Nicotine, Menthol and Humectants in Heated Tobacco Product IQOS from Different Countries

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Significance

- IQOS HeatSticks (HEETs) are available globally in a variety of flavors, including bold and light tobacco as well as bold and light menthol.
- Little is known about differences in composition of IQOS sold globally.
- Retention of nicotine, menthol, and humectant concentrations in the tobacco plug vs the non-tobacco material (NTM) is not well established.
- The aim of this study is to examine nicotine, menthol, and humectant concentrations in the tobacco plug as well as in the NTM of HEET(s) purchased in nine counties where IQOS is available.

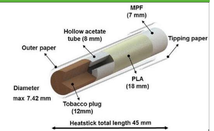

Figure 1. Example HEET; including tobacco plug and non-tobacco material (NTM: outer paper, tipping paper, hollow acetate plug, polylactic acid [PLA] filter, and mouthpiece filter [MPF]).

Purchased Products

	Tobacco		Menthol	
Country	**Bold**	**Light**	**Bold**	**Light**
Canada	Red	Silver		
Israel		Yellow		Turquoise
Italy		Yellow		White
Japan		Regular		Menthol, Mint, Tropical Menthol
Poland	Amber	Yellow	Blue	Turquoise
South Africa	Amber	Yellow		Turquoise
United Kingdom	Amber	Yellow		
South Korea				Green Zing
United States		Silver		Smooth Menthol

Table 1. A convenient sample of tobacco flavored (n=11) and menthol (n=9) HEET(s) were purchased in both bold and light options.

Methods

- University of Kentucky 1R6F research cigarettes were used as controls.
- HEET(s)/Cigarette tobacco filler was separated from the non-tobacco material (NTM), and each were individually extracted using methanol and a platform shaker, **Figure 2**.
- Analysis for nicotine, menthol, propylene glycol (PG) and glycerin (VG) was performed using GC-MS methods following a modified version of CORESTA 62.
- Statistical comparisons were performed with Mann-Whitney t-tests for significance at p<0.05.

Tobacco plug was removed and separated for NTM

Extracted with methanol

Analyzed by GC-MS

Figure 2. Extraction of tobacco plug and non-tobacco material (NTM).

Results

Tobacco Plug Vs. Non-Tobacco Material (NTM) by Country

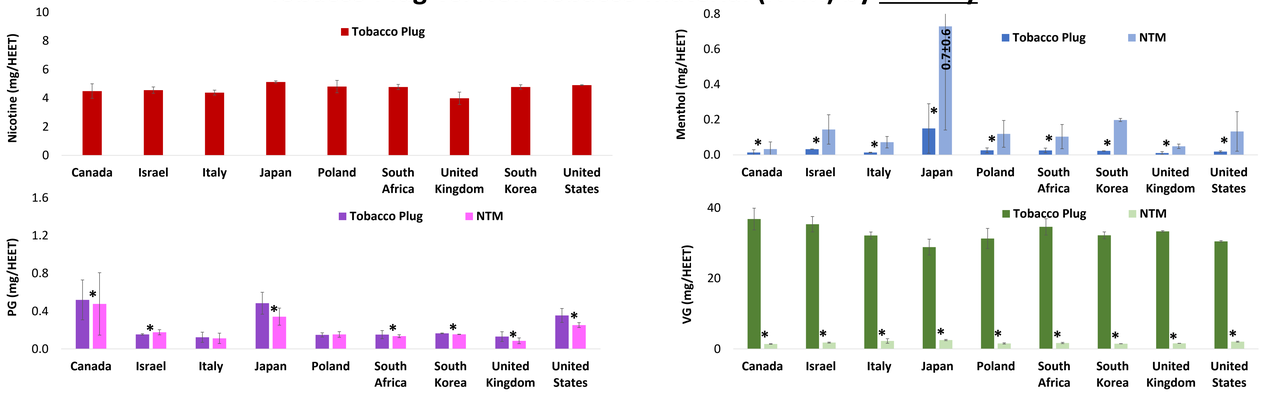

Figure 3. Tobacco plug vs non-tobacco material (NTM) by purchase location. * indicates significance $p>0.05$ between tobacco plug and NTM. Menthol, PG and VG comparisons were significantly different between countries among tobacco plug groups ($p<0.001$) and NTM groups ($p<0.001$) for each comparison. Nicotine plug results were also significant between countries ($p<0.001$).

Tobacco Plug Vs. Non-Tobacco Material (NTM) by Product Type

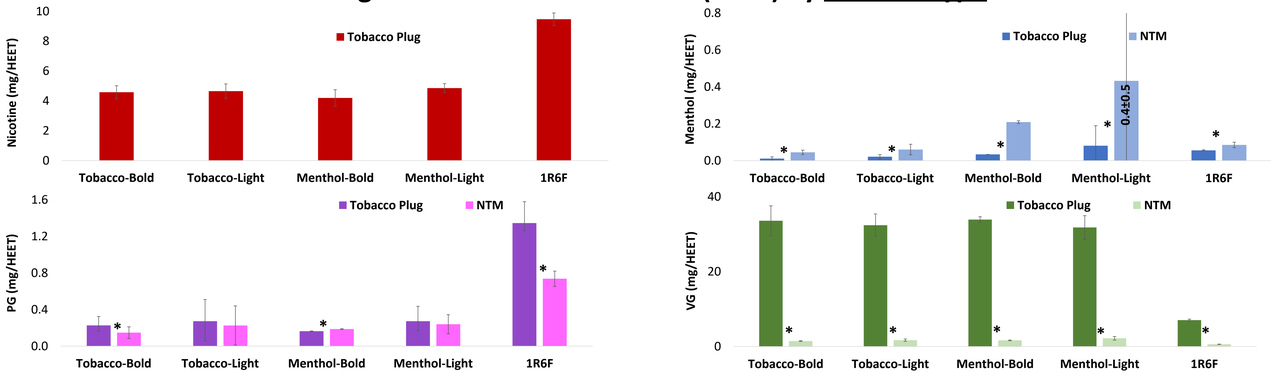

Figure 4. Tobacco plug vs non-tobacco material (NTM) by product type. * indicates significance >0.05 between tobacco plug and NTM. Menthol, PG and VG comparisons were significantly different between product categories among tobacco plug groups ($p<0.001$) and NTM groups ($p<0.001$) for each comparison.

Results

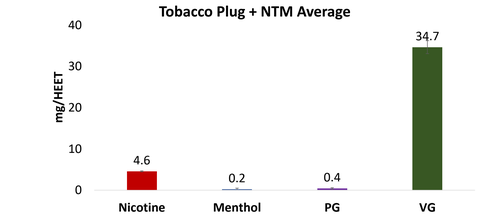

Figure 5. Average amount of nicotine, menthol, PG and VG found in all HEETs examined in this study.

Conclusions

- Nicotine content in IQOS HEETs does not vary by country or product category.
- Menthol, PG and VG content in HEETs varies significantly by country as well as product category.
- Glycerin is a primary humectant in the tobacco plug.
- Significant amounts of menthol are present in non-tobacco material (NTM).

Disclosures

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