K48 Rapid Analysis of THC and Metabolites Using Disposable Pipette Extraction

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After attending this presentation, attendees will understand a new and improved method for analyzing THC and metabolites in whole blood.

This presentation will impact the forensic community and/or humanity by assisting the forensic community to implement a faster and improved method for performing THC analysis.

A rapid extraction method for THC and metabolites has been developed using disposable pipette extraction (DPX). Although DPX has been previously introduced for this extraction methodology, improvements in the design of the DPX tips and changes in sorbent material have permitted higher recoveries and more reproducible data. Also, the extracts are much cleaner and negligible interferences were noted from actual case samples. Furthermore, the new method permits the simultaneous analysis of THC, OH-THC and COOH-THC in a single extract and thus single chemical derivatization.

The method involved extracting 1 mL of whole blood with 1.5 mL acetonitrile. After mixing, the supernatant was decanted into a clean labeled test tube and 2.5 mL of 0.1M HCl added. The mixture was drawn into the DPX tip using an attached 10 mL syringe device and mixed with the sorbent by drawing in air. After 30 seconds, the sample solution was dispensed back into the tube (or waste). Subsequently, 0.5 mL of methanol was drawn into the DPX tip and mixed as a wash step. For elution, 0.5 mL of 5:1 hexanes-ethyl acetate was drawn into the DPX tip, mixed with the sorbent by drawing in air, and after 10 seconds the eluent was dispensed directly into the corresponding labeled GC vial. The elution step was repeated with an additional 0.5 mL of 5:1 hexanes- ethyl acetate. The DPX extraction time, following the protein precipitation with acetonitrile, took approximately 3 minutes, and 12 samples could be processed simultaneously using 12 syringe devices.

Using BSTFA for derivatization, 3 ions (1 target and 2 qualifier ions) could be monitored for THC free from apparent interferences. GC oven temperature was held for about 5 minutes at 220 C to improve the chromatography and increased the resolution of interferences with THC. Detection limits were less than 0.5 ng/mL for THC and OH-THC and approximately 1ng/mL for COOH-THC.

THC, Disposable Pipette Extraction, Solid-Phase Extraction

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