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SEARCH

FROM THE WEBMD ARCHIVES 

Sept. 10, 2018 -- A surge in dangerous side effects and overdoses has put the spotlight on cannabinoid [drugs](#) that go by names like K2, Spice, Mr. Happy, Scooby Snax, and Kronic. Between March and June of this year, these drugs were linked to more than 160 cases of severe bleeding and four deaths in central Illinois. In August, more than 100 people overdosed in a New Haven, CT, park within a 2-day period.

WebMD asked two

synthetic drug experts how K2 and Spice affect the body, and what risks they can pose.

## **What are K2 and Spice?**

Cannabinoids are chemical compounds found in [marijuana](#) plants. K2 and Spice are names used to describe a group of drugs known as synthetic (lab-made) cannabinoids. They're made from dried plant materials that have been sprayed with mind-altering chemicals.

These synthetic drugs were originally designed by scientists to use in research. Once the production methods

were published in scientific journals, enterprising drug manufacturers used the directions to make illicit drugs they could sell.

In 2008, the first reports of these drugs appeared in the United States. Between 2010 and 2011, calls to poison control centers due to synthetic cannabinoid use jumped by 240 percent.

### **How do people use them?**

The most common way people use these drugs is to roll the dried plants into "joints" or put them into **pipes** and smoke them like traditional

marijuana. They're also sold in liquid form and inhaled in e-cigarettes or other devices. Sometimes people add them to herbal tea or food.


### **Are K2 and Spice the same as marijuana?**

Drugs like K2 and Spice are sometimes called "synthetic marijuana" or "fake weed," but experts say these are misleading terms.

Marijuana is a plant that's grown for both medical and recreational use.

Synthetic cannabinoids are plant material that's been sprayed with an active drug.

The drugs in products like K2 and

Spice aren't chemically related to THC, the active ingredient in marijuana. Both types of drugs bind to the same cannabinoid receptors in the [brain](#) , but K2 or Spice drugs bind to these receptors much more strongly and produce more intense effects. Synthetic cannabinoids can be up to 100 times more potent than THC.

### **What's in K2/Spice products?**

That's hard to know for sure, because they can contain many different active ingredients. "Hundreds of synthetic

cannabinoids have been identified. What's in these products is anyone's guess," says Michael Baumann, PhD, chief of the Designer Drug Research Unit of the National Institute on [Drug Abuse](#) Intramural Research Program.

Each product can contain one chemical or a cocktail of different chemicals. He compares taking these drugs to "playing Russian roulette." "You don't know what you're getting when you buy it," he says.

Complicating the issue is the lack of consistency in production. The

same drug can be totally different depending on when you buy it.

"Despite the fact that the packages look pretty slick, these drugs are being illicitly manufactured and sold. There's no quality control going on with them," says William Fantegrossi, PhD, associate professor of pharmacology and toxicology in the College of Medicine at the University of Arkansas for Medical Sciences.

Because the active chemical is sprayed over the plant material, "Even within the same package, you can wind up with

different amounts of the drug. There's no way to control the dose you're getting," says Fantegrossi, who has extensively studied synthetic cannabinoids.

### **What effects do these drugs have on people who use them?**

These drugs produce effects similar to marijuana, including:

- Relaxation
- Euphoria -- intense happiness 🗒
- A heightened awareness of people and things around you

Because synthetic cannabinoids are more potent, the



high is more intense  
than with marijuana.

### **Are they safe?**

No, but many people  
mistakenly think  
they are. "Marijuana  
is becoming legal in  
more and more  
states. This is giving  
the impression that  
marijuana is safe,  
and that these drugs  
are safe," Baumann  
says. "That's  
absolutely a false  
impression."

Synthetic  
cannabinoids can  
cause dangerous  
side effects like:


- Racing heart
- Agitation and  
anxiety
- **Paranoia**
- Hallucinations --  
seeing or

hearing things  
that aren't real

- **Psychosis** -- loss of touch with reality
- High blood pressure
- Shortness of breath
- **Chest pain**
- Seizures
- **Nausea and vomiting**


Between 2011 and 2017, U.S. poison control centers received more than 31,000 calls related to synthetic cannabinoid effects.

K2/Spice products can also be laced with toxic substances. The drugs that caused

severe bleeding in Illinois were tainted with brodifacoum, a chemical found in rat poison. People who were affected had symptoms like [blood](#) in their [urine](#) , severe bloody noses, [coughing up blood](#), and [internal bleeding](#).

People have overdosed on synthetic cannabinoid drugs, but it's hard to know how much of the drug it takes to [overdose](#). "We don't know what a safe dose should be," Fantegrossi says.

Researchers still don't know what long-term effects these drugs might have. Prolonged

marijuana use can affect a young person's developing **brain**  and lead to problems with memory, thinking, and learning. "The expectation is that a drug that's more powerful than THC has to have at least the effects of THC," Fantegrossi says.

### **How many people use them?**

Up to 4% of people have used synthetic cannabinoid drugs. Users tend to be male, and in their late **teens** to early 20s. Many of them also use other drugs.

### **Are these drugs addictive?**

Much of what scientists know

about synthetic cannabinoids they've learned from studying THC in marijuana.

Long-term users of these drugs do develop tolerance and dependence, Baumann says. Tolerance means that your body no longer responds to the drug in the same way, and you need to take more and more of it to have the same effects. Dependence means that you need to keep taking the drug to avoid withdrawal symptoms like headaches, [anxiety](#), and irritability

### **Are they legal?**

When these drugs

first appeared, they were sold over the counter in places like convenience stores, truck stops, and novelty shops. At the time, the ingredients they contained weren't illegal.

By 2010, several states had passed laws banning the sale of synthetic cannabinoids. In 2012, President Obama signed the Synthetic Drug Abuse Prevention Act, which classified many of the active ingredients in these products as Schedule I drugs -- the same category as [heroin](#) and ecstasy.

Yet prosecuting sellers of these drugs has been like hitting

a moving target,  
because they've  
found clever ways to  
bypass the laws.

"Drug dealers got  
smart and started to  
figure out that you  
could make a very  
small change to the  
chemical structure,"  
Fantegrossi says.

"When you do that,  
it's not the same as  
the drug on the  
books."

He says that by the  
time drug  
enforcement officials  
figure out what  
chemical is in a drug  
and get regulations  
passed, "the people  
who are  
manufacturing it  
have already  
stopped making it  
and started making  
another drug."

Drug enforcement has tried to keep up. The federal government and many states have passed laws banning broader categories of ingredients, instead of trying to focus on specific chemicals.


K2/Spice products have also added labels that their products are "not for human consumption." Now, some states have made it a crime to try to get around the law with this claim. But it's been hard for law enforcement to go after everyone who sells these products -- especially when many of them are street dealers or online sellers.



As more states  
legalize marijuana,  
the distinction  
between the real  
thing and synthetic  
cannabinoids  
becomes  
increasingly  
important. "I hate it  
when people call  
these things  
'synthetic marijuana'  
or 'fake marijuana,' "  
Fantegrossi says.  
"People say, 'Real  
marijuana is pretty  
safe, so the fake stuff  
can't possibly be bad  
for you. This does a  
disservice to what  
these drugs really  
are. They will always  
be much more  
powerful than the  
most potent  
marijuana anyone  
has ever smoked."

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