

Blood vessel function takes harmful hit from hookah tobacco smoking

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Smoking hookah tobacco acutely impairs blood vessels' ability to function, according to preliminary research to be presented in Chicago at the American Heart Association's Scientific Sessions 2018.

Hookah, also known as a waterpipe, consists of a bowl, a chamber partially filled with water, hose and mouthpiece. It is designed to burn specialty tobacco which is typically fruit or candy-flavored.

Hookah is often marketed as a harmless alternative to cigarettes. However, while studies have shown cigarette smoking damages [endothelial function](#) (thin membrane lining the inside of the blood vessel), little is known about how smoking flavored hookah tobacco impacts [blood vessels](#).

"Hookah is the only form of tobacco product that uses burning charcoal briquettes to heat the flavored tobacco in the waterpipe. So, in addition to toxic substances from tobacco and nicotine, hookah smoke exposes users to charcoal combustion products, including large amounts of [carbon monoxide](#)," said Mary Rezk-Hanna, Ph.D., study lead author and assistant professor at the University of California, Los Angeles School of Nursing.

In a collaborative research study between the University of California, Los Angeles, School of Nursing; University of California, San Francisco, School of Medicine; and the Smidt Heart Institute at Cedars-Sinai Medical Center, Rezk-Hanna and colleagues studied 30 young adult (average age 26) hookah smokers before and after charcoal-heated hookah smoking. They measured nicotine levels in blood, exhaled carbon monoxide and flow-mediated dilation of blood vessels (a measure of endothelial function). In 20 participants, they took the same measurements before and after electrically heating the same hookah flavored tobacco product. They also compared results to similarly aged cigarette smokers after smoking one cigarette. Finally, they took the same measurements before and after a group of hookah smokers breathed a carbon monoxide gas mixture to mimic the carbon monoxide boost they get from smoking traditional charcoal-heated hookah.

They found that while nicotine levels increased similarly with all smoking products, exhaled carbon monoxide increased 9- to 10-fold with charcoal-heated hookah smoking compared to electronically-heated hookah or cigarette smoking. While charcoal-heated hookah smoking increased flow-mediated dilation, smoking electrically-heated hookah tobacco or cigarette tobacco similarly and substantially decreased flow-mediated dilation (indicating impairment of endothelial function).

The key difference between charcoal and electrically-heated hookah or cigarette tobacco smoking is the production of high levels of carbon monoxide from charcoal briquettes. Carbon monoxide is known to dilate blood vessels and appears to mask the effects of charcoal-heated hookah tobacco smoke to impair endothelial function, according to Rezk-Hanna.

These findings suggest that hookah tobacco smoking, like cigarette [tobacco smoking](#), impairs blood vessel function. The authors conclude that [hookah](#) use, either charcoal or electrically-heated, may impair other aspects of endothelial functions, which are critical for cardiovascular health.

Provided by American Heart Association

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