

First-ever study shows e-cigarettes cause damage to gum tissue

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A University of Rochester Medical Center study suggests that electronic cigarettes are as equally damaging to gums and teeth as conventional cigarettes.

The study, published in *Oncotarget*, was led by Irfan Rahman, Ph.D. professor of Environmental Medicine at the UR School of Medicine and Dentistry, and is the first scientific study to address e-cigarettes and their detrimental effect on [oral health](#) on cellular and molecular levels.

Electronic cigarettes continue to grow in popularity among younger adults and current and former smokers because they are often perceived as a healthier alternative to conventional cigarettes. Previously, scientists thought that the chemicals found in cigarette smoke were the culprits behind [adverse health effects](#), but a growing body of scientific data, including this study, suggests otherwise.

"We showed that when the vapors from an e-cigarette are burned, it causes [cells](#) to release inflammatory proteins, which in turn aggravate stress within cells, resulting in damage that could lead to various oral diseases," explained Rahman, who last year published a study about the damaging effects of e-cigarette vapors and flavorings on [lung cells](#) and an earlier study on the pollution effects. "How much and how often someone is smoking e-cigarettes will determine the extent of damage to the gums and oral cavity."

The study, which exposed 3-D human, non-smoker gum tissue to the vapors of e-cigarettes, also found that the flavoring chemicals play a role in damaging cells in the mouth.

"We learned that the flavorings-some more than others—made the damage to the cells even worse," added Fawad Javed, a post-doctoral resident at Eastman Institute for Oral Health, part of the UR Medical Center, who contributed to the study. "It's important to remember that e-cigarettes contain nicotine, which is known to contribute to gum disease."

Most e-cigarettes contain a battery, a heating device, and a cartridge to

hold liquid, which typically contains nicotine, flavorings, and other chemicals. The battery-powered device heats the liquid in the cartridge into an aerosol that the user inhales.

"More research, including long term and comparative studies, are needed to better understand the health effects of e-cigarettes," added Rahman, who would like to see manufacturers disclose all the materials and chemicals used, so consumers can become more educated about potential dangers.

Provided by University of Rochester Medical Center

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