

# Chronic vaping exerts biological effects on lungs

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(HealthDay)—Chronic vaping exerts biological effects on the lung, some

of which may be mediated by the propylene glycol/vegetable glycerin (PG/VG) base, according to a study published in the July 1 issue of the *American Journal of Respiratory and Critical Care Medicine*.

Arunava Ghosh, Ph.D., from the University of North Carolina at Chapel Hill, and colleagues examined the effects of chronic vaping on pulmonary epithelia. Research bronchoscopies were performed on healthy nonsmokers, cigarette smokers, and electronic-cigarette users (vapers), and bronchial brush biopsies and lavage samples were obtained. To support the human findings, in vitro and murine exposure models were employed.

The researchers found that the vaper airways appeared friable and erythematous on visual inspection by bronchoscopy. Approximately 300 proteins were differentially expressed in [epithelial cells](#) from biopsy samples in smoker and vaper airways, only 78 proteins were commonly altered in both groups, and 113 were uniquely altered in vapers. In vapers, cytochrome P450 family 1 subfamily B member 1, mucin 5 AC (MUC5AC), and MUC4 levels were increased. In vivo, aerosolized PG/VG significantly increased MUC5AC protein in human airway epithelial cultures and in murine nasal epithelial cells. E-liquids rapidly entered cells and PG/VG reduced membrane fluidity and impaired protein diffusion.

"These changes are likely not harmless and may have clinical implications for the development of [chronic lung disease](#)," the authors write. "Further studies will be required to determine the full extent of vaping on the lung."

**More information:** [Abstract/Full Text \(subscription or payment may be required\)](#)

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