

## Drug Facts

### Synthetic Cannabinoids

**AKA: Product Names** currently include:  
**Pandora's Box, Exodus, Exodus Damnation, Abyss, Psyclone, Sensate, Clockwork Orange, Magic Dragon**, and many others. Some of the names are similar to strains or forms of cannabis, e.g. Blue Cheese.

Also referred to as: Synthetic Canna, Incense, Smoking Mixture, Pot Pourri

The drugs in question typically work on **cannabinoid receptors** in the brain and body. They should therefore properly be referred to as **Synthetic Cannabinoid Receptor Agonists (SCRAs)**. However although accurate the term isn't widely used and so the term Synthetic Cannabinoids is used here as it's more understandable to most people.

**Drug Families** include:

**Naphthoylindoles:** JWH-018, JWH-019, JWH-073, JWH-08, JWH-122, JWH-200, AM-1221, AM-2201;

**Phenylacetylindoles:** JWH-250, JWH-251, JWH-203, RCS-8, Benzoylindoles: AM-694, AM-1241, AM-2233,

RCS-4, **Cyclopropanoylindoles:** UR-144, 5F-UR-144,

A-834,735, A-796,260; **Naphthoypyrrroles:** JWH-307,

JWH-147, JWH-030 and other compounds such as: Win-

55,212-2, AB-001, CP-47,497, CP-55-940, HU-210, HU-

211, HU-331, Q-1812.

Naming of synthetic cannabinoids is rather confusing. Some of the chemicals emerged from laboratory research into cannabinoids and so the compounds were given reference codes from research.

For example a sequence of compounds developed by John William Huffman in America were given the initials JWH, followed by a number (e.g. JWH-018.) HU- compounds were developed by Hebrew University.



Each compound has a long chemical name. Often they have more than one. There is an “official” name based on an international naming standard (IUPAC). But some drugs end up with unofficial names too, and abbreviations derived from these unofficial names.

Take one example, the newish **AKB-48**.

The ‘official’ name is *I-pentyl-N-tricyclo[3.3.1.13,7]dec-1-yl-1H-indazole-3-carboxamide* but it is also known as *N-(1-adamantyl)-I-pentyl-1H-indazole-3-carboxamide*. This unofficial name led to an abbreviated name of APINACA emerging from chemical structures.

And why AKB-48 in the first instance? Possibly because it was derived from an earlier compound called AB-001. AKB-48 was first reported in Japan in 2012 and there’s a Japanese girl band called AKB-48 so maybe it was named after them. Who knows?!

**As of October 2013** key compounds on sale include:

AKB-48	<i>N-(1-adamantyl)-I-pentyl-1H-indazole-3-carboxamide</i> <i>I-pentyl-N-tricyclo[3.3.1.13,7]dec-1-yl-1H-indazole-3-carboxamide</i>	APINACA
5F-AKB48	<i>N-(adamantan-1-yl)-I-(4-fluorobutyl)-1H-indazole-3-carboxamide</i>	5F-APINACA
PB-22	<i>Quinolin-8-yl I-pentyl-1H-indole-3-carboxylate</i>	QUPIC
5F-PB22	<i>I-(5-fluoropentyl)-1H-indole-3-carboxylic acid 8-quinolinyl</i>	
STS-135	<i>N-(adamantan-1-yl)-I-(5-fluoropentyl)-1H-indole-3-carboxamide</i>	5F-2NEI

**Overview:** Synthetic cannabinoids have been on the market for several years, but for a fair while their presence wasn’t widely reported. “Herbal smoking mixtures” such as Spice or Aztec Gold, were on the market and offered by head-shops and on-line sellers as an alternative to cannabis.

This, in turn was nothing new. Head-shops had, for years been selling “smoking mixtures,” usually a mixture of plant material with loosely psychoactive properties. Such mixtures had generally resulted in a headache, sore throat and a house that smelt like an autumnal bonfire. The newer compounds like Spice were different – they actually worked and so interest and use started to increase.

Analysis of samples of Spice revealed that, rather than being a blend of herbal smoking mixtures, the products were actually some inert plant material, which had been sprayed with a **synthetic cannabinoid** – a chemical which mimicked the action of THC or CBD at cannabinoid receptors in the brain.

THC is one of the naturally-occurring chemicals present in herbal cannabis and cannabis resin. It is involved in the euphoria associated with cannabis use, but may also be involved in less pleasant effects such as panic, paranoia and mental health problems. In ‘traditional’ strains of cannabis, THC is joined by other compounds including CBD, which is believed to play an important role in the anxiety-reducing, relaxing effects of cannabis.

THC and CBD bind to and activate **cannabinoid receptors** in the brain – CB1 and CB2 receptors. Synthetic cannabinoids occupy the same receptors. However, they may be far more potent than “natural” THC – with some synthetics believed to be 100 x the strength of THC. They may also have different affinities – binding more selectively to receptors in one part of the brain or body rather than others.

These synthetic cannabinoids were originally being used in research settings. They were synthesized by researchers in different settings – such as compounds developed in the mid eighties by John Huffman. It was a couple of these, including JWH-018 which cropped up in the Spice and Aztec Gold smoking mixtures.

Since then many more synthetic cannabinoids have reached the market. The newest products on the market have been around for a very short period of time so little is known about them.

**SOURCE:** Produced in laboratories for non-scientific use. Blended into smoking mixtures and then sold on via on-line suppliers and ‘head shops.’ Synthetic cannabinoids are now also being sold via a range of retail outlets including fast-food shops, convenience stores and newsagents.

**APPEARANCE:** Synthetic cannabinoids are sometimes available in a ‘raw state’ as crystalline white powder though this is not the most common form. This would be very potent and would in turn be mixed with tobacco or another smoking mixture for consumption.

More common is for the cannabinoids to be dissolved in a solvent, and sprayed onto an organic herbal material for sale. These will generally be greenish-brown in colour. Some resinous forms may also be available, looking more like cannabis resin.



Most of the packaged drugs are then sold in printed foil ziplock packages. Examples of these are pictured at the start of this briefing. There are many more designs and product brands available.

Some of the products list or specify the actual synthetic compounds that they contain. Some will mention other herbal products but analysis routinely confirms the presence of the synthetics, and, more often than not an absence of the herbal compounds. Any claims made on a website or on

#### **Exodus Damnation Herbal Incense Blend**

**Exodus Damnation Herbal Incense Blend** might cause irritation. Inhalation and ingestion may result in dizziness, tingling sensations, disorientation, nausea, vomiting, headache.

**USAGE:** Use in a well ventilated area, sprinkle a small amount onto a charcoal disk within an incense burner. Never leave burning incense unattended.

THIS PRODUCT IS NOT APPROVED FOR CONSUMPTION BY THE DEPARTMENT FOR ENVIRONMENTAL, FOOD AND RURAL AFFAIRS (DEFRA) EXODUS IS SOLD AS A INCENSE AND POTPOURRI PRODUCT ONLY.

KEEP THIS PRODUCT OUT OF REACH FROM UNDER 18'S + ANIMALS.

#### **INGREDIENTS:**

N-(adamant-1-yl)-1-(5-fluoropentyl)-1H-indazole-3-carboxamide, Quinolin-8-yl 1-pentyl-1H-indole-3-carboxylate, Thaea Officinalis (Marshmallow), along with a proprietary blend of natural and synthetic extracts, colours and fragrances.



packaging about the specific chemical constituents should be treated with caution.

Some shops are reputed to sell pre-rolled joints containing synthetic cannabinoids – making it impossible to gauge which compounds are being used or the strength of the joints.

**COSTS:** This varies between websites, products and quantity. Prices of around £10-30/g are typical.

**QUALITY, STRENGTH and DOSES:** With synthetic cannabinoids the actual composition and strength of any product is an unknown. Some products have been analyzed by professional laboratories, and appear on databases such as TicTac. They can identify the compounds present but can't easily identify the quantities of drug present. As these resources are not accessible to end users, most people using synthetic cannabinoids cannot be certain what they are actually using.

Analysis of products shows that some contain at least two different psychoactive compounds. Some people find that these substances can be more unpredictable and harder to manage.

Having said this, even if people knew which products they were specifically using, the lack of detailed information about differences between specific products would mean that additional substance-specific harm reduction information would be thin on the ground. We can really only talk in general terms about synthetic cannabinoids at this stage.

Synthetic cannabinoids are often much stronger than their natural counterparts. Starting doses need to be much smaller. Many of the reported unpleasant experiences of synthetic cannabinoids relate to people putting amounts of synthetic material similar to a “normal” cannabis dose. At such levels people are more likely to experience unpleasant side effects.

Starter doses to assay strength and for those unfamiliar with synthetics should be no bigger than the head of a match. This should be mixed in with smoking material but NOT herbal cannabis. If being smoked in a pipe or bong, even smaller quantities may be indicated.

Potency may increase as people get to the bottom of the bag. If the psychoactive material is not firmly bonded to the smoking mixture, it can lead to “bottom of the bag” syndrome, where active ingredients can shake off and become concentrated in the bottom of the bag and can be unexpectedly potent.

**METHODS OF USE:** Most user reports indicate that synthetic cannabinoids are being smoked in the same way as spliffs – mixed in with tobacco and smoked. As very small quantities of synthetic material are required to achieve intoxication, smoking “straight spliffs” of smoking mixture alone without tobacco is not recommended.

Synthetic cannabinoids and are also used in pipes and bongs. Given their relative potency and the small quantities needed to achieve intoxication, care is needed when using pipes or bongs to avoid unpleasant overdose experiences.

**EFFECTS:** The effects of synthetic cannabinoids seem to be very variable and will depend on the user, their state of mind, the type of product used, dose and other substances involved.

For some people, the effect is akin to strong cannabis. This could include euphoria, altered perception, hilarity and a subsequent “stoned” feeling of relaxation and calm.

However, a significant number of users don't report such symptoms and instead report anxiety, feelings of panic, disorientation and dysphoria – the opposite of sought-after euphoric feelings.

While these negative effects could happen to anyone, it seems to be more prevalent amongst people using high doses, or redosing, or people mixing their synthetics with alcohol or cannabis.

### **Unpleasant effects/risks:**

As these compounds are so new, we know very little about what risks they may pose or what causes specific observed symptoms. Risks could stem from:

- the direct effects of the drug during use
- the mix of compounds used in a specific “blend”
- withdrawal symptoms after use
- toxic effects caused as the drug is metabolized in the body or from new unknown compounds formed as the drug is heated and burns or melts.

There is some concern that some of the newer 5F- drugs, which are so-named because of the addition of a fluorine molecule, may result in the production of more toxic compounds as they are metabolized including the production of sodium fluoroacetate. This would be highly toxic. However at this stage this is all speculative and we don't know exactly what causes the following reported side-effects.

A number of users report distinctly unpleasant side-effects, above and beyond the panic or anxiety described above. These include:

- very severe panic,
- highly altered, delusional states (some of sufficient severity to warrant admission to psychiatric wards as acute patients,
- hallucinations,
- very fast heart rate,
- palpitations,
- nausea and vomiting,
- stomach and bowel pain,

- kidney problems,
- severe coughing including coughing up blood,
- shakes and sweats,
- respiratory distress following use including tightness of chest and, in a couple of cases, tightening of the airways requiring hospitalization,
- loss of feeling and numbness in limbs,
- reported episodes of loss of consciousness.

### **Possible fatalities related to synthetic cannabinoids?**

In October 2013, media reports attributed deaths of young people to use of synthetic cannabinoids. This included a death linked to use of Psyclone in Bolton, and another linked to Exodus Damnation in Kent. At the time of writing neither fatality has been conclusively attributed to synthetic cannabinoids. Use of other substances or coincidence has not yet been ruled out.

However a number of user reports and feedback from other workers strongly suggests that use of these compounds can cause a significant increase in heart rate, and so there is probably a risk of heart problems.

### **Other problems:**

With regular, frequent use tolerance can develop, leading to escalating doses.

Some reports indicate a noticeable “comedown,” leaving the user feeling depressed and lethargic, sometimes for several days after use.

There have been reports of withdrawal symptoms including stomach and bowel pain, panic and paranoia, fluctuating body temperature, intense nausea, and insomnia.

As most of the synthetic cannabinoids are relatively new and untested, we do not yet know if they will cause long term problems. It is reasonable to think that they are likely at least to cause some of the same problems that strong cannabis does, including short term memory problems, lethargy, depression and demotivation.

We do not yet know if use amongst young people will increase the risk of psychotic-type illness, as heavy use of strong cannabis appears to. However, it would not be unreasonable to assume such a correlation will be a risk.

**REDUCING HARM:** At present, without much more detailed information about specific synthetic cannabinoids it is not possible to suggest if any of the various substances on the market are more or less safe than others. Likewise we can't speak with any certainty as to how safe or unsafe products may prove to be in the medium to long term

In lieu of more detailed information only the broadest of harm reduction messages can be offered, including the following:

- Be aware that the description of contents on the package of any compound may bear no resemblance to the actual contents. Although described as “herbal” compounds the actual psychoactive material is typically synthetic, not herbal;
- Although sold on-line and via ‘head-shops,’ some of the products sold as “legal” may in fact be controlled drugs; often neither the manufacturer nor the retailer are certain as to the identity and legality of the product they are selling;
- Potency is hugely variable: start with a very small dose (match-head size or less) and only escalate dose cautiously, giving time for previous doses to wear off;
- Some people report blends containing a mix of different chemicals can have more unpleasant side effects and should only be used with great caution;
- Be VERY cautious about using such compounds in bongs or pipes: it is harder to regulate intake and easy to take too much;
- Don’t get into bouts of competitive use (e.g. in bucket bongs etc) as there is a high risk of overdosing;
- If sourcing pure powder synthetic cannabinoids, only use very small doses, calculated using scales and thoroughly mixed in to smoking material;
- Don’t use in conjunction with other drugs, especially other forms of cannabis, alcohol or stimulants;
- There may be a risk of heart problems: you are best off avoiding these compounds if you have an existing heart problem or are using alongside stimulants;
- As synthetic cannabinoids may exacerbate anxiety and paranoia only use in an environment in which you feel safe, with people who you trust. Avoid using if prone to anxiety or have existing mental health problems;
- In the event of panic or anxiety, often treating as for panic attack will help resolve symptoms – sitting down, head down, regular breathing and reassurance. However more serious symptoms, including delusional behaviour or respiratory distress may require medical assistance;
- If you experience a sustained period of fast heart rate, or experience chest pains call an ambulance;
- Use can cause a comedown, development of tolerance, dependence and withdrawal symptoms. If using these compounds, don’t use constantly and take breaks from use;
- Don’t drive or operate machinery when using these compounds.

## **LEGAL STATUS:**

In 2009 Home Office Circular 3209/2009 a number of synthetic cannabinoids were made Class B controlled drugs.

Further cannabinoids were added to the list by HO Circular: 239/2013

The specific wording of the amendments are here:

[http://www.legislation.gov.uk/uksi/2009/3209/pdfs/uksi\\_20093209\\_en.pdf](http://www.legislation.gov.uk/uksi/2009/3209/pdfs/uksi_20093209_en.pdf)  
[http://www.legislation.gov.uk/uksi/2013/239/pdfs/uksi\\_20130239\\_en.pdf](http://www.legislation.gov.uk/uksi/2013/239/pdfs/uksi_20130239_en.pdf)

These made key groups of synthetic cannabinoids controlled drugs. However some compounds fall outside of the current legal controls and so are still legally available.

Compounds believed legal as at October 2013 include AKB-48, 5F-AKB48, PB-22, 5F-PB22, STS-135 and probably a number of others. Given the increasing media coverage of these compounds, and the links to recent fatalities, it seems likely that these new compounds will be added to the legislation soon.

**OTHER INFORMATION:** Synthetic cannabinoids are widely available at present and, despite some controls, introduced in 2009 their use has escalated over the past three years.

According to the BCS 2010/2011 only 0.4% of 16-24 year olds reported use of Spice or other cannabinoids in the previous year. This is probably an underestimate.

For further information on synthetic cannabinoids the following sources will be useful:

<http://www.drugs-forum.com/index.php#>

<http://www.bluelight.ru>

<http://lifelinepublications.org/>

<http://portal.crewknowledge.com/FactsheetSynopses/pdf/3/maindrugid:34/maindrugname:Synthetic%20Cannabinoids>

[www.drugswheel.com](http://www.drugswheel.com)

<http://www.wedinos.org/index.html>

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