

Human heart cells respond less to e-cig vapour than tobacco smoke

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New research has showed substantial differences in the way human heart cells respond to e-cigarette smoke and conventional cigarette smoke.

Researchers from the Medical Research Council Integrative Epidemiology Unit (MRC IEU) at the University of Bristol investigated how the same type of cells as those found in the arteries of the heart, known as human coronary artery endothelial cells (HCAEC), responded when they were exposed to both e-cigarette aerosol and conventional cigarette smoke.

Their results were published in the journal *Drug and Alcohol Dependence*.

Professor Marcus Munafò, who was part of the study team, said: "The past few years have seen a rapid growth in the use of e-cigarettes, which deliver nicotine via inhaled aerosol. It's thought that e-cigarettes are unlikely to be as harmful as conventional cigarettes, but little data exists to show their relative harms, or the long term effects of e-cigarette use. Therefore, research into these biological effects is critical. Our study looked at the stress response in [heart cells](#) in response to cigarette smoke and e-cigarette aerosol."

The researchers created cigarette smoke extract from a conventional cigarette and electronic cigarette aerosol extract from an e-cigarette aerosol. Both were passed through a culture of the cells. The researchers then analysed the gene expression patterns of the heart cells to see if the

cells exhibited a stress response to either the cigarette smoke or e-cigarette aerosol exposure.

Professor Munafò said: "We found the [cells](#) showed a [stress response](#) from the [cigarette smoke](#) extract, but not from the electronic cigarette [aerosol](#) extract. This result suggests tobacco smokers may be able to reduce immediate tobacco-related harm by switching from conventional cigarettes to e-cigarettes."

More information: Jack E. Teasdale et al, Cigarette smoke but not electronic cigarette aerosol activates a stress response in human coronary artery endothelial cells in culture, *Drug and Alcohol Dependence* (2016). DOI: [10.1016/j.drugalcdep.2016.04.020](https://doi.org/10.1016/j.drugalcdep.2016.04.020)

Provided by University of Bristol

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