CP-47,497 and homologues
5-(1,1-Dimethylheptyl)-2-[(1R,3S)-3-hydroxycyclohexyl]-phenol
[Synthetic Cannabinoid in Herbal Products]

Introduction:

CP-47,497 is a synthetic cannabinoid agonist without the classical cannabinoid chemical structure. It is used in scientific research as a tool to study the cannabinoid system. CP-47,497 and its homologues have been identified in herbal incense mixtures, with names including “Spice”, “K2”, and others, sold via the Internet, gas stations, convenience stores, tobacco shops and head shops.

Licit Uses:

CP-47,497 is used in basic scientific research to identify cannabinoid receptors in the brain and study Δ9-THC’s mechanisms of action.

Chemistry:

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; IUPAC Name: 2-[(1R,3S)-3-hydroxycyclohexyl]-5-(2-methyloctan-2-yl)phenol or CP-47,497 [Chemical Abstract Service (CAS) Registry Number 70434-82-1] is identified to have some structural similarities to tetrahydrocannabinols (THC) contained in Cannabis sativa L. (marijuana); but its chemical structure is altered such that it is not classified as a THC. Further, the chemical structure of CP-47,497 does not identify it as belonging to any class of substances controlled under the Controlled Substances Act (CSA).

The chemical structures for CP-47,497 (n=5) and side chain homologues of CP-47,497 (n=4, 6, or 7) (left) and Δ9-THC (right), a compound representative of THC substances that occur in marijuana, are shown below.

Pharmacology:

Behavioral pharmacology studies show that CP-47,497 has Δ9-THC-like activity in animals.

In drug discrimination studies in rats, CP-47,497 generalized to Δ9-THC, i.e. produced subjective effects similar to those of Δ9-THC.

In vitro studies show that CP-47,497 binds to both the brain cannabinoid receptor CB1 and the peripheral cannabinoid receptor CB2 with higher affinity than Δ9-THC suggesting that it would have the same effects as THC in vivo.

Illicit Uses:

CP-47,497 homologues have been identified in herbal incense mixtures which are smoked for their psychoactive effects.

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 Information from Drug Evidence (STRIDE) is the database for the seized drugs analyzed by DEA forensic laboratories and the National Forensic Laboratory Information System (NFLIS) is a system that collects drug analysis information from state and local forensic laboratories. Federal, state, and local forensic laboratories identified 17 exhibits as CP-47,497 and its C8 homologue from 2010 to 2012.

Control Status:

On March 1, 2011, CP-47,497 and cannabicyclohexanol (CP-47,497 C8 homologue), including their isomers, were temporarily controlled in Schedule I of the Controlled Substances Act. Control of these compounds became permanent on July 9, 2012, via passage of the Synthetic Drug Abuse Prevention Act of 2012 (Public Law 112-144, Title XI, Subtitle D).

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.