

More evidence found on potential harmful effects of e-cigarettes

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Credit: TheNorlo/Wikipedia

While e-cigarette use is increasing worldwide, little is known about the health effects e-cigarettes pose for users. A University of Louisville researcher is working to change that status.

Daniel J. Conklin, Ph.D., professor of medicine in UofL's Division of Cardiovascular Medicine, will discuss his early research identifying potentially harmful effects of e-cigarettes at the American Association for the Advancement of Science Annual Meeting.

Conklin will be among a three-member panel discussing "New and Emerging Tobacco Products: Biomarkers of Exposure and Injury," Friday, Feb. 12, from 8-9:30 a.m. at the Marshall Ballroom East of the Marriott Wardman Park, 2660 Woodley Rd. Northwest, Washington.

Conklin will share new data showing that e-cigarettes have been shown to speed up atherosclerosis - the plaque-causing disease that leads to heart attack, stroke and [peripheral arterial disease](#). When atherosclerosis affects the arteries of the heart, it is known as [coronary artery disease](#),

a condition that affects more than 15 million Americans and causes 500,000 deaths annually.

"Currently, we do not know whether e-cigarettes are harmful," Conklin said. "They do not generate smoke as do conventional cigarettes but they do generate an aerosol - the vapor - that alters indoor air quality and contains toxic aldehydes. We investigated the direct effects of these toxins on cardiovascular disease in the laboratory."

Conklin and his team exposed one set of mice to varying levels of e-cigarette aerosol, [tobacco smoke](#), smokeless tobacco or to an aldehyde produced by tobacco, acrolein, which is thought to pose 80-85 percent of the non-cancer health risk of tobacco smoke. Another set of mice was exposed to nicotine alone to understand whether nicotine by itself had any effect.

Not surprisingly and consistent with previous studies, exposure to tobacco smoke increased the amount of atherosclerosis in mice. At the same time, the research team found that either e-cigarette aerosol or smokeless tobacco exposure alone also increased atherosclerosis.

Conklin was particularly intrigued by the results seen with exposure to acrolein or nicotine alone. "Somewhat surprising was the finding that either nicotine alone or acrolein alone at levels equivalent to those present in [smokeless tobacco](#) or mainstream smoke also increased atherosclerosis in mice.

"These findings indicate that multiple tobacco-derived constituents have cardiovascular disease-causing potential."

Provided by University of Louisville

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