

# One exposure to e-cigarette use diminishes cough reflex sensitivity

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With just one exposure to electronic-cigarette (e-cigarette) vapor, participants in a study of 30 healthy subjects demonstrated a diminishment of cough reflex sensitivity. The study was presented at the 2015 American Thoracic Society International Conference.

"Although e-cigarettes have become popular worldwide, very little is known about their effect on the respiratory system. There has been no other research to our knowledge on the effect of [e-cigarette](#) use on the sensitivity of the [cough reflex](#)," said lead author Peter Dicpinigaitis, MD, Professor of Clinical Medicine, Albert Einstein College of Medicine and Montefiore Medical Center, Bronx, N.Y.

The cough reflex stimulates cough to protect the upper respiratory system from the entrance of foreign material. Cough challenge testing is a standard research tool used to measure cough reflex sensitivity. In previous work, Dr. Dicpinigaitis and fellow researchers have shown that chronic tobacco cigarette smokers have reduced cough reflex sensitivity. The researchers theorized that the reduced sensitivity was caused by chronic cigarette smoke-induced desensitization of the airway cough receptors.

The 30 subjects in the current study were healthy adult lifetime nonsmokers. Researchers measured cough reflex sensitivity with the use of capsaicin, the pungent extract of red pepper. Capsaicin has been shown to safely and reproducibly induce cough in previous studies. The capsaicin cough challenge involved inhalation of single breaths of ascending doubling concentrations of capsaicin until the concentration induced five or more coughs, which is called C5, was reached. Subjects underwent cough challenge at baseline (day 1), 15 minutes after they were exposed to an e-cigarette (day 2), and then 24 hours later (day 3). The e-cig "vaping" session for each patient involved 30 puffs of the disposable e-cigarette Blu (Lorillard

Technologies), with each puff 30 seconds apart. This provided an exposure of 1.5 to 1.8 mg of nicotine, which is approximately that of one tobacco cigarette.

Cough reflex sensitivity was significantly diminished in subjects compared with baseline. However, 24 hours after the e-cig exposure, cough reflex sensitivity returned to baseline. The mean log C5 at baseline was  $0.50 \pm 0.48$  (SD), compared with  $0.79 \pm 0.62$  15 minutes after e-cigarette exposure and  $0.55 \pm 0.53$  at one day after exposure.

"We still need to understand the clinical significance of this effect and investigate the consequences of chronic e-cigarette exposure," Dr. Dicpinigaitis said.

**More information:** Abstract 62793: Effect of Electronic Cigarette Use on Cough Reflex Sensitivity

Provided by American Thoracic Society

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