

# APPLICATIONS

## USP Assay (LC-UV) for Lopinavir and Ritonavir Tablets on Kinetex<sup>®</sup> 5 μm C8 150 x 4.6 mm and Kinetex 2.6 μm C8 100 x 4.6 mm LC Columns

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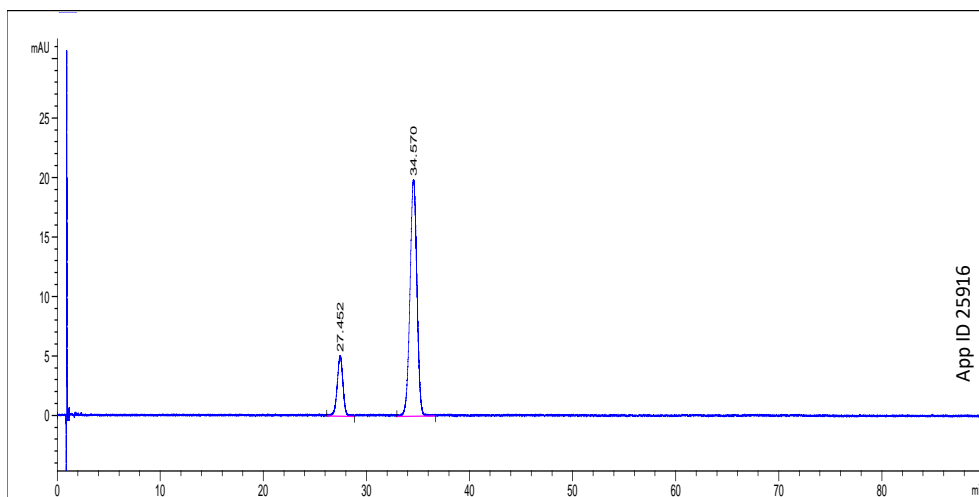
### Overview

Ritonavir and Lopinavir are antiretroviral drugs which have been used successfully for the treatment and prevention of HIV/AIDS. They are currently being studied in combination with interferon beta-1b as a triple anti-viral therapy for treatment of COVID-19.

This application for the LC-UV assay of Lopinavir and Ritonavir tablets is based on the official USP method, utilizing a fully porous 5 μm C8 150 x 4.6 mm column. Standard solution and system suitability solution were prepared in accordance with the USP monograph.

### LC-UV Conditions

- Column:** Kinetex 5 μm C8
- Dimension:** 150 x 4.6 mm
- Part No.:** [00F-4608-E0](#)
- Mobile Phase:** Acetonitrile/Methanol/  
Tetrahydrofuran/Buffer  
(175:100:100:625)  
Buffer: 4.1 g/L of monobasic potassium phosphate in water
- Flow Rate:** 1.5 mL/min
- Temperature:** 40 °C
- Detector:** UV @ 215 nm
- Injection:** 50 μL
- Run Time:** 90 minutes
- Sample:** 1. Ritonavir  
2. Lopinavir



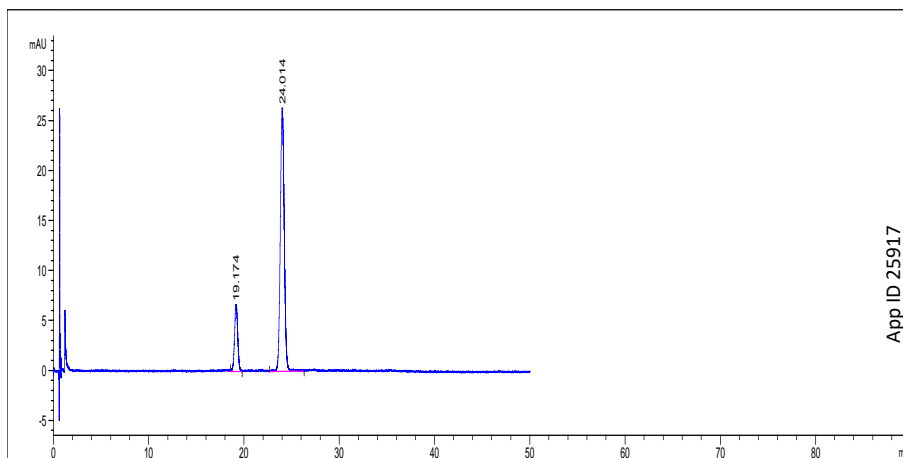
### System Suitability

Compound	Resolution NLT 1.5	Tailing Factor 0.8 – 1.2 for Ritonavir	Theoretical Plates More than 5000 for Ritonavir	RSD (peak area, 5 replicates) NMT 2.0%
Ritonavir		0.96	12,351	5.3
Lopinavir	6.4	0.98	12,648	5.4

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## LC-UV Conditions

**Column:** Kinetex® 2.6 µm C8  
**Dimension:** 100 x 4.6 mm  
**Part No.:** [00D-4497-E0](#)  
**Mobile Phase:** Acetonitrile/Methanol/  
 Tetrahydrofuran/Buffer  
 (175:100:100:625)  
 Buffer: 4.1 g/L of monobasic potassium  
 phosphate in water  
**Flow Rate:** 1.5 mL/min  
**Temperature:** 40 °C  
**Detector:** UV @ 215 nm  
**Injection:** 50 µL  
**Run Time:** 50 minutes  
**Sample:** 1. Ritonavir  
 2. Lopinavir

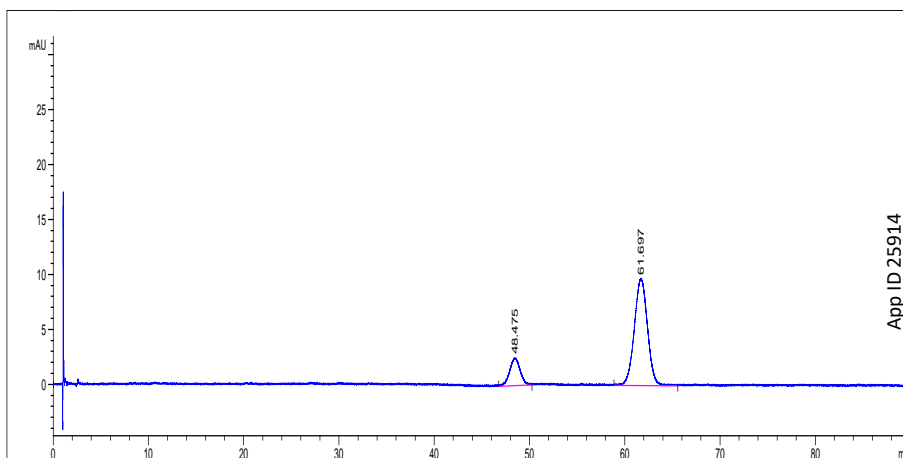


App ID 25917

System Suitability				
Compound	Resolution NLT 1.5	Tailing Factor 0.8 – 1.2 for Ritonavir	Theoretical Plates More than 5000 for Ritonavir	RSD (peak area, 5 replicates) NMT 2.0%
Ritonavir		1.05	15,985	3.3
Lopinavir	7.1	1.05	16,319	2.2

## LC-UV Conditions

**Column:** Luna® 5 µm C8  
**Dimension:** 150 x 4.6 mm  
**Part No.:** [00F-4249-E0](#)  
**Mobile Phase:** Acetonitrile/Methanol/  
 Tetrahydrofuran/Buffer  
 (175:100:100:625)  
 Buffer: 4.1 g/L of monobasic potassium  
 phosphate in water  
**Flow Rate:** 1.5 mL/min  
**Temperature:** 40 °C  
**Detector:** UV @ 215 nm  
**Injection:** 50 µL  
**Run Time:** 90 minutes  
**Sample:** 1. Ritonavir  
 2. Lopinavir



App ID 25914

System Suitability				
Compound	Resolution NLT 1.5	Tailing Factor 0.8 – 1.2 for Ritonavir	Theoretical Plates More than 5000 for Ritonavir	RSD (peak area, 5 replicates) NMT 2.0%
Ritonavir		1.02	10,005	3.88
Lopinavir	5.9	1.00	9804	1.36

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