

# Tobacco and e-cigs may put healthy young people at risk of severe COVID illness, new research suggests

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New UCLA research suggests that smoking tobacco and vaping electronic cigarettes may increase healthy young people's risk for

developing severe COVID illness.

This is among the first studies to find that not only smoking [tobacco](#), but also vaping, may predispose people to increased inflammation and future development of severe COVID-19 and the lingering cardiovascular complications that can occur after initial illness from the virus, said Dr. Theodoros Kelesidis, the study's lead author.

"The key message is that smoking is the worst, but vaping is not innocent," said Kelesidis, associate professor of medicine in the division of infectious diseases at the David Geffen School of Medicine at UCLA. "This has been shown for many [lung diseases](#) but not for COVID. It was a quite interesting and novel finding that vaping changed the levels of key proteins that the virus uses to replicate."

The study is published Feb.9 in the *Journal of Molecular Medicine*.

The investigators examined plasma collected before the pandemic from 45 non-smokers, 30 electronic cigarette vapers, and 29 tobacco cigarette smokers, testing it to measure levels of since-identified proteins that SARS-CoV-2, the virus at the heart of the pandemic, needs in order to replicate. These proteins are ACE2, furin, Ang II, Ang 1–7, IL-6R, sCD163, and L-selectin. The three latter proteins are collectively regulated in cells by a [protein](#) known as ADAM17.

The team found that plasma from healthy young people who smoke tobacco or vape had increased levels of furin, sCD163, and L-selectin over that of non-smokers. These data suggest that there may be increased activity of the proteins furin and ADAM17 in the [immune cells](#) as well as surface cells, such as those lining the lungs, in healthy young smokers and vapers.

"E-cigarette vapers may be at higher risk than non-smokers of

developing infections and inflammatory disorders of the lungs," Kelesidis said. "Electronic cigarettes are not harmless and should be used for only the shortest time possible in smoking cessation, and not at all by non-smokers."

Limitations include the small size of the study, which suggests the need for research with a larger sample size; the reliance on testing [blood plasma](#) rather than [tissue samples](#) such as lung cells that are believed to be affected by smoking and [vaping](#), which also warrants deeper research; and a lack of evidence of the role that the ADAM17 proteins may play in severe COVID illness among non-smokers.

Study co-authors are Madhav Sharma, Sandro Satta, Elizabeth Tran, Rajat Gupta, Dr. Jesus Araujo, and Dr. Holly Middlekauff of UCLA.

**More information:** Ectodomain shedding of proteins important for SARS-CoV-2 pathogenesis in plasma of tobacco cigarette smokers compared to electronic cigarette vapers: a cross-sectional study, *Journal of Molecular Medicine* (2023). [DOI: 10.1007/s00109-023-02286-8](https://doi.org/10.1007/s00109-023-02286-8)

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