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Spice

"Spice" is used to describe a diverse family of herbal mixtures marketed under many names, including K2, fake marijuana, Yucatan Fire, Skunk, Moon Rocks, and others. These products contain dried, shredded plant material and presumably, chemical additives that are responsible for their psychoactive (mind-altering) effects. Spice mixtures are sold in many countries in head shops, gas stations, and via the Internet, although their sale and use are illegal throughout most European countries. Easy access has likely contributed to Spice's popularity. While Spice products are labeled "not for human consumption," they are marketed to people who are interested in herbal alternatives to marijuana (cannabis).[1]

Marketing labels often make unverified claims that Spice products contain up to 3.0 grams of a natural psychoactive material taken from a variety of plants. While Spice products do contain dried plant material, chemical analyses of seized spice mixtures have revealed the presence of synthetic (or designer) cannabinoid compounds, such as JWH-018 and HU-210. These bind to the same cannabinoid receptors in the body as THC (delta-9-tetrahydrocannabinol), the primary psychoactive component of marijuana.

How Is Spice Abused?

Some Spice products are sold as "incense" but resemble potpourri rather than popular, more familiar incense products (common forms include short cones or long, thin sticks). Like marijuana, Spice is abused mainly by smoking. Sometimes Spice is mixed with marijuana or is prepared as an herbal infusion for drinking.

Extent of Use

This year's Monitoring the Future survey captured the use of Spice among high school seniors for the first time. According to the results, almost 1 in 9 or 11.4% of high school seniors reported using Spice in the past year.

What Are the Health Effects of Spice Abuse?

Presently, there are no large-scale studies on the effects of Spice on human health or behavior. As mentioned above, the cannbinoids found in Spice bind to the same receptors as THC; however, some of them bind more strongly to the receptors, which could lead to a much more powerful and unpredictable effect.[1, 2] Spice users report experiences similar to those produced by marijuana, and regular users may experience withdrawal and addiction symptoms.

Notably, the compounds found in Spice have not been fully characterized for their effects and importantly, their toxicity, in humans. However, a variety of mood and perceptual effects have been described, and patients who have been taken to Poison Control Centers in Texas report symptoms that include rapid heart rate, vomiting, agitation, confusion, and hallucinations.

Because the chemical composition of the various products sold as Spice is unknown, it is likely that some varieties also contain substances with dramatically different effects than those expected by the user. There is also concern about the presence of harmful heavy metal residues in Spice mixtures. However, without further analyses, it is difficult to determine whether these concerns are justified.

Legal Status

The U.S. Drug Enforcement Administration (DEA) recently banned five synthetic cannabinoids[3] by placing them in Schedule I status under the Controlled Substances Act. Schedule I status means that the substance is considered to have a high potential for abuse and no known medical benefits; and as such, it is illegal to possess or sell products that contain the substance. After a year-long review, the DEA decided that placement of these five synthetic cannabinoids into Schedule I of the CSA was necessary to avoid an imminent hazard to the public safety. As a result of this order, the full effect of the CSA and its implementing regulations including criminal, civil, and administrative penalties; sanctions; and regulatory controls of Schedule I substances will be imposed on the manufacture, distribution, possession, importation, and exportation of these synthetic cannabinoids.

A number of States have also instituted bans on Spice and Spice-like products and/or synthetic cannabinoid-containing products, and many others are considering legislation forbidding the sale or possession of Spice.

Continuous monitoring of these herbal mixtures as they appear in the marketplace is essential for timely detection of new chemicals, which are likely to continue to be developed as a reaction to the newly implemented control measures.[4] Similarly, social and health professionals should maintain a high degree of alertness for the use of "traditional" and emerging Spice products and their possible psychiatric effects in vulnerable people.

Other Information Sources

For more information on Spice and Spice-like products, see "Understanding the 'Spice' phenomenon," which was produced by the European Monitoring Centre for Drugs and Drug Addiction: **http://www.emcdda.europa.eu/publications/thematic-papers/spice.**

Resources

[1]Vardakou, I. Pistos, C., and C. Spiliopoulou, Spice drugs as a new trend: mode of action, identification and legislation. *Toxicol Lett.* 197(3):157–162, 2010.

[2]Huffman, J.W. Cannabimimetic indoles, pyrroles, and indenes: structure–activity relationships and receptor interactions. *Curr Med Chem.* 6(8):705–720, 2009.

[3]The substances placed in Schedule I are 1-pentyl-3-(1-naphthoyl) indole (JWH-018), 1-butyl-3-(1-naphthoyl) indole (JWH-073), 1-[2-(4-morpholinyl) ethyl]-3-(1-naphthoyl)indole (JWH-200), 5-(1,1-dimethylheptyl)-2-[(1R,3S)-3-hydroxycyclohexyl]-phenol (CP-47,497), and 5-(1,1-dimethyloctyl)-2-[(1R,3S)-3-hydroxycyclohexyl]-phenol (cannabicyclohexanol; CP-47,497 C8 homologue).

[4]Fattore L., Fratta W. Beyond THC: the new generation of cannabinoid designer drugs. *Front Behav Neurosci.* 5:60, 2011.

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