

Varian 320-MS

Area and Retention Time Reproducibility

Advantage Statement: The 320-MS Triple Quadrupole Mass Spectrometer combined with the 212-LC Binary Gradient LC/MS Chromatography Pumps can deliver excellent reproducibility of both area and retention time over multiple injections of a heavy matrix extract.

One of the major concerns of all industries regarding triple quadrupole instrumentation is the ability of these instruments to handle samples in dirty matrices with little or no instrument maintenance. The data presented here was gathered from samples in a heavy matrix containing many components with multiple transitions on a Varian 320-MS triple quadrupole mass spectrometer. This method provides a rugged test of reliability and reproducibility. The samples analyzed here contained over 90 pesticides in a tomato, orange, spinach, sweet corn, and raisin matrix extract. The samples were extracted using the QUECHERS method (Quick, Easy, Cheap, Effective, Rugged, Safe), consisting of micro extraction of cryo-milled vegetables with no sample clean-up.

Figure 1 shows the retention time reproducibility of Buprofezin (306 → 201) over 60 injections. The % RSD = 0.02 which exhibits the system's excellent reliability. The % RSD = 0.09 over 100 subsequent injections. These experiments used a gradient program that spanned 60 minutes/injection.

Area reproducibility is the other important indication of how robust an instrument is while being used with a heavy matrix. Figure 2 shows the area reproducibility of Buprofezin (306 → 201). Over the course of 100 injections, the overall % RSD = 4.57. Two other transitions were examined, at varying times in the analysis, and each of the components showed RSD < 7 %. In this study, the instrument and this method were continually running for at least 4 days, and even after 100 injections, the instrument did not lose sensitivity in further experiments, demonstrating that the system was not contaminated by the dirty matrix and that the maintenance required is minimal.

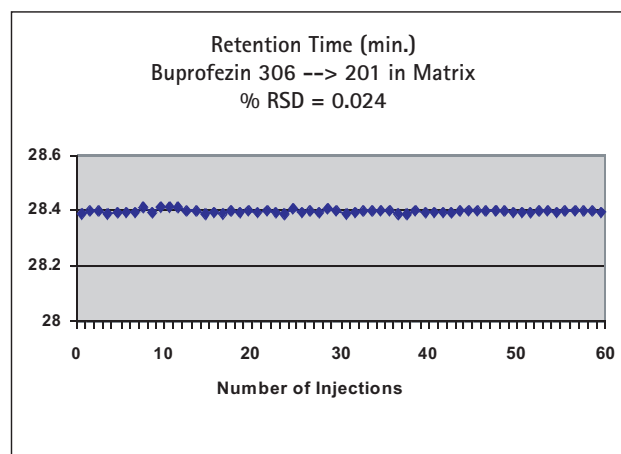


Figure 1 Retention time of Buprofezin in a heavy matrix over 60 injections.

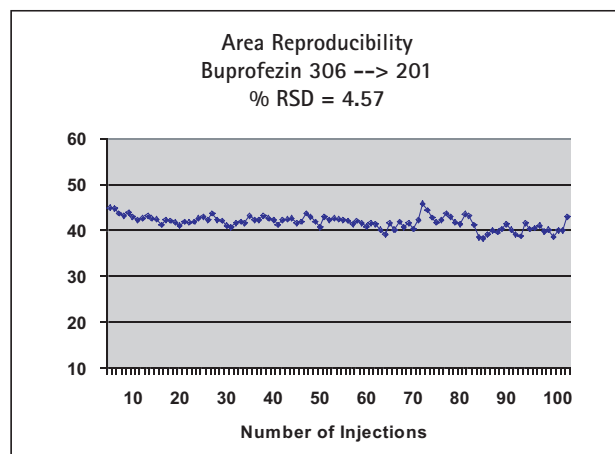


Figure 2. Area reproducibility of Buprofezin in a heavy matrix over 100 injections.

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