenza A+B	RSV	Influenza A+B /RSV	Adeno	Mycoplasma	Strep A			
Principle	Time-resolved fluorescent lateral flow assay (TRF-LFIA)								
Reaction time			10 min			5 min			
Sample type	Nasopharyngeal swab, Nasal aspirate Throat swab								
Reaction Temp.		15~35 °C							
Shelf life		18 month							
Output data	Pos(+), Neg(-) or invalid								
Analyzer	ichroma™ II, ichroma™ III, ichroma™ M2								

### Procedures (ichroma™ II, ichroma™ III, ichroma™ M2)





**iCHROMAI** 

The ichroma<sup>™</sup> Respiratory Solution accurately identifies viral and bacterial infections as well as COVID-19 with similar symptoms, helping patients receive accurate treatment, including appropriate antibiotic prescription.



### Ordering information

ichroma™ II	FPRR021	Set
ichroma™ III	FPRR037	Set
ichroma™ M2	FPRR031	Set
ichroma™ Influenza A+B	CFPC-61	25T/Box
ichroma™ RSV	CFPC-88	25T/Box
ichroma™ Influenza A+B/RSV	CFPC-80	25T/Box
ichroma™ Adeno	CFPC-96	25T/Box
ichroma™ Mycoplasma	CFPC-94	25T/Box
ichroma™ Strep A	CFPC-74	25T/Box





**iCHROMA**II

### **Clinical performances**

ichroma™	Influenza A+B			Influ	enza A+B/	′RSV	Adapa		Strop A
Classification	Flu A	Flu B	RSV	Flu A	Flu B	RSV	Aueno	мусоріаѕта	StrepA
Clinical sensitivity (%)	98.7 (74/75)	96 (72/75)	91.3 (137/150)	96.0 (72/75)	98.7 (74/75)	96.0 (96/100)	93 (93/100)	81.9 (68/83)	93.4 (99/106)
Clinical specificity (%)	nical specificity (%) 100 100 100 100 (125/125) (125/125)		100 100 99.1 (105/105) (105/105) (104/105)		99.1 (104/105)	98 (196/200)	98.8 (79/80)	97.9 (47/48)	

#### Reference tests

**RT-PCR:** Influenza A+B, RSV, Influenza A+B/RSV, Adenovirus, Mycoplasma **Culture method:** Strep A

#### References

- 1) Czubak J, et. al., Comparison of the clinical differences between COVID-19, SARS, influenza, and the common cold: A systematic literature review (2021). Adv Clin Exp Med. 30(1): 109. doi: 10.17219/acem/129573. PMID: 33529514.
- 2) Peci A, et. al., Prevalence of Co-Infections with Respiratory Viruses in Individuals Investigated for SARS-CoV-2 in Ontario, Canada (2021). Viruses. 18(1): 130. doi: 10.3390/v13010130. PMID: 33477649
- 3) Singh V et. al., SARS-CoV-2 respiratory co-infections: Incidence of viral and bacterial co-pathogens (2021). Int J Infect Dis. 105: 617. doi: 10.1016/j.ijid.2021.02.087. Epub 2021 Feb 25. PMID: 33640570
- 4) Shafran N et. al., Secondary bacterial infection in COVID-19 patients is a stronger predictor for death compared to influenza patients (2021). Sci Rep. 11(1): 12703. doi: 10.1038/s41598-021-92220-0. PMID: 34135459
- 5) Chen X et. al., The microbial coinfection in COVID-19 (2020). Appl Microbiol Biotechnol. 104(18): 7777. doi: 10.1007/s00253-020-10814-6. Epub 2020 Aug 11. PMID: 32780290
- Stowe J *et. al.*, Interactions between SARS-CoV-2 and influenza, and the impact of coinfection on disease severity: a test-negative design (2021). Int J Epidemiol. doi: 10.1093/ije/dyab081. Epub ahead of print. PMID: 33942104
- He S et. al., Clinical characteristics of COVID-19 patients with clinically diagnosed bacterial co-infection: A multi-center study (2021). PLoS One. 16(4): e0249668. doi: 7) 10.1371/journal.pone.0249668. PMID: 33819304

# ichorma™ COVID-19/Flu Ag Combo

- Health officials caution about the twindemic with COVID-19 and Influenza in coming Flu season.
- Both COVID-19 and influenza can have common symptoms with various ranges from asymmetric to severe symptoms.
- ichroma<sup>™</sup> COVID-19/Flu Ag Combo can be diagnosed for distinguishing of COVID-19 and Influenza in patients with symptoms.

### Test procedure



### Specification

Product name	ichroma™ COVID-19/Flu Ag Combo
Assay type	TRF-LFIA*
Sample type	Nasopharyngeal swab
Sample prep / extraction	Collecting with nylon swab
Target	COVID-19 Ag / Influenza A Ag / Influenza B Ag
Platform	ichroma™ II / ichroma™ III / ichroma™ M2
Unit	25 kit / box

\* TRF-LFIA: Time-resolved fluorescent leteral flow assay

# Ordering Information

Product	Cat. No.
ichroma™ COVID-19 Ag / Flu Ag Combo	CFPC-117
ichroma™ II reader	FPRR021
ichroma™ III reader	FPRR037
ichroma™ M2 reader	FPRR031

\* Note. A nylon swab is excluded from the components of the cartridge box

# Clinical performance

COVID-19	RT-PCR				RT-PCR			Elu D	RT-PCR		
	Positive	Negative	Total		Positive	Negative	Total	FIUD	Positive	Negative	Total
Positive	31	0	33	Positive	30	0	30	Positive	30	0	30
Negative	0	115	115	Negative	2	74	76	Negative	2	74	76
Total	31	117	148	Total	32	74	106	Total	32	74	106
PPA (%)	100.0% (9	5% C.I. 86.3	3~100.0%)	PPA (%)	93.8% (95% C.I. 77.8~98.9%		3~98.9%)	PPA (%)	93.8% (95% C.I. 77.8~98.9%		
NPA (%)	98.3% (9	5% C.I. 93.3	3~99.7%)	NPA (%)	100.0% (95% C.I. 93.9~100			NPA (%)	100.0% (95% C.I. 93.9~100.09		9~100.0%)
OPA (%)	98	.6% (K = 0.9	96)	OPA (%)	98.1% ( <i>K</i> = 0.95)			OPA (%)	98.1% ( <i>K</i> = 0.95)		



