



Fast Separation of Androsterone Steroids on **DIAMOND BOND**[®]-C18

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This application note shows the separation of four closely related anabolic steroids (androsterone, epiandrosterone, etiocholanolone and epietiocholanolone) using a DiamondBond[®]-C18 column. A typical analysis of these compounds involves derivatization and subsequent quantitation by GC-FID or GC-MS, however these methods tend to be labor intensive, and analytically unreliable (1). Baseline resolution of all four compounds was obtained on DiamondBond[®]-C18 at slightly elevated column temperature in under 3 minutes using isocratic elution.

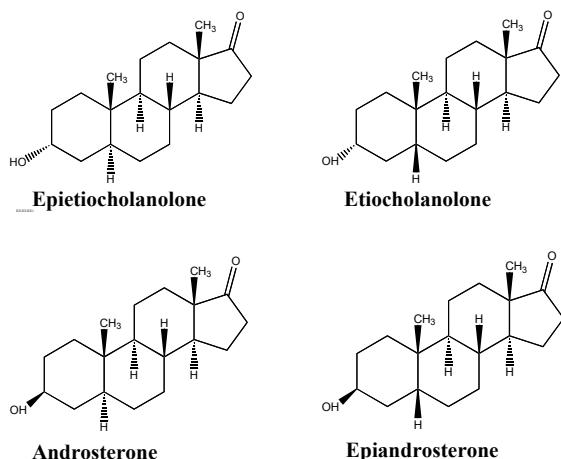


Figure 1: Structures of androsterone steroids.

Introduction

The rapid and accurate detection of anabolic steroids is crucial in today's sporting world. Historically the structural similarity of these compounds has made quantitative analysis by reversed-phase HPLC difficult at best. These steroids are very difficult to separate on silica ODS phases due to their size and structure similarities and their nearly identical mass spectra.

Experimental

A mixture of androsterone steroids (see Figure 1) was separated at 100 °C using a Diamondbond[®]-C18 column and a Metalox[™] 200-C column heater. The separation conditions were as follows:

Column: Diamondbond[®]-C18, 150 mm x 4.6 mm i.d.
(Part Number: DB01-1546)
Mobile Phase: 60/40 acetonitrile/water
Temperature: 100 °C with Metalox[™] 200-C column heater
Flow Rate: 2 ml/min.
Injection Vol.: 10 µl
Pressure Drop: 148 bar
Detection: UV at 215 nm

We report here a method that capitalizes on the unique temperature stability and surface chemistry of a zirconia-based stationary phase to achieve baseline resolution of these compounds in less than 3 minutes.

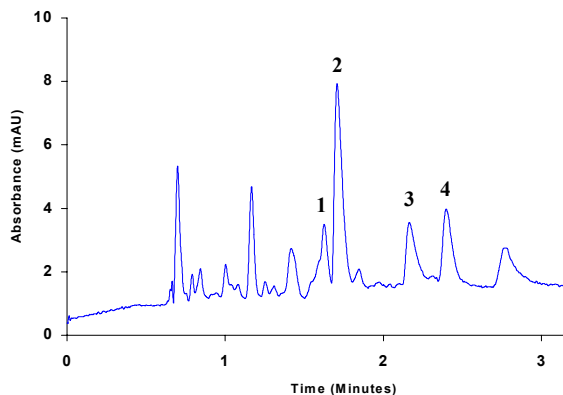


Figure 2: Separation of 1=Epietiocholanolone, 2=Etiocholanolone, 3=Androsterone, 4=Epiandrosterone on Diamondbond[®]-C18 at 100 °C with the Metalox[™] 200-C column heater.

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.

References

- (1) A. Leinonen et al., J. Mass Spectrometry; 37, 693-698 (2002).

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