Juul users are inhaling chemicals not listed on the label
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"We were able to detect these acetals both in "Crème Brulée’ e-liquid as well as in the generated from it," said lead author Hanno Erythropel, adding that this is the first report of the presence of glycerol acetals in e-cigarette aerosol. Erythropel, an associate research scientist in Zimmerman’s lab, also noted that 60%-70% of the acetals transferred from the liquid to the vapor.

"People often assume that these e-liquids are a final product once they are mixed," Erythropel said. "But the reactions create new molecules in the e-liquids, and it doesn't just happen in e-liquids from small vape shops, but also in those from the biggest manufacturers in the U.S."

Co-author Sven-Eric Jordt at Duke University said the research team didn't expect to find so many additional chemicals formed from vanillin, a compound used for vanilla flavoring. The chemical is banned in traditional cigarettes but allowed in e-cigarettes. "We were surprised that levels in Juul vapor were already close to safety limits for workplaces where vanillin is used, such as in bakeries and the flavor chemical industry," Jordt said. Little is known about the health effects of inhaling the resulting acetals, but research indicates that chemicals resulting from vanillin are more likely to irritate the airways than vanillin itself.

In the Juul products tested, most of the acetals resulted from the reaction with glycerol. The researchers also noted that four of the eight flavors tested, including "Fruit Medley," contained menthol, a compound used to counteract nicotine’s bitterness and that may increase nicotine intake.

Based on the results, the researchers recommend that future e-cigarette regulations address the formation of new and potentially toxic compounds, menthol levels, and the health effects of flavorants in e-cigarettes.

More information: Hanno C. Erythropel et al.

Provided by Yale University


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