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Cannabis and Associated Cardiovascular Risks

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CAPSULE

Cannabis is a plant of the Cannabaceae family that contains numerous biologically active compounds, including delta-9-tetrahydrocannabinol (THC) and cannabidiol (CBD)(Table 1).[1] In 2023, Ohio legalized cannabis, including recreational marijuana, with the requirement that product labels include the amount of THC and other cannabinoids.[2]

Cardiovascular Risks of Cannabis Use

Daily cannabis use has been associated with an increased risk for congenital heart disease, myocardial infarction, and stroke.[3] Additionally, higher odds of cardiovascular adverse events are associated with more frequent use.

THC acts on CB1 receptors, which are widespread throughout the body, including in cardiac tissue. This interaction can cause dose-dependent tachycardia, increased contractility, and systemic catecholamine release, and in other studies, increased heart rate and blood pressure.[3,4] In addition to cardiovascular effects, cannabinoids have been shown to impact other systems, such as the gastrointestinal, pulmonary, and neurologic systems.[5]

Table 1. Cannabinoids: Formulations, Risks, and Effects

	Type of Cannabinoid[1,5]		
	Cannabidiol (CBD)	**Δ (Delta)-9-Tetrahydrocannabinol (THC)**	**Δ-8-THC, Δ-10-THC**
Regulation	None	State-level regulation	None
Formulations	Topical, essential oils, tinctures, infused foods	Inhaled (smoked or vaporized), oral tincture, infused foods	Inhaled (smoked or vaporized)
Cardiovascular Risk	Unknown, thought to be less than THC	Increased risk of myocardial infarction and stroke, with higher odds of events associated with more days of use per month	Insufficient evidence; structurally very similar to Δ-9-THC
Psychoactive Effect	None	Significant: alteration of mood, perception, emotion, cognition	Less potent than Δ-9-THC
Drug Interactions	Many; metabolized by CYP450	Many; metabolized by CYP450; CYP3A4 inhibitor	Many; metabolized by CYP450

CYP450=cytochrome P450, CYP3A4=cytochrome P3A4

Cannabis Use Disorder and Harm Reduction Strategies

Cannabis use disorder is associated with dependence on the substance, which includes experiencing withdrawal symptoms when not taking the substance, along with continued cannabis use despite negative consequences.[1] This disorder is more likely to develop with more frequent use and use at a younger age.[6]

Patients should be screened for cannabis use, advised to avoid smoking, and counseled about the association with premature cardiovascular disease and cardiac events.[3] If a patient will not stop using cannabis, encourage them to minimize use of products and choose products with the lowest possible amount of THC. Additionally, encourage patients to communicate openly about their cannabis use.

For more information, access Cardi-OH's expanded resource on cannabis use.

References

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