



A115 Development and Validation of a Quantitative Method for Identification of Synthetic Cannabinoids Using GC/MS

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After attending this presentation, attendees will have a solid grasp on the properties and characteristics of synthetic cannabinoids and the current trends in use and regulation of the drugs, as well as how to effectively analyze samples to determine the type and quantity of synthetic cannabinoid used in the herbal matter tested.

Due to the increasing abuse of these herbal incense products, this presentation will impact the forensic science community by informing attendees about new developments in the battle against the use and abuse of synthetic cannabinoids as well as a method that has been developed to quantitate the synthetic cannabinoids in each product tested in a quick and accurate way.

These products often have names that are ambiguous or suggestive drug references. While labeled as “Not for Human Consumption” and purportedly for use as incense only, these are a part of a growing trend to use as a way to get around the legality of using marijuana but still obtain a high. These products are laced with chemicals known as synthetic cannabinoids, named for their structural similarity to the psychoactive ingredient in marijuana. The structural similarity allows them to bind to the same receptors in the brain and other organs, giving the user the same effects of marijuana. These products have been seen in the market since at least 2004 when they were quickly banned by the military. Since then, a number of states have followed suit and begun banning these products.

With the recent temporary scheduling of five of these compounds in March 2011 by the DEA, there has been a need to find a method that accurately and quickly determines the type and quantity of synthetic cannabinoid in each seized product. The method needs to have the ability to separate out the components as to allow the analyst to distinguish synthetic cannabinoids from other components such as Vitamin E, which is often added to try to disguise the synthetic cannabinoid's presence. The fact that Vitamin E is easily separated from the synthetic cannabinoids by gas chromatography negates any attempt at disguising the active ingredients. Gas chromatography/mass spectrometry (GC/MS) has been previously shown to be a good method for the qualitative analysis of the synthetic cannabinoids. However, quantitative analysis has been limited until now due to the limited availability of reference standards and that most states do not require quantitative analysis for seized drugs. This presentation will describe a method used to obtain accurate results using a GC/MS and will show how the synthetic cannabinoids in such products can be quantitated using this method.

In order to develop a quantitation method, various synthetic cannabinoid standards were obtained from commercial sources and subsequently analyzed by gas chromatography/mass spectroscopy. The reference standards analyzed include the following: JWH-018; JWH-073; JWH-200; JWH-250; and (\pm)-CP 47,497 (C8) homolog. Using tetracosane as an internal standard and a standard curve, the data obtained was applied to the analysis of various brands of herbal incenses obtained from Huntington area head shops in 2010 and a service station in Kentucky in 2011. GC/MS data is presented for all reference standards as well as for all samples analyzed.

Synthetic Cannabinoids, Herbal Incense, JWH Compounds