APPLICATION BRIEF

Liquid Chromatography

HPLC Analysis of Plavix Using Quasar C8 Column

Introduction

The medication known as Plavix is an antiplatelet drug which prevents platelets in your blood from sticking together to form an unwanted blood clot, that could block an artery. It is used to lower the risk of having a stroke, or serious heart problem after you've had a heart attack, or aid with circulation problems as it helps to keep blood flowing smoothly in the body.[1]

The patent expired in 2012 and the drug is now also sold under many generic brands.[2] Plavix tablets contain the active ingredient clopidogrel hydrogen sulphate, which is readily analysed by HPLC. This application brief describes use of a Quasar C8 column in the analysis of Plavix, Figure 1.

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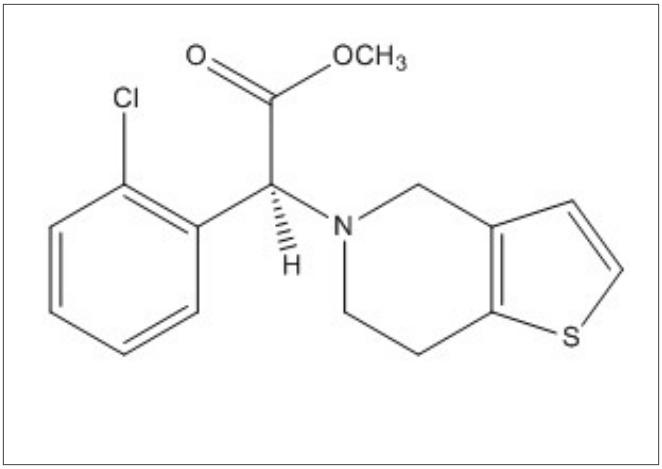

Figure 1. Chemical structure of Plavix.

Experimental Conditions

Method Parameters

All HPLC method parameters are shown in Table 1.

Table 1. HPLC Method Parameters.

Quasar C8	150 mm	4.6 mm	5 µm	N9308880
Mobile Phase	H_20: ACN, 25:75			
Flow Rate	1 mL/min			
Temp	25 °C			
Wavelength	254 nm			
Analyte	Clopidogrel Hydrogen Sulphate			

Solvents and Samples

All solvents were HPLC grade and samples were filtered using a 0.45 µm nylon filter, P/N 02542880.

Results and Discussion

Plavix, Figure 1, is successfully analysed in just over 6 minutes using the Quasar C8 column used, 150 mm in length, Figure 2. Ideally suited to the analysis of small molecules, such as this antiplatelet drug, the Quasar C8 phase provides optimal retention via ligand/analyte interactions, whilst also maintaining peak shape due to the ultra-high purity silica base and low residual silanol activity. A C18 phase could have been used, but due to the increased hydrophobicity of the phase the retention would have also increased, which is not desirable in this instance.

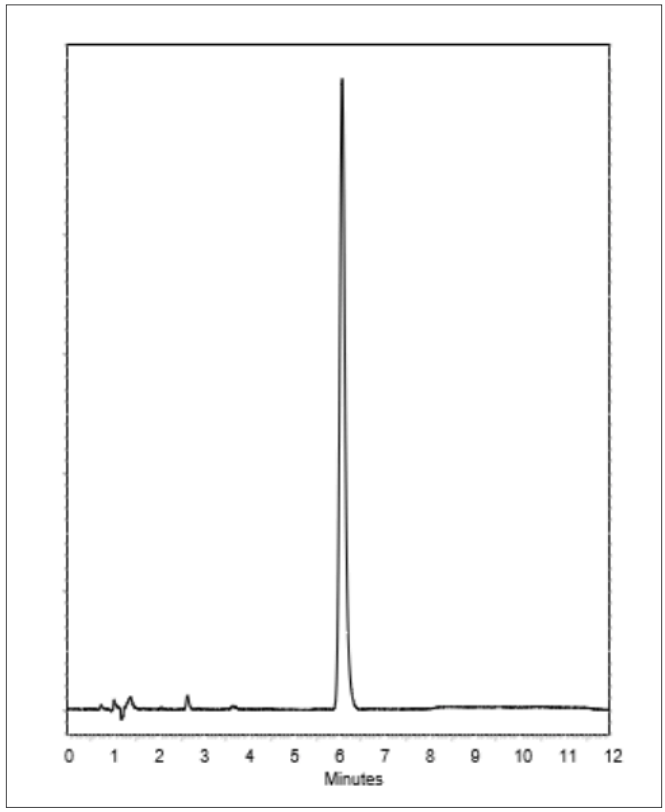

Figure 2. HPLC analysis of vitamin C using Quasar biphenyl column, 150 x 4.6 mm, 5 µm.

Conclusion

- The Quasar C8 HPLC phase offers high efficiency separation of this antiplatelet drug.
- The ultra-high purity silica base and low residual silanol activity yields excellent peak shape even for polar analytes, such as Plavix.
- Run time could be further reduced by using a shorter Quasar C8 column packed with 3 µm or 1.7 µm particles.

References

1. "Clopidogrel Bisulfate." The American Society of Health-System Pharmacists. Archived from the original on 21 December 2016. Retrieved December 8, 2016.
2. "Clopidogrel International brand names." Drugs.com. Archived from the original on April 1, 2017. Retrieved April 1, 2017.

Consumables

Phase	Length (mm)	I.D. (mm)	µm	Part
Quasar C8	250	4.6	5	N9308879
Quasar C8	150	4.6	5	N9308880
Quasar C8	100	4.6	5	N9308881
Quasar C8	50	4.6	5	N9308882
Quasar C8	150	4.6	3	N9308883
Quasar C8	100	4.6	3	N9308884
Quasar C8	50	4.6	3	N9308885
Quasar C8	150	3.0	3	N9308886
Quasar C8	100	3.0	3	N9308887
Quasar C8	50	3.0	3	N9308888
Quasar C8	150	2.1	3	N9308889
Quasar C8	100	2.1	3	N9308890
Quasar C8	50	2.1	3	N9308891
Quasar C8	100	4.6	1.7	N9308892
Quasar C8	50	4.6	1.7	N9308893
Quasar C8	100	3.0	1.7	N9308894
Quasar C8	50	3.0	1.7	N9308895
Quasar C8	100	2.1	1.7	N9308896
Quasar C8	50	2.1	1.7	N9308897
Quasar C8 Guard Cartridge (3/pack)	10	3	5	N9308982
Quasar C8 Guard Cartridge (3/pack)	10	3	3	N9308983
Quasar Guard Cartridge Holder	-	-	-	N9306876
Quasar Guard Cartridge Holder	-	-	-	N9306876

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