



Control/Tracking Number: 2020-A-4082-SOT

Activity: Abstract

Current Date/Time: 10/21/2019 10:06:05 AM

Propylene glycol/vegetable glycerin and menthol-flavored e-cigarette aerosol induced strain and sex-dependent immune-toxicity in mice

Author Block: [T. M. Muthumalage](#), I. K. Sundar, and [I. Rahman](#), University of Rochester, Rochester, NY.

Abstract:

Rationale: Flavored e-cigarettes (e-cig) have become popular among teenagers in recent years. Due to flavor bans, the regulatory agencies are not sure about including menthol flavors among the other e-cig flavors that need to be banned. We have previously shown that menthol flavor induces reactive oxygen species and inflammation *in vitro* in human lung cells. In this study, we hypothesized that menthol-flavored e-cigarettes differentially affect the immune-inflammatory response in a strain and sex-dependent manner. **Methods:** C57BL/6J and BALB/cJ strains (male and female; n=4/group) were exposed to e-cig aerosols containing PG/VG (50:50) or menthol (Ecto 0 mg/ml and 24 mg/ml nicotine) for two hours/day for 3 days using the Scireq inExpose exposure system [Puff profile: 2 puffs/min, 70 ml puff volume]. Similarly, mice were also exposed to tobacco flavored e-cig aerosols for comparison with menthol-flavored e-cigs. Differential cell counts and inflammatory mediators were measured in bronchoalveolar lavage (BAL) fluid. **Results:** Acute exposure to e-cig aerosol containing PG/VG, menthol without nicotine, and menthol with nicotine increased the total cell counts in the BAL fluid in male and female of both mouse strains. PG/VG exposure caused the highest infiltration of total cell counts in the BAL fluid. Neutrophil counts were increased in both PG/VG and menthol (0 or 24 mg/ml) exposed both male and female BALB/cJ mice. CD4⁺ T-lymphocyte counts were altered in PG/VG and menthol with and without nicotine exposed BALB/cJ mice. Most significant changes in the differential BALF cell counts were observed in male BALB/cJ compared to C57BL/6J (male and female) mice. E-cig aerosol containing PG/VG and menthol (0 and 24 mg/ml) differentially affect inflammatory cytokines, such as MCP-1, IFN γ , KC, TNF α , RANTES, and Eotaxin in both the mouse strains compared to air group control. Further, we compared the effects of tobacco vs. menthol-flavored e-cig aerosols with and without nicotine to determine the difference in their respiratory toxicity. **Conclusions:** E-cig exposure containing PG/VG alone and menthol without nicotine induced chemotaxis such as neutrophilia and inflammatory response that may be predominantly Th1 driven. Nicotine differentially affects chemotaxis, inflammatory mediators, and increased susceptibility to immune-toxicity in menthol exposed male compared to female mice. This study was supported by NIH R01HL135613 and U54CA228110.

:

Presentation Preference (Complete): Platform or Poster

Category (Complete): Immunotoxicity ; Inflammation ; Respiratory Toxicology

COI/Keywords (Complete):

The authors declare there exist no real or perceived conflict of interest : True

Keyword 1: immunotoxicity

Keyword 2: inflammation

Keyword 3: inhalation toxicology

Keyword Other : e-cigarettes

Chemical Entity : flavors

Sponsor (Complete):

Are you or another author of the abstract an SOT member? : Yes

Abstract Submission Fee (Complete): Your credit card order has been processed on Friday 18 October 2019 at 6:20 PM.

Status: Complete

[Society of Toxicology](#)

59th Annual Meeting

March 15-19, 2020

Anaheim, CA

[Society of Toxicology](#)

11190 Sunrise Valley Drive, Suite 300

Reston, VA 20191

703-438-3115 Office

sothq@toxicology.org

<http://www.toxicology.org/>

[Feedback](#)