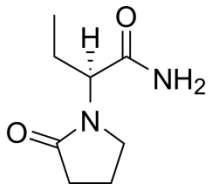
Levetiracetam (USP)

– Tablets



Levetiracetam is an anticonvulsant medication used to treat epilepsy.
It is the S-enantiomer of etiracetam.

Levetiracetam is marketed under the trade name Keppra by UCB Pharmaceuticals Inc., and from 2008 as a generic by many different companies under Levetiracetam.

Drug dissolution testing has been carried out following the experimental conditions in the USP37-NF32 monograph for Amoxicillin and Clavulanate Potassium Tablets (*using an isocratic HPLC method with RP-18 endcapped columns and thus scalable*).

We have transferred this method to a monolithic column. The new method is fast, having improved chromatographic efficiency, lower column backpressure, and still meeting all method performance criteria compared to the prescribed column.

Levetiracetam (USP)
– Tablets

Dissolution <711>

HPLC

Medium: Water; 900 mL
Apparatus 2: 50 rpm
Time: See Table 1.

Buffer: 6.8 g/L of monobasic potassium phosphate, adjusted with dilute potassium hydroxide to pH 5.6
Mobile phase: Acetonitrile and Buffer (15:85)
Standard solution: (L/1000) mg/mL in Medium, where L is the Tablet label claim, in mg
Sample solution: Pass a portion of the solution under test though a suitable filter of 0.45-µm pore size.

Chromatographic system (See Chromatography 621 , System Suitability.)
Detector: UV 220 nm
Column: 150x4.6 mm; 5-µm packing L1
Flow rate: 1.2 mL/min
Injection volume: 10 µL
System suitability (Sample: Standard solution)

Suitability requirements
Tailing factor: NMT 2.0
Relative standard deviation: NMT 2.0%

Analysis
Samples: Standard solution and Sample solution
Calculate the percentage of the labeled amount of levetiracetam ($C_8H_{14}N_2O_2$) dissolved:

Result = (rU/rS) × (CS/L) ×V× 100

rU = peak response from the Sample solution
rS = peak response from the Standard solution
CS =concentration of USP Levetiracetam
RS in the Standard solution (mg/mL)
L = label claim (mg/Tablet)
V = volume of Medium, 900 mL

Tablet Strength (mg/Tablet)	Time (min)
250	15
500	15
750	15
1000	30

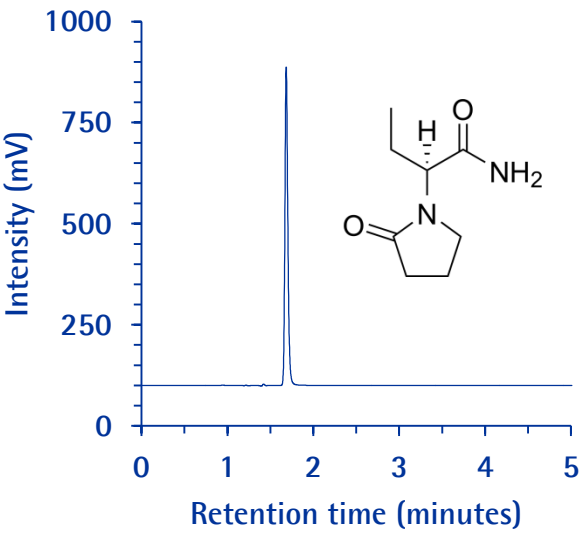
Tolerances
NLT 70% (Q) of the labeled amount of levetiracetam ($C_8H_{14}N_2O_2$) in 15 min for Tablets labeled to contain 250, 500, or 750 mg; NLT 80% (Q) of the labeled amount of levetiracetam ($C_8H_{14}N_2O_2$) in 30 min for Tablets labeled to contain 1000 mg.

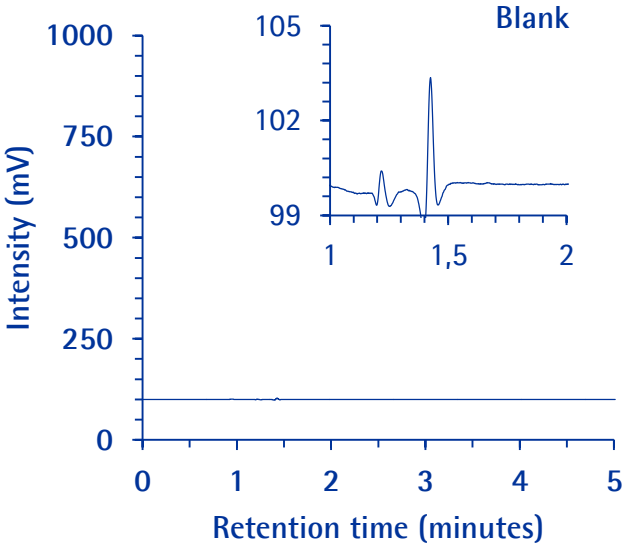
Levetiracetam Tablet Dissolution (USP)

Chromolith® HighResolution RP-18 endcapped

Chromatographic Conditions

Column:	Chromolith® HighResolution RP-18 endcapped, 100x4.6 mm	1.52022.0001
Injection:	10 µL	
Detection:	UV 220 nm	
Cell:	10 µL	
Flow Rate:	1.2 mL/min	
Medium:	Water	
Apparatus	USP Apparatus 2 (Paddle), 50 rpm	
Time:	15 minutes	
Buffer:	6.8 g/L of monobasic potassium phosphate, adjusted with dilute potassium hydroxide to a pH of 5.6	
Mobile Phase :	Buffer:Acetonitrile 85:15 (v/v)	
Temperature:	Ambient	
Sample:	500 ppm (0.5 mg/mL) of Levetiracetam in diluent	
Pressure Drop:	68 Bar (986 psi)	





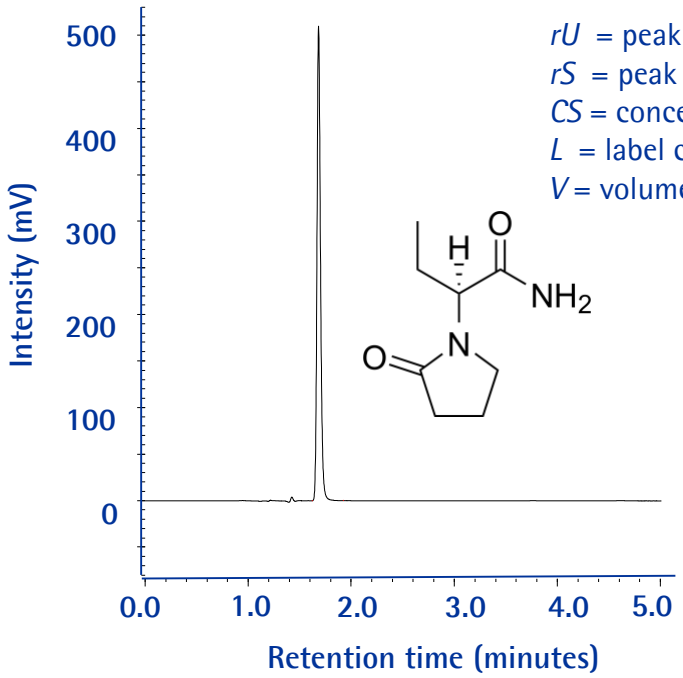
Chromatographic Data: Standard

No.	Compound	Retention Time (min)	Tailing factor	Theoretical plates
1	Levetiracetam	1.6	1.2	11851

Levetiracetam Tablet Dissolution (USP)

Chromolith® HighResolution RP-18 endcapped

Calculation of percentage Levetiracetam dissolved:
Result = (*rU*/*rS*) × (*CS*/*L*) ×*V*× 100



rU = peak response from the *Sample solution*
rS = peak response from the *Standard solution*
CS = concentration of the *Standard solution* (mg/mL)
L = label claim (mg/Capsule)
V = volume of *Medium*, 900 mL

Sample (area units)	Standard (area units)	[Standard solution] (mg/ml)	Label claim (mg/tablet)	Media volume (ml)	Dissolution (%)
1718244	1870805	0.5	500	900	82.6
1771524					85.2
1727706					83.1
1732646					82.9
1710910					82.3
Average					83.2 ± 1.1

NLT 70% (Q) of the labeled amount of levetiracetam ($C_8H_{14}N_2O_2$) in 15 min for Tablets labeled to contain 250, 500, or 750 mg; NLT 80% (Q) of the labeled amount of levetiracetam ($C_8H_{14}N_2O_2$) in 30 min for Tablets labeled to contain 1000 mg.