“Cigalikes versus Tank Systems: Effects on Smoking Reduction, Self-Reported Satisfaction, Craving and Withdrawal Relief at the Early Stage of a Quit Attempt”

Catherine Kimber MBPsS¹ | Email: c.kimber@uel.ac.uk
Dr Kirstie Soar
Prof. Olivia Corcoran
Dr Lynne Dawkins

¹ Drugs & Addictive Behaviours Research Group, School of Psychology, University of East London, Water lane, E15 4LZ, UK | Tel: +44 (0) 208 223 4592
Disclosures

➢ This study was fully funded by a UEL PhD studentship to the first author
➢ No tobacco industry, electronic cigarette company or pharmaceutical industry funding
➢ No COI
Cigalikes Vs Tanks

➢ First ecigs poor nicotine delivery (Bullen et al., 2010; Eissenberg, 2010)

➢ Tanks more efficient than Cigalikes (Farsalinos et al., 2014)

➢ Recent studies using tanks found plasma nicotine levels matching tobacco cigarettes (TC) (Dawkins, Kimber et al., 2016; Ramôa et al., 2016)
Puffing patterns

Experienced Vs Naïve users

➢ Experienced users (Dawkins & Corcoran, 2014) & newer devices achieve higher nicotine plasma levels, craving relief and satisfaction (Farsalinos et al., 2015; Hajek et al., 2017; Vansickel & Eissenberg, 2013)

➢ Experienced users take longer puffs (Farsalinos, 2015)

➢ Naive users’ puffing patterns increase over time thereby increasing blood nicotine levels (Lee, Gawron & Goniewicz, 2015; Hajek et al., )

➢ “E-cigarette use: a learning curve” (McQueen, 2011)
Nicotine concentrations

➢ Higher nicotine concentrations associated with greater craving relief & satisfaction (Etter, 2015), & higher plasma nicotine (Dawkins, Kimber et al, 2016)

➢ Ecig naïve smokers had to increase their nicotine concentrations to achieve abstinence (Farsalinos et al., 2013)
Rationale

➢ Although cigalikes use prevalence is in decline (ASH, 2017), cigarette-like appearance appeal to ecig-naïve smokers wanting to quit (Dawkins, Kimber et al, 2015)
   ➢ 28% of smokers would try again “if it felt like smoking” (ASH, 2017)

➢ EU-TPD cap on nic concentrations (20mg/mL)
   ➢ 6% vapers use 20 mg/mL (ASH, 2017)
   ➢ What about Smokers??

➢ Nicotine concentrations
➢ Device types
➢ Frequency of use
Primary aims

To compare cigalikes VS tank systems

1. Effect on smoking behaviours (CPD & CO; Nicotine dependence)

2. Effect on craving & satisfaction & subjective effects

3. Effects of frequency of use on smoking (daily puff number)

4. How puffing patterns differ between devices and nicotine concentrations
## Methods: Group allocation

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Percentage</th>
<th>Mean±SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole sample</td>
<td>70</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Gender (Female)</td>
<td>-</td>
<td>62.9</td>
<td>-</td>
</tr>
<tr>
<td>Age</td>
<td>-</td>
<td>-</td>
<td>29.47±9.19</td>
</tr>
<tr>
<td>Cigalikes (18 mg/mL)</td>
<td>24</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>TECC Go eCig</td>
<td>11</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Blu eCig</td>
<td>13</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>6 mg/mL tank (TW mini curve – Red label 50/50 PG/VG) (Tank 6)</td>
<td>23</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>18 mg/mL tank (TW mini curve – Red label 50/50 PG/VG) (Tank 18)</td>
<td>23</td>
<td>-</td>
<td>-</td>
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</tbody>
</table>
Methods: Study protocol

Baseline session
- Salivary cotinine
- e-CO
- Demographic data
- Smoking history & motivation to quit
- Nicotine dependence
- Craving & W/S

Ecig allocation
- Puffing topography
- 20 min Ad lib vaping
- Subjective effects

E-cig use diary

WK 1
- Tob cig smoked
- e-CO
- Nicotine dependence
- Craving & W/S

Subjective effects

E-cig use diary

Repeated at WK 2

20 min Ad lib vaping

Craving & W/S

Subjective effects
Smoking reduction and Nicotine dependence

CPD

CO

FTND

Time to 1st TC
Craving

Craving at baseline, Time 1 & 2

![Graph showing craving scores at baseline, Time 1, and Time 2 for Cigalikes, Tank 18, and Tank 6.](image-url)
Subjective effects

Satisfaction at baseline, week 1 & 2

Mean scores

Baseline
Time 1
Time 2

Cigalikes
Tank 18
Tank 6
Daily subjective effects and number of puffs

Daily satisfaction at week 1 and 2

Volume consumed in tanks
## Smoking reduction, puffing patterns & subjective effects at week 1

<table>
<thead>
<tr>
<th></th>
<th>CO</th>
<th>CPD</th>
<th>Puff number</th>
<th>Satisfaction</th>
<th>Pleasant</th>
<th>Reduced Craving</th>
<th>Hit</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CPD</td>
<td>-.176</td>
<td></td>
<td>-.451**</td>
<td>-.326*</td>
<td>-.567**</td>
<td>-.458**</td>
<td></td>
</tr>
<tr>
<td>Puff number</td>
<td></td>
<td></td>
<td>.331*</td>
<td>.229</td>
<td>.220</td>
<td>.298*</td>
<td></td>
</tr>
<tr>
<td>Satisfaction</td>
<td></td>
<td></td>
<td></td>
<td>.796**</td>
<td>.709**</td>
<td>.683**</td>
<td></td>
</tr>
<tr>
<td>Pleasant</td>
<td></td>
<td></td>
<td></td>
<td>.507**</td>
<td>.518**</td>
<td></td>
<td>.731**</td>
</tr>
<tr>
<td>Reduced Craving</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</table>

* Correlations significant at p < .05 (2 tailed)

** Correlations significant at p < .01 (2 tailed)
Smoking reduction, puffing patterns & subjective effects at week 2

<table>
<thead>
<tr>
<th></th>
<th>CO</th>
<th>CPD</th>
<th>Puff number</th>
<th>Satisfaction</th>
<th>Pleasant</th>
<th>Reduced Craving</th>
<th>Hit</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO</td>
<td>.682**</td>
<td>-.287</td>
<td>-.318*</td>
<td>-.203</td>
<td>-.324*</td>
<td>-.218</td>
<td></td>
</tr>
<tr>
<td>CPD</td>
<td>-.241</td>
<td>-.358*</td>
<td>-.226</td>
<td>-.394**</td>
<td>-.240</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Puff number</td>
<td></td>
<td></td>
<td>.517**</td>
<td>.540**</td>
<td>.613**</td>
<td>.550**</td>
<td></td>
</tr>
<tr>
<td>Satisfaction</td>
<td></td>
<td></td>
<td></td>
<td>.860**</td>
<td>.844**</td>
<td>.912**</td>
<td></td>
</tr>
<tr>
<td>Pleasant</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.681**</td>
<td>.822**</td>
<td></td>
</tr>
<tr>
<td>Reduced Craving</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.896**</td>
</tr>
</tbody>
</table>

* Correlations significant at p < .05 (2 tailed)
** Correlations significant at p < .01 (2 tailed)
Key findings summarised

➢ As measured by CPD & CO, smoking reduced over time regardless of device type
➢ Nicotine dependence reduced also
➢ For satisfaction, the 18 mg/mL generally performed better except at week 1 (6 mg/mL Tank)
➢ Cigalikes performed the poorest at all times
➢ Tank systems & higher nicotine concentrations tended to perform better for craving relief
➢ No difference between device types in terms of feel or taste like a TC
➢ Daily puffing patterns were associated with satisfaction & other subjective effects (diary data)
Implications

➢ E-cigarettes can positively impact smoking behaviours

➢ Satisfaction promotes more frequent use so is therefore important

➢ Cigalikes do not *feel* or *taste like a TC* usefulness?

➢ Impact of EU-TPD cap on nicotine concentrations for smokers?
Acknowledgements

➢ Participants

➢ Dr Kirstie Soar ¹

➢ Dr Lynne Dawkins ²

➢ Prof. Olivia Corcoran³

➢ UEL DAB-RG

¹ Drugs & Addictive Behaviours Research Group, School of Psychology, University of East London, Water lane, E15 4LZ, UK
² Division of Psychology, School of Applied Sciences, 103 Borough Road, London South Bank University, London, SE1 0AA, UK
³ The Medicines Research Group, School of Health, Sport and Bioscience, University of East London, Water lane, E15 4LZ, UK
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References


