

Acute vascular effects following e-cigarette inhalation

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Bakgrund

E-cigarettes emerged on the market as global tobacco sales declined and have been depicted as both a smoking cessation tool as well as a healthier alternative to conventional cigarettes. However, recent studies have shown adverse health effects related to e-cigarette usage, mostly on the respiratory and cardiovascular systems. The aim of this study is to demonstrate the acute vascular effects of e-cigarette usage (vaping) with and without nicotine on forearm blood flow (FBF) employing the gold standard method, forearm venous occlusion plethysmography.

Material och Metod

Twenty healthy males with a sporadic use of tobacco/nicotine were included. In a randomized, double blinded, cross-over fashion, subjects vaped 30 puffs during 30 minutes of e-cigarettes containing nicotine-free and nicotine e-liquids on two separate occasions. Two hours following vaping, they underwent venous occlusion plethysmography investigating FBF during intraarterial administration of acetylcholine (ACH) and sodium nitroprusside (SNP).

Resultat

ACH and SNP caused dose-dependent increases in FBF after both exposures. Compared with SNP, the ACH-induced increase in FBF was significantly greater after vaping nicotine-containing e-cigarettes.

Slutsats

A greater increase in FBF during infusion of the endothelium-dependent vasodilator ACH was seen after brief vaping with nicotine-containing e-cigarettes, suggesting nicotine may create a potentiation of ACH-induced vascular effects. However, how these mechanisms relate to the long-term effects of vaping nicotine-containing e-cigarettes on cardiovascular health have yet to be demonstrated.