Conklin, D. J. (2022). How irritating! Electronic cigarettes not “95% safer” than combustible cigarettes: Recent mechanistic insights into endothelial dysfunction. *Arteriosclerosis, Thrombosis, and Vascular Biology*, *42*(11), 1351-1354. https://doi.org/10.1161/ATVBAHA.122.318468

Definitions

- **Endothelial Dysfunction**: A condition where the inner lining of blood vessels doesn't work properly, leading to cardiovascular issues.
- **Electronic Cigarettes (E-cigs)**: Devices that deliver nicotine through vapor rather than smoke.
- **Flow-Mediated Dilation (FMD)**: A test that measures how well blood vessels expand, used to assess endothelial function.
- **Aldehydes**: Harmful chemicals found in both cigarette smoke and E-cig aerosols.

Key Findings

- E-cigarettes are not 95% safer than traditional cigarettes regarding cardiovascular health.
- E-cigarettes cause similar levels of vascular injury as traditional cigarettes.
- Aldehydes in E-cig vapors contribute to endothelial dysfunction.
- Both acute and chronic exposure to E-cig vapors impair blood vessel function.

Introduction

The study investigates the effects of electronic cigarettes on cardiovascular health, challenging the claim that E-cigs are 95% safer than traditional cigarettes. The research focuses on endothelial dysfunction, a key factor in heart disease.

Main Content

Background

Public Health England claimed that E-cigarettes are 95% less harmful than traditional cigarettes. However, recent studies suggest that E-cigs may cause significant vascular injury similar to traditional cigarettes.

Methods

- **Flow-Mediated Dilation (FMD)**: This technique was used to measure blood vessel function in rodents and humans exposed to E-cig vapors.
- **Chemical Analysis**: The presence of harmful aldehydes in E-cig aerosols was analyzed.

Results

- **Acute Exposure**: Studies on rats showed that exposure to E-cig vapors impaired FMD similarly to traditional cigarette smoke.
- **Chronic Exposure**: In human studies, long-term E-cig users had impaired FMD, indicating chronic endothelial dysfunction.
- **Aldehydes' Role**: Harmful chemicals like acrolein and acetaldehyde in E-cig vapors were identified as significant contributors to vascular injury.

Conclusion

E-cigarettes cause endothelial dysfunction, challenging the notion that they are significantly safer than traditional cigarettes. Both short-term and long-term use of E-cigs can harm blood vessel function due to the presence of harmful chemicals like aldehydes. These findings highlight the need for more stringent regulations and further research on the health impacts of E-cigarettes.

Word Count: 309