Accurate Liquid Chromatography Solutions for THC Quantitation in Forensic Labs

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The cannabis/hemp market continues to grow, with more states legalizing marijuana, as well as the 2018 Farm Bill removing hemp from the controlled substance list. This bill defines that any cannabis sativa L. strain with a total tetrahydrocannabinol (THC) concentration of ≤0.3% can be considered hemp, not cannabis. Consequently, there is strong demand to differentiate hemp from cannabis based on THC concentration. Traditional qualitative methods use gas chromatography mass spectrometry (GCMS) to identify and confirm the presence of marijuana in criminal cases. GCMS could be used for quantitation, however full separation of the acid forms is not feasible as it is converted to native THC in the source. More recently, adulterated hemp samples containing THC variants are increasing and there is a need to fully identify and quantify each of them. Most laboratories are only monitoring and reporting delta-9 THC. This workshop will describe the use of liquid chromatography (LC) techniques for accurate separation of common cannabinoids, Cannabis or Hemp analyzer for THC quantitation, and LCMS separation methods.

Learning objectives

1. Discuss the difference between GC and LC
2. Learn about the cannabis or hemp analyzers for THC quantitation
3. Learn how to expand capabilities of LC to include MS and additional cannabinoid isomers such as delta-8 and delta-9, delta-10 and delta-6a/10a THC.
4. Hands-on portion to see the analyzer run in real-time samples