

Marijuana & Heart Disease: What Do We Really Know?



By Chuck Dinerstein, MD, MBA — January 20, 2020

According to the CDC, approximately 26 million Americans smoke tobacco daily. In comparison, 14.6 million smoke marijuana every day. In the headlong green rush for dollars -- it's, after all, a \$7 billion market in the U.S. -- no one has been able to answer the question of whether all that pot smoking has any ill effects.



Image courtesy of M. Maggs on Pixabay

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To be fair, that isn't the fault of researchers. Marijuana remains classified as a Schedule 1 drug, with no medical indications and a high risk of abuse. Why it remains a Schedule 1 drug remains a bit of a mystery, after all the FDA has approved three versions of cannabinoids for medical use in intractable epilepsy, refractory chemotherapy-induced nausea and weight loss due to HIV. A new paper in the *Journal of the American College of Cardiology* provides a review of what we know about marijuana and heart disease.

Spoiler alert – we know very little.

The dried leaves of *Cannabis sativa* and *indica* contain THC, the psychoactive ingredient, as well as about 100 related cannabinoids. Those other related cannabinoids have receptors through the tissue of our bodies including the brain, GI tract, cardiovascular system, and our endocrine systems; so there is a lot of potential effects. And those leaves contain many other compounds,

even more when they are ignited and inhaled, the usual means for 75% of marijuana use. Tobacco and marijuana smoke share a lot of compounds together. On the other hand, tobacco smoking doesn't usually consist of taking as much in as possible and holding it as long as possible. The upshot, while we can say inhaling something that is burning is bad for you, we have no idea of the dosages of marijuana being inhaled. And that problem is compounded because THC and cannabinoids in the retail space are being bred to be steadily more potent.

The authors of this review queried the National Health and Nutrition Examination Survey (NHANES) for those individuals who self-reported the use of marijuana and concomitant heart disease (defined as heart failure, coronary heart disease or a heart attack). They estimated the number of individuals smoking pot with coronary artery disease is approximately 2 million. Given that this is self-reporting, that number is probably a low-end estimate. But suffice to say, having heart disease is not a deal-breaker for anyone smoking tobacco or marijuana.

The authors acknowledge the "limited scope of data," hampered by federal law basically prohibiting research and the case report or observational self-reporting in studies they reviewed. But in terms of the body's response to marijuana, there is the activation of the sympathetic nervous system, increasing heart rate and blood pressure and increasing the work of the heart. And it may result in cellular stress, cholesterol formation, or "induction of an inflammatory response," something we see in a number of chronic diseases.

These changes can cascade into other problems. That increase sympathetic activity, "may theoretically increase arrhythmogenicity." Some cannabinoids can prompt vessels to constrict increasing the risk of clot formation in the extremities or the brain. With respect to marijuana's metabolic effects, they are all over the scientific map. From being approved to stimulate appetite, to a study that shows cannabis may be protective against weight gain and for some they lower their LDL, the bad cholesterol.

For physicians, there are concerns that cannabinoids may interfere with a number of important cardiovascular medications including statins, anti-arrhythmics, warfarin and beta-blockers. All key elements in the cardiologist toolbox. Of course, again, we don't really know.

"In 2017, the National Academies of Sciences, Engineering, and Medicine released a report on the health effects of marijuana. For cardiometabolic risk, they concluded that the evidence was unclear regarding the association between cannabis use and myocardial infarction, stroke, and diabetes mellitus."

The review is helpful in pointing out how much we do not know. It is time to stop doing studies with an N of 1; time that the federal government got out of the way and opened up this area of research so we can begin to get some real data and people can make evidence-informed decisions.

[1] [Americanmarijuana.org](https://www.americanmarijuana.org) [2]

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