

Synthetic Cannabinoids Drug Information

Classification

Synthetic Cannabinoids are chemicals that act as cannabinoid receptor agonists. Chemically they are not similar to cannabinoids but the term "Synthetic Cannabinoids" or "Cannabinomimetics" is widely used to refer to them as they're cannabinoid-like in their activity.

The synthetic cannabinoid receptor agonists fall into seven major structural groups:

- Naphthoylindoles (e.g. JWH-018, JWH-073, JWH-081, AM-2201)
- Naphthylmethylindoles* (JWH-185, JWH-199)
- Naphthoylpyrroles* (JWH-369, JWH-370)
- Naphthylmethylindenes* (JWH-176)
- Phenylacetylindoles (JWH-250, RCS-4)
- Cyclohexylphenols (e.g. CP 47,497 and homologues of CP 47,497)
- Classical cannabinoids (e.g. HU-210)

*Compounds in these groups have not been detected in herbal blends so far.

Metabolism

Little is known about the detailed pharmacology and toxicology of the synthetic cannabinoids and few formal human studies have been published.

Synthetic Cannabinoids metabolize extensively in humans via oxidation and glucuronide conjugation. Following a single low dose, the hydroxylated synthetic cannabinoids and the carboxylated synthetic cannabinoids metabolites can be detected up to 72 hours in urine. Very little parent drug excreted in human urine has been reported. In case of chronic use the detection window could be longer.

Presence of parent drug in saliva confirms ingestion; average detection window up to 24-48 hours.

It is possible that, apart from high potency, some other synthetic cannabinoids could have particularly long half-lives, potentially leading to a prolonged psychoactive effect. In addition, there is considerable inter-and intra-batch variability in smoking mixtures, both in terms of substances present and their quantity. Thus, there is a higher potential for overdose than with cannabis.

Abuse

Initially, JWH-018 and JWH-073 were the two most common synthetic cannabinoid chemicals found in a variety of herbal smoking blends. Others like AM-1248, AKB-48, UR-144, and XLR-11 have started appearing in newer synthetic cannabinoid products and preparations. Reportedly offering a high 4 times stronger than marijuana, these compounds are commonly associated with herbal smoke and incense products sold under names such as K2, K3 Legal, Spice, Syn, Haze, Cloud Nine, Serenity and many others.

Synthetic cannabinoid chemicals are often laced in the herbal smoking products that are readily available via the Internet and in many "head-shops" around the country.

Users looking for a "high" often turn to these herbal smoking or incense products because they do not show up on a standard urine drug test. Users smoke the product by wrapping joints, smoking it in pipes, or inhaling fumes via vaporizers. Users also report that herbal blends or pure chemical concoctions can be ingested with an infusion or solvent process; purportedly allowing them to manage the potency and dose of the active ingredient(s).

Users indicate the high comes on slow at first, then with surprising potency. There have been many reports about the adverse effects including agitation, rapid heart rate, confusion, dizziness and nausea.

According to the American Association of Poison Control Centers, the number of human exposure calls relating to synthetic cannabinoids increased 139% between 2010 and 2011.

Long-term effects from these research chemicals are unknown.

In July 2012, the DEA banned synthetic cannabinoids based on their structural classification, explicitly naming 15 chemicals, citing numerous calls to poison control centers around the nation. Plans to Emergency Schedule three more drugs were announced in April 2013. However, newer generation compounds continually emerge—making it more vital than ever to target synthetic marijuana.

Methods of Analysis

Immunoassay screens are now available for synthetic cannabinoid testing. RTL's test utilizes the most sophisticated, sensitive and specific equipment and technology available, liquid chromatography/tandem mass spectrometry (LC/MS/MS) to confirm presumptive positive specimens for synthetic cannabinoid metabolites in urine. The method relies on monitoring multiple metabolites for each drug. RTL's test methodology provides the most definitive synthetic cannabinoid biomarker test results.

