Results and Discussion

Figure 3. Typical chromatogram for a marijuana QuEChERS extract with added analyte protectants.

Figure 4. The Agilent Find by Fragments software extracted the six most significant ions for each pesticide in the PCDL at its locked RT. The software looks at the peak shapes and RT for each extracted ion. The coelution plot shows the normalized peak heights for each ion relative to a reference ion.

Figure 6. Find by Formula Compound Identification Results showing some of the information available to help identify a "hit."

Figure 7. Compound Identification results for Dichloro-...ase. The red rectangles show the theoretical spacing and abundance of the isotope.

Figure 8. Molecular ion isotope pattern for Dichloro-...ase. Note: M+ is only 1.8% of the base peak. The red rectangles show the theoretical spacing and abundance of the isotope.

Conclusions

- Cannabis is one of the most difficult matrices to work with.
- High concentrations of cannabinoids and terpenes get extracted along with pesticides using QuEChERS extraction.
- These heavy interferences can lead to false positives.
- But, most false positives can be eliminated by looking at the RT difference ratio, mass and RT accuracy and the molecular ion isotope pattern (when present).
- 22 pesticides & metabolites, 2 fire retardants and 3 PAEs were found in the 16 samples.
- The fire retardants, PAEs and banned pesticides likely came from environmental contamination.
- No pesticides were found in the Marijuana grown at U Miss.