The Effect of Pod-based E-Cigarettes on Endothelial Cell Phenotype: Preliminary Results

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INTRODUCTION

- More than 25% of high-school students use e-cigarettes
- Many youth perceive e-cigarettes to be safer than conventional cigarettes
- Pod-based devices produced by JUUL account for >70% of the total market share
- A recent study in rats reported that JUUL induced endothelial dysfunction
- The effects of JUUL aerosol and e-liquid components on human endothelial cells remain unknown

OBJECTIVE

To evaluate the effects of JUUL e-liquid components on vascular endothelial cell function

METHODS

System: Human aortic endothelial cells in culture
Exposure: JUUL e-liquid components in serial dilutions
Outcome Measures: Cell viability with TUNEL assay

RESULTS

- Higher dilutions of JUUL e-liquids, nicotine salt, and PG/VG vehicle induced significant cell death
- Notably, evidence of increased cellular toxicity was seen even at the lowest dilutions (<< 1%)
- No overt differences in cytotoxic effects across the individual JUUL liquid flavors
- Toxicity induced by nicotine salt or PG/VG alone was similar to that of entire JUUL e-liquid

CONCLUSIONS

- JUUL e-liquid components demonstrated acute toxicity in vascular endothelial cells
- In future studies, we plan to expose endothelial cells to JUUL aerosols (evaluating for transcriptomics and oxidative stress)

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