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More evidence that e-cigs harm blood vessels as much as cigs

The ability of arteries to get bigger (dilate) in response to increased demand for blood flow is an important part of how the cardiovascular system regulates itself on a second-to-second basis. This process is mediated by the ability of the lining of arteries, known as the vascular endothelium, to produce nitric oxide (NO), which diffuses into the muscle and relaxes or stiffens it as needed to keep everything in balance.

In addition to this rapid regulatory function, [disturbances in endothelial function](#) predicts the long-term development of heart disease.

Jessica Fetterman and her colleagues have published "[Alterations in Vascular Function Associated With the Use of Combustible and Electronic Cigarettes](#)" in the Journal of the American Heart Association in which they measured [arterial stiffness](#) in cigarette smokers, e-cigarette only users, and dual users. They also measured production of nitric oxide by their vascular endothelium directly by collecting some endothelial cells from the people in their study.

They found that smokers, e-cigarette users all had depressed vascular function to similar extents.

This is one more bit of evidence that, in terms of cardiovascular disease, e-cigarettes are no better than cigarettes.

People – and regulators notably the FDA – should stop assuming that e-cigarettes are substantially less dangerous than cigarettes.

Here is the abstract:

Background Electronic cigarettes (e-cigarettes) have been proposed as a potential harm reduction tool for combustible cigarette smokers. The majority of adult e-cigarette users continue to smoke combustible cigarettes and are considered dual users. The vascular impact of e-cigarettes remains incompletely defined.

Methods and Results We examined the association of e-cigarette use with measures of vascular function and tonometry, preclinical measures of cardiovascular injury. As part of the CITU (Cardiovascular Injury due to Tobacco Use) study, we performed noninvasive vascular function testing in individuals without known cardiovascular disease or cardiovascular disease risk factors who were nonsmokers (n=94), users of combustible cigarettes (n=285), users of e-cigarettes (n=36), or dual users (n=52). In unadjusted analyses, measures of arterial stiffness including carotid-femoral pulse wave velocity, augmentation index, carotid-radial pulse wave velocity, and central blood pressures differed across the use groups. In multivariable models adjusted for age, sex, race, and study site, combustible cigarette smokers had higher augmentation index compared with nonusers (129.8±1.5 versus 118.8±2.7, P=0.003). The augmentation index was similar between combustible cigarette smokers compared with sole e-cigarette users (129.8±1.5 versus 126.2±5.9, P=1.0) and dual users (129.8±1.5 versus 134.9±4.0, P=1.0). Endothelial cells from combustible cigarette smokers and sole e-cigarette users produced less nitric oxide in response to A23187 stimulation compared with nonsmokers, suggestive of impaired endothelial nitric oxide synthase signaling.

Conclusions Our findings suggest that e-cigarette use is not associated with a more favorable vascular profile. Future longitudinal studies are needed to evaluate the long-term risks of sustained e-cigarette use.

The full citation is Fetterman JL, Keith RJ, Palmisano JN, et al. Alterations in Vascular Function Associated With the Use of Combustible and Electronic Cigarettes. J Am Heart Assoc. 2020;9(9):e014570. doi:10.1161/JAHA.119.014570. It available [here](#).

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