

Potent marijuana edibles can pose a major unrecognized risk to patients with cardiovascular disease

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As marijuana legalization sweeps North America, use of the substance has been on the rise, and the public's attitude is shifting. An increasing number of people believe that "weed" is the safest recreational drug, one that carries health benefits that outweigh its risks. Those assumptions are challenged in an article and editorial published in the *Canadian Journal of Cardiology* that examine the story of a patient who developed crushing chest pain and myocardial ischemia after consuming most of a marijuana lollipop.

"Marijuana can be a useful tool for many patients, especially for pain and nausea relief. At the same time, like all other medications, it does carry risk and side effects. In a recent case, inappropriate dosing and oral consumption of marijuana by an older patient with stable cardiovascular disease resulted in distress that caused a cardiac event and subsequent reduced cardiac function," said Alexandra Saunders, MD, Dalhousie University, Internal Medicine Program and Horizon Health Network's Department of Cardiology, Saint John, NB, Canada.

The case report describes a 70-year-old man with stable coronary artery disease, taking the appropriate cardiac medications, who ate most of a lollipop that was infused with 90 mg of THC (delta-9-tetrahydrocannabinol) to relieve pain and aid sleep, which caused him to have a potentially-serious heart attack. He consumed a much larger dose than the 7 mg that is typically ingested by smoking a

single joint or taking the 2.5 mg starting dose of dronabinol (Marinol), a synthetic THC marketed for nausea and appetite stimulation in AIDS and cancer patients. While the patient had smoked marijuana in his youth, he had not done so since the THC content of the substance had increased significantly from three percent to 12 percent. He was also not familiar with the time-delayed and extended effect of oral THC dosing.

The patient's cardiac event was likely triggered by unexpected strain on his body from anxiety and fearful hallucinations caused by the unusually large amount of THC he ingested. His sympathetic nervous system was stimulated, causing increased cardiac output with tachycardia, hypertension, and catecholamine (stress hormone) release. After the psychotropic effects of the drug wore off, and his hallucinations ended, his [chest pain](#) stopped.

A number of prior case reports, as well as epidemiological studies, have described the association between [cannabis use](#) and acute cardiovascular (CV) adverse events, including myocardial infarction, stroke, arrhythmias, and sudden death.

"Most previous research on marijuana-induced [myocardial ischemia](#) focused mostly on younger patients and did not focus on its different formulations and potencies. As a result of widespread marijuana legalization, healthcare providers need to understand and manage cannabis use and its complications in older patients, particularly in those with cardiovascular disease," said Robert S. Stevenson, MD, Horizon Health Network, Department of Cardiology, Saint John, NB, Canada.

CV toxicity of marijuana is described in an accompanying editorial. It can be viewed as a consequence of one or more the following: 1) inhalation of combustion products of marijuana; 2) direct CV effects of THC; and 3) indirect effects of THC related to acute anxiety, hallucination, and/or psychosis. Individuals who are THC-naïve and are

not used to taking mind-altering drugs can become highly distressed by impaired cognition and feelings of loss of control produced by THC. Extreme emotional responses in the context of THC psychiatric toxicity are associated with surges of catecholamines, which can have adverse acute CV effects. Important considerations with respect to cannabis toxicity are the pattern of use, dose, route of administration, and degree of tolerance.

"The legalization of cannabis has considerable public support but also raises public health concerns," commented the editorial's author, Neal L. Benowitz, MD, Chief, Division of Clinical Pharmacology and Experimental Therapeutics, Medical Service, Departments of Medicine, and Biopharmaceutical Sciences; Center for Tobacco Control Research and Education, University of California, San Francisco, CA, USA.

"Some users may benefit from the social and medical effects, but others will be at risk for adverse health outcomes. Little information has been disseminated to patients or healthcare providers about cannabis use in older patients, and in particular those with cardiovascular disease. For better or worse, providing advice and care to such patients who are using cannabis is now necessary for the provision of optimal medical care to these [patients](#)."

More information: Alexandra Saunders et al, Marijuana Lollipop-Induced Myocardial Infarction, *Canadian Journal of Cardiology* (2019). DOI: [10.1016/j.cjca.2018.11.033](https://doi.org/10.1016/j.cjca.2018.11.033)

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