

Advantages of Fast Scan Rates with the Agilent 500 Ion Trap LC/MS

Technical Overview

General Description

Chromatographic separation of complex mixtures is known to be degraded by the limited number of data points. The unique "Triple Resonant" mass scan technology used in the Agilent 500 Ion Trap LC/MS allows scan rates of 15,000 Da/sec with a mass resolution of better than 0.5 Da full width half maximum (FWHM).

Morphine-3-glucuronide and morphine-6-glucuronide, two very closely eluting analytes within the same spectrum are shown in Figure 1. The samples were analyzed by ESI MS/MS, precursor m/z = 462.2, product ion scan m/z = 160-470. The compounds are chromatographically separated, but in the top chromatogram the separation is not apparent because of the slow scan rate of 5000 Da/sec, which produced very few data points across the chromatographic peak. The lower chromatogram was obtained with a scan rate of 15,000 Da/sec, which allowed more data points to be acquired across the peak. The higher data rate improves the chromatographic resolution. Under the same chromatographic condition, a peak pair is resolved about 30% at 5000 Da/sec but the same peaks are resolved to 80% at 15,000 Da/sec.





Benefits

A higher data rate improves chromatographic resolution, particularly in closely eluting analytes with the same spectrum.

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Printed in the USA February 17, 2011 SI-0250

