**Primary aromatic amines (PAAs) in** **third-hand smoke collected from waterpipe/cigarette cafés: level and exposure assessment**

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| **Table S1**. Target analytes\* with retention times (RT), regression coefficient (r) of the calibration curve, limit of detection (LOD) and limit of quantification (LOQ), accuracy and precision for validation of analysis  |
| **Chemicals** | **RT (min)** | **Correlation coefficient (r)** | **LOD (ng/g)** | **LOQ (ng/g)** | **5ng/0.2g** | **10ng/0.2g** | **20ng/0.2g** |
| **Accuracy (%)** | **Precision (% )** | **Accuracy (%)** | **Precision (% )** | **Accuracy (%)** | **Precision (% )** |
| **Intra-day** | **Inter-day** | **Intra-day** | **Inter-day** | **Intra-day** | **Inter-day** |
| **ANL** | 2.09 | 0.9998 | 0.15 | 0.53 | 94.6 | 3.43 | 3.31 | 92.1 | 4.21 | 6.19 | 94.8 | 7.95 | 4.82 |
| **o-TOL** | 3.12 | 0.9992 | 0.10 | 0.38 | 104 | 3.48 | 3.33 | 105 | 5.93 | 3.67 | 106 | 5.49 | 4.37 |
| **p-TOL** | 3.52 | 0.9991 | 0.10 | 0.35 | 102 | 3.71 | 5.12 | 101 | 6.31 | 6.13 | 104 | 7.94 | 8.03 |
| **m-TOL** | 3.78 | 0.9992 | 0.10 | 0.38 | 104 | 3.48 | 3.33 | 105 | 5.93 | 3.67 | 106 | 5.49 | 4.37 |
| **o-ASD** | 4.02 | 0.9994 | 0.085 | 0.32 | 98.9 | 2.77 | 3.12 | 104 | 7.34 | 4.65 | 101 | 3.81 | 3.35 |
| **2,6-DMA** | 4.47 | 0.9992 | 0.10 | 0.40 | 94.3 | 4.89 | 4.64 | 102 | 3.92 | 2.78 | 96.5 | 4.53 | 4.77 |
| **2-NA** | 5.20 | 0.9996 | 0.03 | 0.14 | 95.4 | 1.67 | 2.43 | 96.2 | 5.21 | 4.19 | 92.9 | 4.54 | 4.66 |
| **p-CD** | 5.19 | 0.9994 | 0.03 | 0.12 | 108 | 4.78 | 3.62 | 103 | 6.16 | 5.88 | 111 | 7.65 | 9.47 |
| **4-CA** | 5.51 | 0.9997 | 0.10 | 0.38 | 104 | 6.85 | 7.54 | 106 | 4.73 | 3.68 | 112 | 7.49 | 10.2 |
| \* ANL: Aniline, o-TOL: ortho-Toluidine, p-TOL: para-Toluidine, m-TOL: meta -Toluidine, o-ASD: ortho-Anisidine, 2,6-DMA: 2,6-dimethylaniline, 2-NA: 2-Naphthylamine, pCD: para-Cresidine, 4-CA: 4-Chloroaniline.  |

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**FigS1.** A chromatogram of primary aromatic amines (PAAs) in third-hand smoke

**Table S2**. Multiple/Post Hoc group comparisons of primary aromatic amines (PAAs) (ng/g) in settled indoor dusts collected from waterpipe cafés (WPC), cigarette cafés (CC) and smoking-free cafés (SFC).

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Dependent Variable** | **(I) groups** | **(J) groups** | **Mean Difference (I-J)** | **Std. Error** | **Sig.** | **95% Confidence Interval** |
| **Lower Bound** | **Upper Bound** |
| ANLa | Tukey HSD | WPC | CC | 135.06\* | 52.44 | .035 | 8.14 | 261.98 |
| SFC | 331.97\* | 49.05 | <0.001 | 213.25 | 450.69 |
| CC | WPC | -135.06\* | 52.44 | .035 | -261.98 | -8.14 |
| SFC | 196.91\* | 52.44 | .001 | 69.99 | 323.83 |
| SFC | WPC | -331.97\* | 49.05 | <0.001 | -450.69 | -213.25 |
| CC | -196.91\* | 52.44 | .001 | -323.83 | -69.99 |
| o-TOL | Tukey HSD | WPC | CC | 4.74 | 2.28 | .106 | -0.79 | 10.27 |
| SFC | 10.85\* | 2.13 | <0.001 | 5.67 | 16.02 |
| CC | WPC | -4.74 | 2.28 | .106 | -10.27 | 0.79 |
| SFC | 6.11 | 2.28 | .027 | 0.57 | 11.64 |
| SFC | WPC | -10.85\* | 2.13 | <0.001 | -16.02 | -5.67 |
| CC | -6.11 | 2.28 | .027 | -11.64 | -0.57 |
| p-TOL | Tukey HSD | WPC | CC | 8.87\* | 2.89 | .010 | 1.85 | 15.88 |
| SFC | 16.53\* | 2.71 | <0.001 | 9.97 | 23.09 |
| CC | WPC | -8.87\* | 2.89 | .010 | -15.88 | -.1.85 |
| SFC | 7.66\* | 2.89 | .029 | .65 | 14.68 |
| SFC | WPC | -16.53\* | 2.71 | <0.001 | -23.09 | -9.97 |
| CC | -7.66\* | 2.89 | .029 | -14.68 | -.65 |
| m-TOL | Tukey HSD | WPC | CC | 8.85\* | 2.24 | .001 | 3.43 | 14.27 |
| SFC | 9.56\* | 2.09 | <0.001 | 4.49 | 14.64 |
| CC | WPC | -8.85\* | 2.24 | .001 | -14.27 | -3.43 |
| SFC | 0.71 | 2.24 | .946 | -4.71 | 6.13 |
| SFC | WPC | -9.56\* | 2.09 | <0.001 | -14.64 | -4.49 |
| CC | -0.71 | 2.24 | .946 | -6.13 | 4.71 |
| o-ASD | Tukey HSD | WPC | CC | 14.95 | 7.92 | .153 | -4.21 | 34.12 |
| SFC | 34.71\* | 7.40 | <0.001 | 16.78 | 52.65 |
| CC | WPC | -14.95 | 7.92 | .153 | -34.12 | 4.21 |
| SFC | 19.76 | 7.92 | .042 | 0.59 | 38.93 |
| SFC | WPC | -34.71\* | 7.40 | <0.001 | -52.65 | -16.78 |
| CC | -19.76 | 7.92 | .042 | -38.93 | -0.59 |
| 2,6-DMA | Tukey HSD | WPC | CC | 169.10\* | 33.68 | <0.001 | 87.59 | 250.61 |
| SFC | 193.40\* | 31.50 | <0.001 | 117.15 | 269.64 |
| CC | WPC | -169.10\* | 33.68 | <0.001 | -250.61 | -87.59 |
| SFC | 24.29 | 33.60 | .752 | -57.21 | 105.80 |
| SFC | WPC | -193.40\* | 31.50 | <0.001 | -269.64 | -117.15 |
| CC | -24.29 | 33.68 | .752 | -105.80 | 57.21 |
| 2-NA | Tukey HSD | WPC | CC | 26.02\* | 6.60 | .001 | 10.03 | 42.02 |
| SFC | 28.99\* | 6.18 | <0.001 | 14.04 | 43.95 |
| CC | WPC | -26.02\* | 6.60 | .001 | -42.02 | -10.03 |
| SFC | 2.96 | 6.60 | .895 | -13.02 | 18.96 |
| SFC | WPC | -28.99\* | 6.18 | <0.001 | -43.95 | -14.04 |
| CC | -2.96 | 6.60 | .895 | -18.96 | 13.02 |
| pCD | Tukey HSD | WPC | CC | 24.18\* | 5.07 | <0.001 | 11.89 | 36.48 |
| SFC | 30.10\* | 4.75 | <0.001 | 18.60 | 41.59 |
| CC | WPC | -24.18\* | 5.07 | <0.001 | -36.48 | -11.89 |
| SFC | 5.91 | 5.07 | .481 | -6.38 | 18.20 |
| SFC | WPC | -30.10\* | 4.75 | <0.001 | -41.59 | -18.60 |
| CC | -5.91 | 5.07 | .481 | -18.20 | 6.38 |
| 4-CA | Tukey HSD | WPC | CC | 5.58813\* | 1.89015 | .015 | .9734 | 10.2029 |
| SFC | 6.33729\* | 1.89015 | .005 | 1.7225 | 10.9521 |
| CC | WPC | -5.58812\* | 1.89015 | .015 | -10.2029 | -.9734 |
| SFC | .74917 | 2.02065 | .927 | -4.1842 | 5.6826 |
| SFC | WPC | -6.33729\* | 1.89015 | .005 | -10.9521 | -1.7225 |
| CC | -.74917 | 2.02065 | .927 | -5.6826 | 4.1842 |
| ∑PAAs | Tukey HSD | WPC | CC | 396.82\* | 84.89 | <0.001 | 191.37 | 602.28 |
| SFC | 661.98\* | 79.41 | <0.001 | 469.79 | 854.17 |
| CC | WPC | -396.82\* | 84.89 | <0.001 | -602.28 | -191.37 |
| SFC | 265.15\* | 84.89 | .008 | 59.70 | 470.61 |
| SFC | WPC | -661.98\* | 79.41 | <0.001 | -854.17 | -469.79 |
| CC | -265.15\* | 84.89 | .008 | -470.61 | -59.70 |
| \*. The mean difference is significant at the 0.05 level. |

d ANL: Aniline, o-TOL: ortho-Toluidine, p-TOL: para-Toluidine, m-TOL: meta -Toluidine, o-ASD: ortho-Anisidine, 2,6-DMA: 2,6-dimethylaniline, 2-NA: 2-Naphthylamine, pCD: para-Cresidine, 4-CA: 4-Chloroaniline.