

High Mass Sensitivity on the Agilent 500 Ion Trap LC/MS

Technical Overview

Introduction

Quadrupole mass filter based mass spectrometers are excellent instruments for quantitation of small molecules. However, these instruments are known to have ion transmission that decreases at high masses. Figure 1 illustrates excellent response over a wide mass range with the Agilent 500 Ion Trap LC/MS to a tune/calibration sample (Ultramark). The spectrum obtained from the 500 Ion Trap shows high intensities for the low m/z ions at 74 and 242, while also maintaining good intensity at m/z = 1922. The mass resolution of ions 1222.2, 1223.2 and 1224.2 is excellent and baseline resolution is achieved as shown in Figure 2.





Figure 1. Full scan 50-2000 on the Agilent 500 Ion Trap LC/MS.



Figure 2. Excellent mass resolution demonstrated in profile acquisition mode on the Agilent 500 Ion Trap.

Experimental Conditions

In order to demonstrate absolute high mass sensitivity achieved on the 500 Ion Trap LC/MS, Cyclosporin A (CsA, $C_{62}H_{111}N_{11}O_{12}$ MW 1201 amu), a non polar cyclic oligopeptide, was injected into the system under ESI positive conditions. Figure 3 shows the excellent response and signal-to-noise ratio (S/N 167:1) for 500 pg of CsA obtained under full scan acquisition mode (100–2000 Da). The base peak observed in the mass spectrum corresponds to the intact sodium adduct [M + Na]⁺ at *m/z* 1224.5. It emphasizes the superb high mass sensitivity of the 500 Ion Trap at a low concentration level and makes it the ideal LC/MS of choice for trace investigation.



Benefits

Resolution over the entire mass range when using the Agilent 500 Ion Trap LC/MS is excellent, delivering as much as eight times greater sensitivity than alternative methods.

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