



F18 An Evaluation of Sample Preparation Techniques for Cannabis and Cannabis Products

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Learning Overview: This presentation will discuss the results from a consolidated sample preparation technique for cannabis and cannabis products that will allow for the analysis of incurred pesticides residues and potency evaluations, ideally from the same sample preparation process. Data from both Gas Chromatography/Tandem Mass Spectrometry (GC/MS/MS) and High-Performance Liquid Chromatography (HPLC) will be shown to demonstrate the effectiveness of this approach. Furthermore, the cannabinoid profiles for the samples will be determined and the incurred pesticides residues will be measured for each sample as a result of proper sample preparation methods.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by providing a more comprehensive overview of sample preparation techniques that can be used for a host of analyses using a complicated matrix like cannabis or cannabis product that will demonstrate to users the effectiveness of the sample preparation techniques but also the ease the expense of the technique.

Sample preparation is an essential part of method development that is critical to successful analytical measurements. In short, the goal for organics analysis is to reduce and simplify the complex sample matrices to a form that is applicable for instrumental analysis without bias to potential target and desired non-target compounds. With cannabis and cannabis products, however, the analyst is faced with a very challenging matrix and targets that may range from trace level through percent level, thus placing considerable demands on the sample preparation techniques. The most effective sample preparation techniques will allow for a precise and accurate analytical measurement of both cannabinoids and incurred pesticides present within the samples. Cannabinoid profiling has been utilized in the field for some time now due to the legal aspects associated with cannabis and cannabis products; however, incurred pesticide recovery analysis is currently a hot-button topic and growing in popularity. The need to perform pesticide analyses on cannabis and cannabis products is rising because of safety concerns for the users and growers that are present due to the lack of regulations in place in regard to pesticides and the cultivation of cannabis plants. Cannabinoid profiling alongside incurred pesticide analyses could also be useful to law enforcement in order to track where the cannabis and cannabis products came from, including dealer and grower, if any patterns were to be detected. Those patterns could be of importance to law enforcement when trying to investigate cannabis cases.

Recently, sample preparation for cannabis and cannabis products has moved toward Quick, Easy, Cheap, Effective, Rugged, and Safe (QuEChERS)-like procedures due to their high throughput and lower costs. QuEChERS-like procedures provide a more generic approach that is well suited for a variety of products and also provides sample cleanup that increases compatibility for both GC and LC separations. QuEChERS' appeal to cannabis work is its ability to be modified in order to deal with matrix effects commonly associated with cannabis.

Cannabis, HPLC, GC/MS