**Understanding the influence of atomizing power on electronic cigarette aerosol size and inhalation dose estimation**

***Online Supplemental Information***

**List of contents**

**Table S1.** Respiratory Deposited E-cig Aerosol Mass by the Size and Flavor (μg)A1

**Figure S1.** Size Distribution of E-cig Aerosol Mass by Atomizing PowerA4

**Table S1. Respiratory Deposited E-cig Aerosol Mass by the Size and Flavor (μg)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Region of****Deposition** | **Flavor** | **Power(Watts)** | **Impactor Cutoff (μm)** |
| **0.056** | **0.10** | **0.18** | **0.32** | **0.56** | **1.0** | **1.8** | **3.2** | **5.6** | **10** | **18** |
| Head Airways | Chocolate | 5 | 0.003 | 0.006 | 0.056 | 0.484 | 7.048 | 9.947 | 4.799 | 1.103 | 0.053 | 0.062 | 0.044 |
|  |  | 10 | 0.003 | 0.005 | 0.162 | 1.557 | 9.075 | 61.377 | 21.007 | 2.234 | 0.068 | 0.063 | 0.099 |
|  |  | 15 | 0.013 | 0.012 | 0.482 | 2.381 | 12.866 | 31.697 | 5.211 | 0.387 | 0.058 | 0.018 | 0.113 |
|  |  | 20 | 0.014 | 0.025 | 0.190 | 0.941 | 12.185 | 30.479 | 14.793 | 3.073 | 0.136 | 0.112 | 0.033 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Melon | 5 | 0.014 | 0.002 | 0.088 | 0.781 | 9.292 | 11.804 | 6.007 | 1.481 | 0.025 | 0.307 | 0.220 |
|  |  | 10 | 0.006 | 0.007 | 0.233 | 1.306 | 8.284 | 23.974 | 4.890 | 0.172 | 0.058 | 0.027 | 0.021 |
|  |  | 15 | 0.033 | 0.001 | 0.241 | 2.211 | 16.427 | 87.860 | 27.539 | 2.869 | 0.281 | >0.001 | >0.001 |
|  |  | 20 | 0.001 | 0.002 | 0.139 | 1.286 | 9.997 | 61.672 | 42.027 | 10.275 | 0.138 | 0.076 | 0.050 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Menthol | 5 | >0.001 | 0.540 | 0.035 | 0.388 | 5.041 | 6.928 | 4.934 | 2.743 | 2.564 | 0.126 | 0.077 |
|  |  | 10 | 0.004 | 0.004 | 0.063 | 0.604 | 9.723 | 13.904 | 2.781 | 0.112 | 0.068 | 0.036 | 0.092 |
|  |  | 15 | 0.014 | 0.008 | 0.246 | 1.635 | 10.027 | 25.628 | 5.320 | 0.533 | >0.001 | 0.009 | >0.001 |
|  |  | 20 | >0.001 | 0.251 | 0.427 | 1.526 | 14.509 | 60.756 | 39.216 | 12.136 | 0.674 | 0.121 | 0.169 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Strawberry | 5 | 0.022 | 0.005 | 0.092 | 0.576 | 7.642 | 15.553 | 10.203 | 2.699 | 5.388 | 0.133 | 0.063 |
|  |  | 10 | >0.001 | 0.014 | 0.525 | 2.252 | 9.684 | 19.891 | 4.423 | 0.309 | 0.087 | 0.009 | 0.021 |
|  |  | 15 | >0.001 | 0.006 | 0.474 | 3.087 | 10.799 | 80.155 | 23.970 | 2.921 | 0.019 | 0.018 | >0.001 |
|  |  | 20 | 0.005 | 0.004 | 0.300 | 1.775 | 12.330 | 59.592 | 44.759 | 15.894 | 0.445 | 0.105 | 0.090 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Grapefruit | 5 | 0.001 | 0.004 | 0.106 | 1.383 | 15.857 | 36.890 | 23.052 | 8.413 | 0.372 | 0.138 | 0.073 |
|  |  | 10 | >0.001 | 0.011 | 0.087 | 1.012 | 11.521 | 38.685 | 10.714 | 2.002 | 0.358 | 0.090 | 0.092 |
|  |  | 15 | 0.076 | 0.003 | 0.126 | 1.071 | 8.245 | 15.177 | 1.612 | >0.001 | 0.416 | >0.001 | 0.007 |
|  |  | 20 | 0.028 | 0.004 | 0.134 | 1.559 | 19.466 | 116.410 | 102.901 | 33.965 | 0.452 | 1.086 | 0.237 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Mango | 5 | 0.004 | 0.009 | 0.227 | 1.838 | 15.972 | 54.089 | 16.895 | 2.718 | 0.065 | 0.075 | 0.147 |
|  |  | 10 | 0.006 | 0.024 | 0.165 | 0.361 | 3.618 | 2.601 | >0.001 | 0.129 | >0.001 | >0.001 | 0.064 |
|  |  | 15 | 0.004 | 0.005 | 0.325 | 2.151 | 14.525 | 42.385 | 9.065 | 0.876 | 0.077 | >0.001 | >0.001 |
|  |  | 20 | 0.023 | 0.004 | 0.314 | 1.853 | 14.014 | 55.661 | 58.168 | 53.941 | 21.770 | 0.293 | 0.140 |

**Table S1. (Continued)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Region of****Deposition** | **Flavor** | **Power(Watts)** | **Impactor Cutoff (μm)** |
| **0.056** | **0.10** | **0.18** | **0.32** | **0.56** | **1.0** | **1.8** | **3.2** | **5.6** | **10** | **18** |
| Tracheobronchial | Chocolate | 5 | 0.005 | 0.007 | 0.024 | 0.048 | 0.524 | 0.947 | 0.468 | 0.085 | 0.002 | 0.001 | >0.001 |
| Region |  | 10 | 0.005 | 0.006 | 0.070 | 0.153 | 0.675 | 5.846 | 2.047 | 0.172 | 0.003 | 0.001 | 0.001 |
|  |  | 15 | 0.022 | 0.015 | 0.209 | 0.235 | 0.957 | 3.019 | 0.508 | 0.030 | 0.003 | >0.001 | 0.001 |
|  |  | 20 | 0.025 | 0.032 | 0.083 | 0.093 | 0.906 | 2.903 | 1.442 | 0.237 | 0.006 | 0.002 | >0.001 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Melon | 5 | 0.024 | 0.002 | 0.038 | 0.077 | 0.691 | 1.124 | 0.585 | 0.114 | 0.001 | 0.006 | 0.001 |
|  |  | 10 | 0.010 | 0.009 | 0.101 | 0.129 | 0.616 | 2.283 | 0.477 | 0.013 | 0.003 | 0.001 | >0.001 |
|  |  | 15 | 0.059 | 0.002 | 0.105 | 0.218 | 1.221 | 8.368 | 2.684 | 0.222 | 0.013 | >0.001 | >0.001 |
|  |  | 20 | 0.002 | 0.002 | 0.060 | 0.127 | 0.743 | 5.874 | 4.096 | 0.793 | 0.006 | 0.001 | >0.001 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Menthol | 5 | 0.001 | 0.677 | 0.015 | 0.038 | 0.375 | 0.660 | 0.481 | 0.212 | 0.117 | 0.002 | >0.001 |
|  |  | 10 | 0.007 | 0.006 | 0.027 | 0.060 | 0.723 | 1.324 | 0.271 | 0.009 | 0.003 | 0.001 | >0.001 |
|  |  | 15 | 0.025 | 0.010 | 0.107 | 0.161 | 0.746 | 2.441 | 0.518 | 0.041 | >0.001 | >0.001 | >0.001 |
|  |  | 20 | >0.001 | 0.315 | 0.186 | 0.150 | 1.079 | 5.787 | 3.822 | 0.937 | 0.031 | 0.002 | 0.001 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Strawberry | 5 | 0.040 | 0.006 | 0.040 | 0.057 | 0.568 | 1.481 | 0.994 | 0.208 | 0.246 | 0.002 | >0.001 |
|  |  | 10 | >0.001 | 0.017 | 0.228 | 0.222 | 0.720 | 1.895 | 0.431 | 0.024 | 0.004 | >0.001 | >0.001 |
|  |  | 15 | 0.001 | 0.007 | 0.206 | 0.304 | 0.803 | 7.634 | 2.336 | 0.226 | 0.001 | >0.001 | >0.001 |
|  |  | 20 | 0.008 | 0.004 | 0.130 | 0.175 | 0.917 | 5.676 | 4.362 | 1.227 | 0.020 | 0.002 | >0.001 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Grapefruit | 5 | 0.001 | 0.005 | 0.046 | 0.136 | 1.179 | 3.514 | 2.247 | 0.650 | 0.017 | 0.003 | >0.001 |
|  |  | 10 | >0.001 | 0.014 | 0.038 | 0.100 | 0.857 | 3.685 | 1.044 | 0.155 | 0.016 | 0.002 | >0.001 |
|  |  | 15 | 0.136 | 0.004 | 0.055 | 0.105 | 0.613 | 1.446 | 0.157 | >0.001 | 0.019 | >0.001 | >0.001 |
|  |  | 20 | 0.050 | 0.005 | 0.058 | 0.154 | 1.447 | 11.087 | 10.029 | 2.622 | 0.021 | 0.020 | 0.001 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Mango | 5 | 0.008 | 0.012 | 0.098 | 0.181 | 1.188 | 5.152 | 1.647 | 0.210 | 0.003 | 0.001 | 0.001 |
|  |  | 10 | 0.011 | 0.030 | 0.072 | 0.036 | 0.269 | 0.248 | >0.001 | 0.010 | >0.001 | >0.001 | >0.001 |
|  |  | 15 | 0.007 | 0.006 | 0.141 | 0.212 | 1.080 | 4.037 | 0.883 | 0.068 | 0.004 | >0.001 | >0.001 |
|  |  | 20 | 0.041 | 0.005 | 0.137 | 0.183 | 1.042 | 5.301 | 5.669 | 4.164 | 0.993 | 0.005 | 0.001 |

**Table S1. (Continued)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Region of****Deposition** | **Flavor** | **Power(Watts)** | **Impactor Cutoff (μm)** |
| **0.056** | **0.10** | **0.18** | **0.32** | **0.56** | **1.0** | **1.8** | **3.2** | **5.6** | **10** | **18** |
| Alveolar | Chocolate | 5 | 0.023 | 0.039 | 0.161 | 0.599 | 5.261 | 4.245 | 1.085 | 0.130 | 0.003 | 0.001 | >0.001 |
| Region |  | 10 | 0.022 | 0.035 | 0.468 | 1.927 | 6.773 | 26.195 | 4.751 | 0.262 | 0.004 | 0.002 | 0.001 |
|  |  | 15 | 0.105 | 0.082 | 1.396 | 2.948 | 9.603 | 13.528 | 1.179 | 0.045 | 0.003 | >0.001 | 0.001 |
|  |  | 20 | 0.115 | 0.169 | 0.550 | 1.165 | 9.094 | 13.008 | 3.346 | 0.361 | 0.008 | 0.003 | >0.001 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Melon | 5 | 0.115 | 0.012 | 0.256 | 0.967 | 6.935 | 5.038 | 1.359 | 0.174 | 0.001 | 0.007 | 0.002 |
|  |  | 10 | 0.049 | 0.047 | 0.674 | 1.617 | 6.183 | 10.232 | 1.106 | 0.020 | 0.003 | 0.001 | >0.001 |
|  |  | 15 | 0.277 | 0.009 | 0.698 | 2.737 | 12.261 | 37.497 | 6.228 | 0.337 | 0.016 | >0.001 | >0.001 |
|  |  | 20 | 0.008 | 0.013 | 0.403 | 1.592 | 7.461 | 26.321 | 9.505 | 1.207 | 0.008 | 0.002 | >0.001 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Menthol | 5 | 0.004 | 3.618 | 0.100 | 0.481 | 3.762 | 2.957 | 1.116 | 0.322 | 0.146 | 0.003 | 0.001 |
|  |  | 10 | 0.031 | 0.030 | 0.181 | 0.748 | 7.257 | 5.934 | 0.629 | 0.013 | 0.004 | 0.001 | 0.001 |
|  |  | 15 | 0.117 | 0.054 | 0.711 | 2.025 | 7.484 | 10.937 | 1.203 | 0.063 | >0.001 | >0.001 | >0.001 |
|  |  | 20 | >0.001 | 1.682 | 1.237 | 1.889 | 10.829 | 25.930 | 8.869 | 1.425 | 0.038 | 0.003 | 0.001 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Strawberry | 5 | 0.186 | 0.032 | 0.265 | 0.713 | 5.703 | 6.638 | 2.307 | 0.317 | 0.307 | 0.003 | 0.001 |
|  |  | 10 | >0.001 | 0.092 | 1.521 | 2.788 | 7.228 | 8.489 | 1.000 | 0.036 | 0.005 | >0.001 | >0.001 |
|  |  | 15 | 0.003 | 0.039 | 1.372 | 3.822 | 8.060 | 34.209 | 5.421 | 0.343 | 0.001 | >0.001 | >0.001 |
|  |  | 20 | 0.040 | 0.024 | 0.868 | 2.198 | 9.203 | 25.433 | 10.123 | 1.867 | 0.025 | 0.002 | 0.001 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Grapefruit | 5 | 0.006 | 0.024 | 0.307 | 1.712 | 11.835 | 15.744 | 5.213 | 0.988 | 0.021 | 0.003 | 0.001 |
|  |  | 10 | >0.001 | 0.073 | 0.252 | 1.253 | 8.599 | 16.510 | 2.423 | 0.235 | 0.020 | 0.002 | 0.001 |
|  |  | 15 | 0.638 | 0.022 | 0.365 | 1.326 | 6.154 | 6.477 | 0.365 | >0.001 | 0.024 | >0.001 | >0.001 |
|  |  | 20 | 0.235 | 0.024 | 0.389 | 1.930 | 14.529 | 49.682 | 23.272 | 3.990 | 0.026 | 0.026 | 0.002 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Mango | 5 | 0.036 | 0.063 | 0.656 | 2.276 | 11.921 | 23.084 | 3.821 | 0.319 | 0.004 | 0.002 | 0.001 |
|  |  | 10 | 0.052 | 0.158 | 0.479 | 0.447 | 2.701 | 1.110 | >0.001 | 0.015 | >0.001 | >0.001 | 0.001 |
|  |  | 15 | 0.034 | 0.033 | 0.940 | 2.663 | 10.841 | 18.089 | 2.050 | 0.103 | 0.004 | >0.001 | >0.001 |
|  |  | 20 | 0.192 | 0.029 | 0.910 | 2.294 | 10.460 | 23.755 | 13.155 | 6.336 | 1.241 | 0.007 | 0.001 |

**Figure S1. Size Distribution of E-cig Aerosol Mass by Atomizing Power**

