



LC/MS Compatible Separation of Benzodiazepines on ZirChrom®-EZ

Clayton McNeff, Ph.D. , Dwight Stoll, and Kelly Johnson
ZirChrom Separations, Inc.

Technical Bulletin # 286

At ZirChrom® we have compared the elution sequences of benzodiazepines antidepressants on reversed-phase zirconia and silica C18-based columns and found that poorly resolved compounds on silica are well separated on zirconia and vice versa. We report here the separation of four benzodiazepines under isocratic elution conditions and an LC/MS compatible acetate buffer.

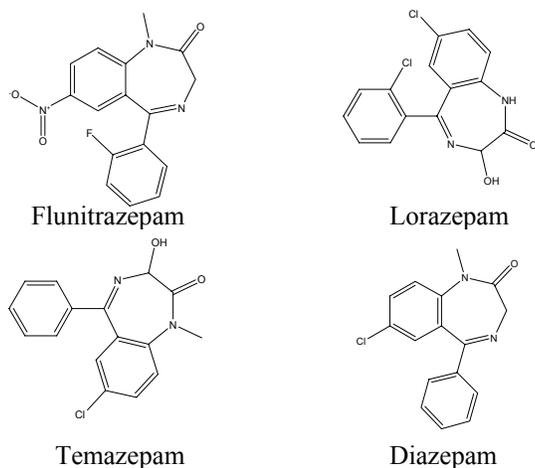


Figure 1: Chemical structures of four benzodiazepines.

Introduction

Benzodiazepines are an important class of amine containing antidepressants. The use of a ZirChrom®-EZ column allows for the separation of these four benzodiazepine compounds in under six minutes.

Experimental

A mixture of four benzodiazepines (flunitrazepam, lorazepam, temazepam, and diazepam) was separated at 35°C using a ZirChrom®-EZ column. The separation conditions were as follows:

Column:	ZirChrom®-EZ, 150 mm x 4.6 mm i.d. (Part Number: EZ01-1546)
Mobile Phase:	Isocratic elution: 35/65 A/B A: acetonitrile B: 20mM ammonium acetate pH 5.0
Temperature:	35 °C with Metalox™ 200-C column heater
Flow Rate:	1.0 ml/min.
Injection Vol.:	2 µl
Pressure Drop:	168 bar
Detection:	UV at 254 nm

Four benzodiazepines were separated using isocratic elution conditions and an LC/MS compatible acetate buffer. Peaks obtained were efficient and symmetrical.

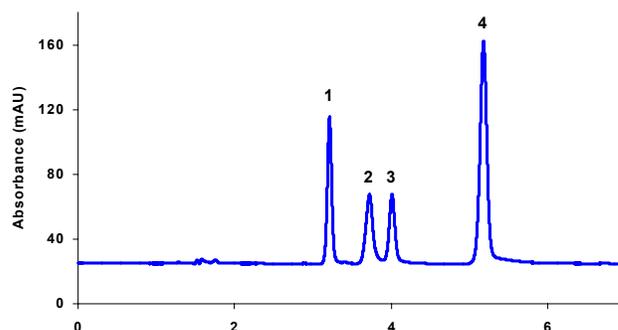


Figure 2: Separation of 1=Flunitrazepam, 2=Lorazepam, 3=Temazepam, and 4=Diazepam on ZirChrom®-EZ

This method can be tailored to your specific application needs. ZirChrom method developers can help to optimize and transfer this method to your site. Please contact ZirChrom technical support at 1-866-STABLE-1 or support@zirchrom.com for details.

ZirChrom phases offer unique selectivity, high efficiency, and excellent chemical and thermal stability.

ZirChrom Separations, Inc.
617 Pierce Street, Anoka, MN 55303
1-866-STABLE-1
support@zirchrom.com

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