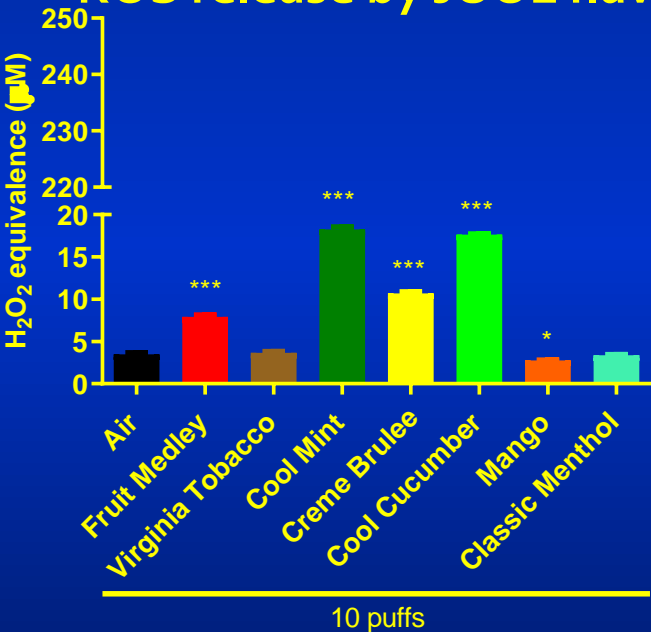


JUUL e-Cigarette and Vape Pen Flavors Impose Oxidative Stress and Inflammatory Responses in Lung Epithelial Cells and Macrophages

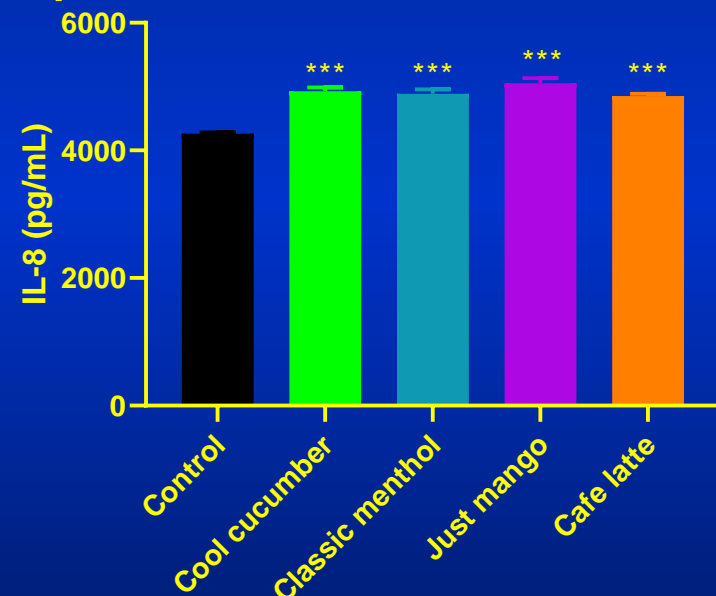
Introduction: JUUL and vaping pens are emerging electronic nicotine delivery systems (ENDS), and are increasingly popular among youth due to compact designs, appealing flavors, and as inhalable health supplements..

Rationale and Hypothesis: The pulmonary effects caused by JUUL and vape pens are currently unknown. JUUL flavoring agents induce cytotoxicity, oxidative stress, and inflammation. **Methods:** Several JUUL flavors (cool mint, mango, crème brulee, virginia tobacco, fruit medley, and cool cucumber) and vape pens (vitamin B12, sleep, energy, and performax) were used...

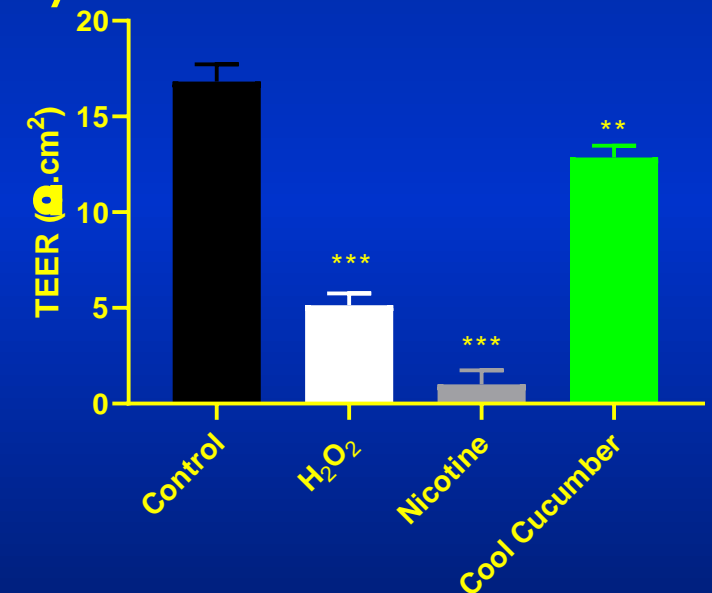
ROS release by JUUL flavors



Induced inflammatory response by JUUL and JUUL-like flavors



Induced epithelial barrier dysfunction by JUUL and JUUL-like flavors



Acute exposure to JUUL and similar flavors causes loss of epithelial barrier function and induction of pro-inflammatory response in lung cells mediated by oxidative stress