

CP-47,497 and Cannabicyclohexanol (CP-47,497 C8 homologue) [Synthetic Cannabinoids found in Herbal Products]

March 2011
DEA/OD/ODE

Introduction:

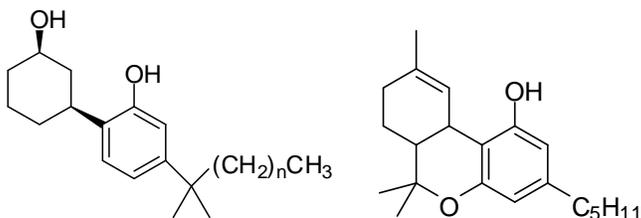
CP-47,497 is a synthetic cannabinoid agonist lacking the classical cannabinoid chemical structure, ABC tricyclic benzopyran system. It was designed and evaluated as a research tool to study the cannabinoid system. CP-47,497 and cannabicyclohexanol have been found in the herbal incense products sold via the Internet, gas stations, convenience stores, tobacco shops and head shops.

Licit Uses:

CP-47,497 and cannabicyclohexanol were used in basic scientific research to study structure activity relationships.

Chemistry:

The chemical structures for CP-47,497(n=5) (left) and Δ^9 -THC (right), the primary psychoactive constituent of marijuana, are shown below. Cannabicyclohexanol (CP-47,497-C8 homologue, n=6) differs from CP-47,497 by one carbon unit (left).



Names for CP-47,497, CAS # 70434-82-1:

- 2-[(1R,3S)-3-hydroxycyclohexyl]-5-(2-methyloctan-2-yl)phenol (IUPAC Name);
- 5-(1,1-dimethylheptyl)-2-[(1R,3S)-3-hydroxycyclohexyl]-phenol;
- 3-(4-(1,1-dimethylheptyl)-2-hydroxyphenyl)cyclohexanol;
- *cis*-3-[2-hydroxy-4(1,1-dimethylheptyl)phenyl]-cyclohexan-1-ol

Names for cannabicyclohexanol, CAS # 70434-92-3:

- 2-[(1R,3S)-3-hydroxycyclohexyl]-5-(2-methylnonan-2-yl)phenol (IUPAC Name);
- 5-(1,1-Dimethyloctyl)-2-[(1R,3S)-3-hydroxycyclohexyl]-phenol;
- CP-47,497 C8 homologue

CP-47,497 and cannabicyclohexanol have some structural similarities to tetrahydrocannabinols contained in *Cannabis sativa* L. (marijuana); but their chemical structure is such that they are not classified as a THC.

Pharmacology:

Behavioral pharmacology studies show that CP-47,497

and cannabicyclohexanol have Δ^9 -THC-like activity in animals. In mice, it decreases overall activity, produces analgesia, decreases body temperature and produces catalepsy. Together, these four effects are used by scientists to predict Δ^9 -THC-like psychoactivity in humans. CP-47,497's activity in all four tests suggests that it is likely to have Δ^9 -THC-like psychoactive effects in humans.

In drug discrimination studies in rats, CP-47,497 generalized to Δ^9 -THC, i.e. produced subjective effects similar to those of Δ^9 -THC.

In vitro studies show that CP-47,497 and cannabicyclohexanol bind to both the brain cannabinoid receptor CB1 and the peripheral cannabinoid receptor CB2 with higher affinity than Δ^9 -THC suggesting that it would have the same effects as THC in vivo.

The safety of these substances in humans is unknown.

Illicit Uses:

CP-47,497 and homologues have been identified in the herbal incense products such as "Spice", "Spike 99", and others which may be smoked for their psychoactive effects. There is no known legitimate use for these substances and based on product analyses plant material is purposely spiked with these substances.

User Population:

The primary abusers are youth purchasing these substances from Internet websites, gas stations, convenience stores, tobacco shops and head shops.

Illicit Distribution:

The System to Retrieve Drug Evidence (STRIDE) is the database for the seized drugs analyzed by DEA forensic laboratories and the National Forensic Laboratory System (NFLIS) is a system that collects drug analysis information from state and local forensic laboratories. These systems contain more than 1,300 reports of various synthetic cannabinoids in seized exhibits from over 30 states.

Control Status:

As of March 1, 2011, CP-47,497 and cannabicyclohexanol (CP-47,497 C8 homologue), including its isomers have been temporarily placed in Schedule I under the Controlled Substances Act.

Comments and additional information are welcomed by the Drug and Chemical Evaluation Section, Fax 202-353-1263, telephone 202-307-7183, or E-mail ODE@usdoj.gov.