

# New case studies link smoking synthetic marijuana with stroke in healthy, young adults

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Add stroke to the list of severe health hazards that may be associated with smoking synthetic marijuana, popularly known as spice or K2, a University of South Florida neurology team reports.

An advance online article in the journal *Neurology* details case studies by the USF neurologists of two healthy, young siblings who experienced acute ischemic strokes soon after smoking the street drug spice. Ischemic strokes occur when an artery to the brain is blocked.

Seizures, abnormal heart rhythms, heart attacks, psychosis, hallucinations and other serious adverse effects have been associated with smoking synthetic pot. Medical journals have also begun to report a growing number of strokes potentially related to the use of natural (non-synthetic) marijuana.

"Since the two patients were siblings, we wondered whether they might have any undiagnosed genetic conditions that predisposed them to strokes at a young age. We rigorously looked for those and didn't come up with anything," said senior author W. Scott Burgin, MD, professor of neurology at the USF Health Morsani College of Medicine and director of the Comprehensive Stroke Center at Tampa General Hospital.

"To the best of our knowledge, what appeared to be heart-derived strokes occurred in two people with otherwise healthy hearts. So more

study is needed."

USF vascular neurology fellow Melissa Freeman, MD, was lead author of the paper.

Synthetic marijuana refers to a mixture of herbs, often resembling lawn clippings, that have been sprayed or soaked with a solution of designer chemicals intended to produce a high similar to cannabis when consumed. Spice can be much more potent than conventional marijuana because of the more complete way the psychoactive ingredient in the synthetic product binds to the brain's cannabinoid receptors, Dr. Burgin said.

People who smoke spice expose their brains to unidentified chemicals untested on humans.

"You don't know what you're getting when you smoke synthetic marijuana," Dr. Burgin said. "It's like the Wild West of pharmaceuticals, and you may be playing dangerously with your brain and your health."

Not identified in standard toxicology screens, spice has become the second only to natural marijuana as the most widely used illicit drug among high school seniors, according to a 2011 survey sponsored by the National Institute on Drug Abuse. In Florida, it is a third-degree felony to sell, manufacture, deliver or possess with the intent sell these synthetic drugs, so they are more difficult to buy at convenience stores or smoke shops, but still readily available online.

More physicians need to be more aware of the potentially toxic effects of recreational synthetic drugs, especially when seeing conditions like heart attack or stroke not as common in young patients, Dr. Burgin said. "Be willing to ask about pot and spice use, because it's not something patients are inclined to volunteer and [synthetic marijuana](#) does not show

up on routine drug tests."

An editorial in *Neurology* accompanying the USF cases studies urges caution in interpreting "anecdotal reports," noting that cases of marijuana-related stroke are still few given the illicit drug's widespread use.

"In any event, if [marijuana](#) can cause [ischemic stroke](#), and if anything pot can do spice can do better, neurologists will likely encounter increasing numbers of spice-associated strokes in the years ahead," concluded John C. M. Brust, MD, professor of clinical neurology at Columbia University College of Physicians and Surgeons.

**More information:** Ischemic stroke after use of the synthetic marijuana "spice," Melissa J. Freeman, MD; David Z. Rose, MD; Martin A. Myers, MD; Clifton L. Gooch, MD; Andrea C. Bozeman, MS, ARNP-C; and W. Scott Burgin, MD; *Neurology*; published online before print November 8, 2013, [DOI: 10.1212/01.wnl.0000437297.05570.a2](https://doi.org/10.1212/01.wnl.0000437297.05570.a2)

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