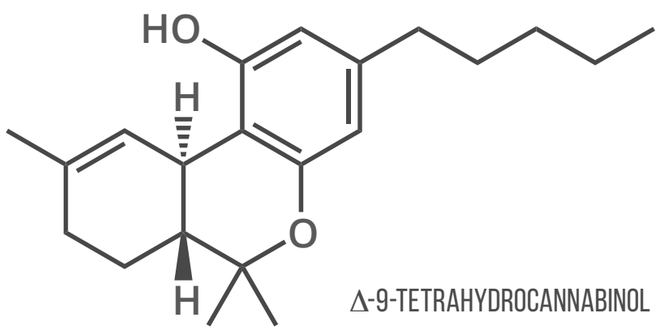
CANNABIS & SYNTHETIC CANNABINOIDS

In recent years, the use of synthetic cannabinoids as a substitute for cannabis has been on the increase. However, there is also some concern about their potential effects on users. This graphic looks at what synthetic cannabinoids are, how they can be classified, and some of the effects that they can have.

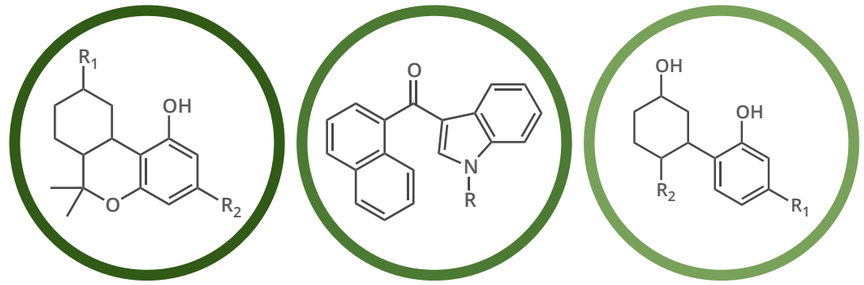
CANNABIS & CANNABINOIDS



Δ-9-TETRAHYDROCANNABINOL

Cannabis contains a large number of different cannabinoid chemicals. The main psychoactive constituent in cannabis is the cannabinoid tetrahydrocannabinol (THC). It acts on cannabinoid receptors in the brain, causing a range of psychological effects.

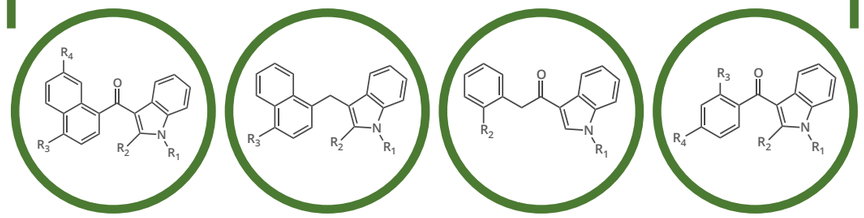
SELECTED CLASSES OF SYNTHETIC CANNABINOIDS



CLASSICAL *(structure similar to THC)*

AMINOALKYLINDOLES *(number of subcategories)*

NON-CLASSICAL *(e.g. cyclohexylphenols)*



NAPHTHOYLINDOLES *e.g. JWH-018*

NAPHTHYLMETHYLINDOLES *e.g. JWH-175*

PHENYLACETYLINDOLES *e.g. JWH-167*

BENZOYLINDOLES *e.g. RCS-4*

Synthetic cannabinoids can be classified in a number of ways. Broadly, they can be split into three groups: classicial cannabinoids, which are structurally related to THC; aminoalkylindoles, the most numerous, which can be further split into a number of subclasses; and non-classical, including cyclohexylphenols and other compounds. Other classifications split them into further groups. A group not shown here is the eicosanoids.

A number of the compounds have 'code names'. JWH stands for John W. Huffman, who synthesised many new cannabinoids. Others have more obscure origins; AKB-48 is named after a Japanese girl band, whilst XLR-11 is named after the first liquid rocket fuel developed in the US.

SYNTHETIC CANNABINOIDS & THEIR EFFECTS

SYNTHESIS

First synthesised in labs in the 1980s for research purposes.

ILLICIT USE IN 'SPICE'

Sprayed onto dried herbs then smoked or ingested.

HIGH POTENCY

2-100x

Synthetic cannabinoids can be much more potent than THC.

SERIOUS SIDE EFFECTS

Adverse effects often much more severe than for THC.

Synthetic cannabinoids (SCs) were never intended for human consumption, but synthesised to investigate potential medicinal uses of cannabis. They target the same receptors, but have a higher efficacy than THC. There is no published safety data for the compounds, and little is known about their effects in humans. Many are controlled substances, but modifications of the compounds produces new entities not covered by legislation. Use of SCs is linked with nausea & vomiting, anxiety, psychosis, seizures, acute renal failure, and in cases, death.