Can Smoking E-Cigarettes Damage Your DNA?

Compounds released during vaping could boost cancer risk.

August 23, 2018 By Alicia Green

Although electronic cigarettes are often advertised as a healthier alternative to smoking tobacco, the long-term effects of inhaling the chemicals produced by these battery-powered devices are still unknown. Now, new findings presented at the annual meeting of the American Chemical Society (ACS) suggest that vaping can damage a person's DNA, thus increasing their risk of cancer, reports the ACS.

For the study, researchers collected saliva from five e-cigarette users before and after a 15-minute vaping session. Scientists tested the saliva samples for chemicals known to cause DNA damage and identified three such compounds: formaldehyde, acrolein and methylglyoxal.

Next, researchers assessed damage in the cells of participants' mouths to determine the possible long-term effects of vaping. Four out of five study participants sustained increased DNA damage—known as DNA adduct— after being exposed to acrolein. (This injury occurs when toxic chemicals like acrolein react with DNA, which could lead to cancer if cells are unable to repair the damage and replicate normally.)

"We still don't know exactly what these e-cigarette devices are doing and what kind of effects they have on health, but our findings suggest that a closer look is warranted," said Silvia Balbo, PhD, an associate professor at the Masonic Cancer Center at the University of Minnesota, and the project's lead investigator.

Researchers plan to conduct a follow-up study with a larger cohort of participants. In addition, the scientists would like to compare the level of damage to DNA between e-cigarette users and regular cigarette smokers.

Click here to learn how e-cigarettes expose users to toxic metals.
