

# E-cigarette vapor slows heart rate in mice

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Credit: American Heart Association

Electronic nicotine delivery systems (ENDS) such as e-cigarettes, affect heart rhythm and cardiovascular function in mice, according to preliminary research presented at the American Heart Association's Scientific Sessions 2017, a premier global exchange of the latest advances in cardiovascular science for researchers and clinicians.

In addition to nicotine, e-cigarette products usually contain propylene glycol (PG) and/or vegetable glycerin (VG). These substances are commonly used to limit moisture loss in skin lotions or as food additives, but the health effects of heating and inhaling these substances are unknown.

In this study, researchers examined the cardiovascular effects of e-cigarette aerosols relative to traditional cigarettes in mice and found:

- Exposure to ENDS aerosol or traditional cigarette smoke rapidly slowed the heart rate (bradycardia) in mice.
- Exposure to aerosol of 50:50 vegetable glycerin and propylene glycol prolonged the heart's electrical cycle.
- When heated, propylene glycol and/or vegetable glycerin generate aldehydes,

acrolein, acetaldehyde, and formaldehyde, of which, only acrolein induced bradycardia in mice.

- Exposure to acrolein or PG:VG aerosol increased blood pressure in mice before the [heart rate](#) began to drop.

Researchers say further studies are needed to explore these effects in humans using ENDS. These findings suggest that exposure to ENDS aerosols may trigger cardiovascular effects and may increase the risks of developing [irregular heart rhythm](#) and overall cardiovascular disease.

## More information:

[circ.ahajournals.org/content/130/16/1418](http://circ.ahajournals.org/content/130/16/1418)

Provided by American Heart Association

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