

UHPLC-UV Method for the Determination of Esomeprazole Using a Synchronis C18 1.7 μm Column

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Abstract

This application note demonstrates the use of the Thermo Scientific Synchronis C18 1.7 μm column for the determination of esomeprazole by UHPLC-UV.

Introduction

One of the key goals for the chromatographer is to achieve a consistent, reproducible separation. The selection of a highly reproducible HPLC column is essential if this goal is to be attained. The Synchronis™ column range has been engineered to provide exceptional reproducibility due to its highly pure, high surface area silica, dense bonding and double endcapping, all controlled and characterized through the use of rigorous testing.

Esomeprazole is a protein pump inhibitor and works by decreasing the amount of acid produced in the stomach. It is prescribed for treatment of gastro-esophageal reflux diseases such as heartburn. It is also used for the treatment of stomach ulcers caused by taking non-steroidal anti-inflammatory drugs (NSAIDs).

This application note demonstrates the successful analysis of esomeprazole using a Synchronis C18 1.7 μm column.



Key Words

- Esomeprazole
- Synchronis C18
- Heartburn

Experimental Details

| Chemicals and Reagents | Part Number |
|---|-------------|
| Fisher Scientific HPLC grade water | W/0106/17 |
| Fisher Scientific HPLC grade acetonitrile | A/0626/17 |
| Fisher Scientific HPLC grade ammonia solution | A/3295/PB05 |
| Esomeprazole purchased from Sigma Aldrich | |

Sample Handling Equipment

| | |
|--|----------------|
| NSC Mass Spec Certified 2 mL clear vial with blue bonded PTFE silicone cap | MSCERT4000-34W |
|--|----------------|

| Separation Conditions | Part Number | |
|-------------------------|--|--------------|
| Instrumentation: | Thermo Scientific Accela UHPLC system | |
| Column: | Synchronis C18 1.7 μm , 50 x 2.1 mm | 97102-052130 |
| Mobile phase A: | water + 0.1 % ammonia solution | |
| Mobile phase B: | acetonitrile | |
| Gradient: | Time (minutes) | % B |
| | 0.0 | 20 |
| | 0.50 | 20 |
| | 2.00 | 70 |
| | 2.01 | 20 |
| | 3.00 | 20 |
| Flow rate: | 0.4 mL/min | |
| Column temperature: | 30 °C | |
| Injection details: | 1 μL partial loop | |
| Injection wash solvent: | 80:20 (v/v) water:acetonitrile | |
| UV detector wavelength: | 302 nm | |
| Backpressure: | 450 bar | |

Solutions

Working standard contained 50 $\mu\text{g}/\text{mL}$ of esomeprazole in water

Results

The analysis was performed on a Synchronis C18 1.7 μm , 50 x 2.1 mm column. As shown in Figure 1, esomeprazole was analyzed in less than 2 minutes. Table 1 shows the calculated results from six replicate injections.

| | Esomeprazole |
|--------------------------|--------------|
| Retention time (minutes) | 1.66 |
| %RSD on retention time | 0.6 |
| Asymmetry | 1.24 |
| %RSD on asymmetry | 1.6 |

Table 1: Retention time and asymmetry results for esomeprazole

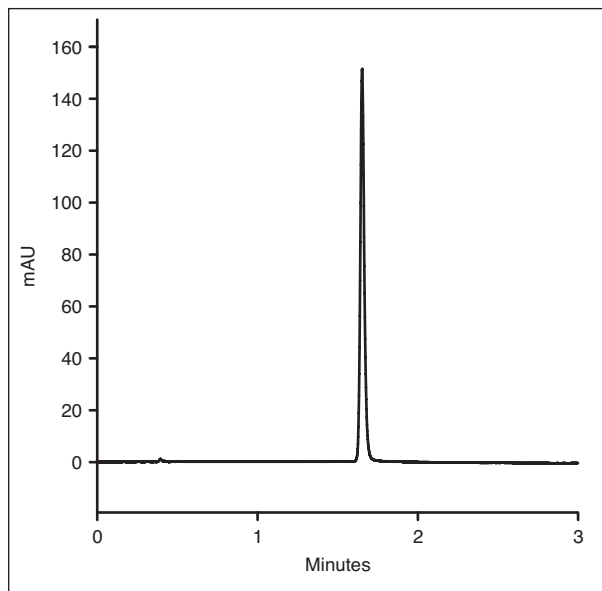


Figure 1: Chromatogram of esomeprazole analyzed using a Synchronis C18 1.7 μm , 50 x 2.1 mm column

Conclusions

The Synchronis C18 1.7 μm column successfully analyzed esomeprazole in less than 2 minutes. Replicate injections show stable and reproducible results. This demonstrates that Synchronis C18 is an excellent choice of column for the rapid analysis of esomeprazole, allowing high sample throughput.

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