

## SYNTHETIC CANNABINOIDS (K2, SPICE)

<b>Test #</b>	<b>19116</b>
<b>Synonyms</b>	K2, Spice, JWH-018, JWH-073
<b>Category</b>	Hallucinogen

### Specimen Requirements

<b>Specimen</b>	Aliquot of random or spot urine collection
<b>Volume</b>	10 mL
<b>Handling</b>	Refrigerate; specimen may also be frozen

### Assay Parameters

<b>Methodology</b>	Liquid Chromatography with Tandem Mass Spectrometry (LC-MS/MS)
<b>CPT code Suggested</b>	82541

### Clinical Information

JWH-018 and JWH-073 are two synthetic compounds possessing biological activities similar to  $\Delta^9$ -THC, the primary component in marijuana responsible for the psychoactive properties of the drug. JWH-018, JWH-073 and similar substances are collectively known as **synthetic cannabinoids**. These compounds are considered contraband in many European countries and their possession and use are also prohibited by an increasing number of local governments within the United States; however, neither JWH-018 nor JWH-073 is currently classified as a controlled substance by the U.S. federal government (as of Sept 2010). The DEA has identified these compounds as 'Drugs and Chemicals of Concern'.

JWH-018 and JWH-073 have been identified as additives in various herbal products such as **Spice** and **K2**. Although these products are marketed as 'incense – not for human consumption, they are commonly smoked for the psychoactive properties associated with the synthetic cannabinoids. Users report perceived effects similar to marijuana, but with a shorter duration of action. Once consumed, these compounds are rapidly metabolized in the body and excreted in the urine as a series of related metabolites.

MEDTOX Laboratories has developed a new test capable of identifying the recent use of JWH-018 and JWH-073. The procedure utilizes advanced, state of the art forensic technology; high performance liquid chromatography coupled to linear ion trap tandem mass spectrometry. The methodology detects and positively identifies the presence of metabolites of JWH-018 and JWH-073 in urine.

# MEDTOX

## Synthetic Cannabinoids (K2, SPICE)

### Testing Highlights

#### FAQ's

##### 1. What is "Spice?"

The terms *Spice*, *K2*, *Fake Pot*, *Mr Nice Guy Incense*, etc. refer to commercially available products that have been sprayed with research chemicals called *synthetic cannabinoids* but do not contain any cannabis (marijuana) components. The cannabinoid-like chemicals were developed in research laboratories to study neuronal receptors found in the body and brain. These products are generally sold as incense, but are intended to be smoked for their psychoactive effects. Very little (if anything) is known about the health and safety of these research compounds. The compounds themselves are considered contraband in many European countries and their possession and use are also prohibited by an increasing number of local governments within the United States. Most synthetic cannabinoids (and the products that contain them) however, are not currently classified as controlled substances by the U.S. federal government (as of Sept 2010). The DEA has identified these compounds as 'Drugs and Chemicals of Concern'.

##### 2. What is MEDTOX actually testing for?

The MEDTOX assay for "Spice" is testing for the two synthetic cannabinoids most commonly found in incense products (JWH-018 and JWH-073) and the metabolites of these compounds. Following the consumption of JWH-018 and/ or JWH-073, a distinct pattern of metabolites of these compounds can be found in urine. The metabolites are identified based on both chromatographic parameters as well as mass spectral fingerprinting.

##### 3. Is a positive result defensible?

Yes, it is, when collected and analyzed using chain-of-custody protocols. With the MEDTOX assay, a specimen is considered positive if there is a match of at least 6 metabolic compounds when compared with known compounds found in reference samples.

##### 4. How are positive results reported?

A positive result will be reported as "*POSITIVE; Metabolite profile consistent with the use of JWH-018 and/or JWH-073 is present*".

##### 5. Why is the MEDTOX assay believed to be superior to that of other laboratories?

MEDTOX utilizes an Applied Biosystems Qtrap 5500 for the analysis of "spice" specimens. This combination UPLC – quadrupole, linear ion trap mass spectrometer is the most sophisticated in the industry, delivering exceptional sensitivity, which results in a longer detection window, as well as the ability to positively fingerprint suspected metabolites. Compounds are identified down to levels of approximately 0.1 ng/mL for most of the diagnostic metabolites. The MEDTOX test incorporates known reference standards for JWH -018 and 073 metabolites in addition to targeting metabolites elucidated from known positive samples.

##### 6. How can I compare what other labs are offering versus the MEDTOX assay?

Ask a laboratory about their criteria for calling a sample positive and the sensitivity of the assay. Tests optimized to detect only parent compounds will not be effective in identifying Spice users due to the extensive metabolism of JWH-018 and JWH-073. Algorithms for identifying metabolic patterns are not available for most instrument types. As is the case with full spectrum mass spectrometry, there should be defined matching criteria used to discriminate positive from negative samples to ensure defensibility of the test. MEDTOX requires a match of at least six metabolic compounds for a positive result. Similarly, a good but insensitive assay will not provide insight into a donor's history. The sensitivity of the MEDTOX assay is 0.1 ng/mL.