

# Supporting Information

## Laser ablation-aerosol mass spectrometry-chemical ionization mass spectrometry for ambient imaging

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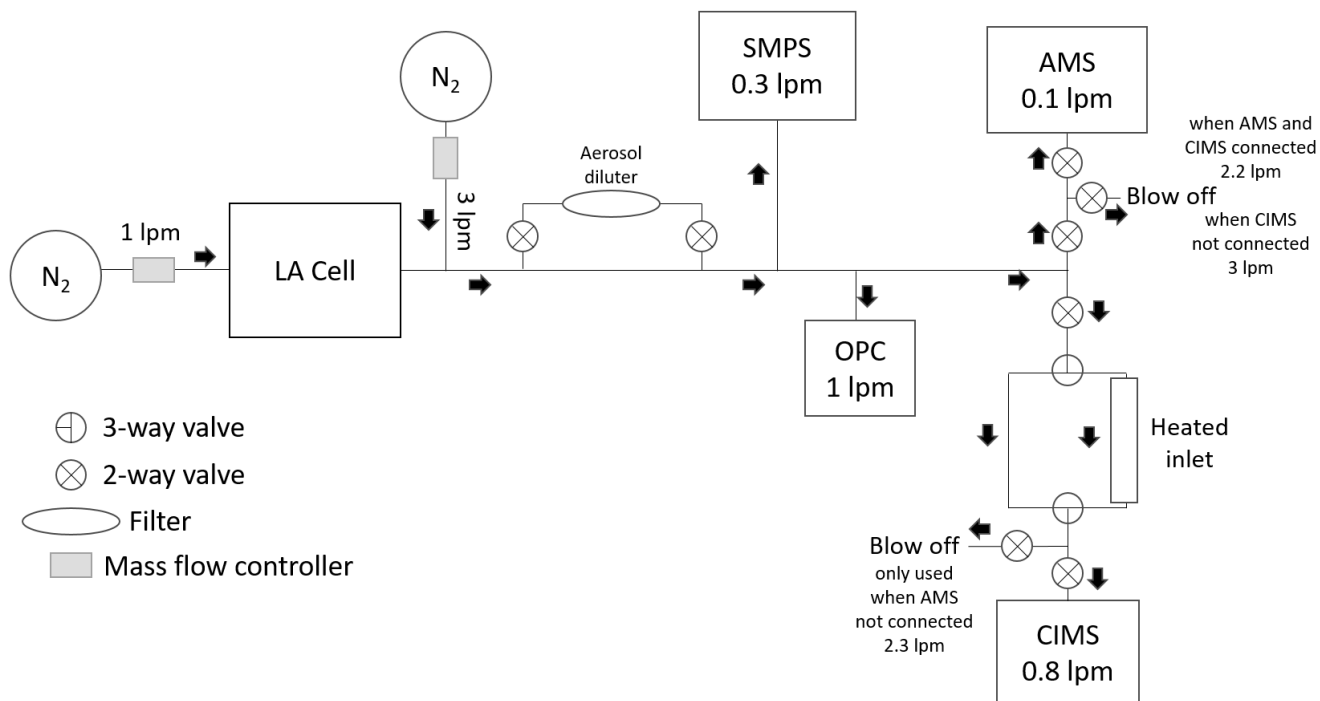


Figure S-1. LA-AMS-CIMS experimental setup. The purpose of the dilution set-up was to reduce analyte loading by passing a fraction of the sample flow through a HEPA filter in order to maintain analyte loadings at a level to avoid clogging of the instrument inlet orifices.

Compound	Formula (M)	Ions detected by AMS	Ions detected by CIMS
Adenine	C <sub>5</sub> H <sub>5</sub> N <sub>5</sub>	n.d.	n.d.
Sodium lauryl sulfate	C <sub>12</sub> H <sub>25</sub> O <sub>4</sub> S <sup>-</sup>	n.d.	n.d.
2-4 dinitrophenyl hydrazine	C <sub>6</sub> H <sub>6</sub> N <sub>4</sub> O <sub>4</sub>	n.d.	n.d.
Bis(4-hydroxyphenyl)sulfone	C <sub>24</sub> H <sub>20</sub> N <sub>2</sub> O <sub>4</sub> S	n.d.	n.d.
Methionine	C <sub>5</sub> H <sub>11</sub> NO <sub>2</sub> S	n.d.	n.d.

Table S-1. Compounds that were not detected (n.d.) by the LA-AMS-CIMS from a single line ablation of dried compound droplet.

Compound	Formula	Formula of molecular ion of common decomposition product	CIMS molecular ion to decomposition on ratio
Nicotine	C <sub>10</sub> H <sub>14</sub> N <sub>2</sub>	C <sub>5</sub> H <sub>6</sub> N <sup>+</sup>	*
Acetylsalicylic acid (ASA)	C <sub>9</sub> H <sub>8</sub> O <sub>4</sub>	C <sub>7</sub> H <sub>7</sub> O <sub>3</sub> <sup>+</sup>	**
Atrazine	C <sub>8</sub> H <sub>14</sub> ClN <sub>5</sub>	C <sub>5</sub> H <sub>9</sub> ClN <sub>5</sub> <sup>+</sup>	47
Acetaminophen (APAP)	C <sub>8</sub> H <sub>9</sub> NO <sub>2</sub>	C <sub>6</sub> H <sub>8</sub> ON <sup>+</sup>	1.5
Histidine	C <sub>6</sub> H <sub>9</sub> N <sub>3</sub> O <sub>2</sub>	C <sub>4</sub> H <sub>5</sub> N <sub>2</sub> <sup>+</sup>	***
Tryptophan	C <sub>11</sub> H <sub>12</sub> N <sub>2</sub> O <sub>2</sub>	C <sub>9</sub> H <sub>8</sub> N <sup>+</sup>	0.13

Table S-2. Formulas of the compounds and the molecular ions of the common decomposition products that were investigated by the LA-AMS-CIMS from a single line ablation of dried compound droplet. Decomposition products are believed to be the result of laser ablation. Good correlation between the protonated molecular ion and the fragment ion (as shown in Figure 2 of the main text) indicate a common source. Poor correlation would indicate a contribution of a different molecule to the signal. Thus, monitoring both signals aids interpretation. \*Nicotine molecular ion was saturated. \*\*ASA decomposition ion occurs at same mass as the trimer ethanol reagent ion. \*\*\*Only detected as a decomposition product.

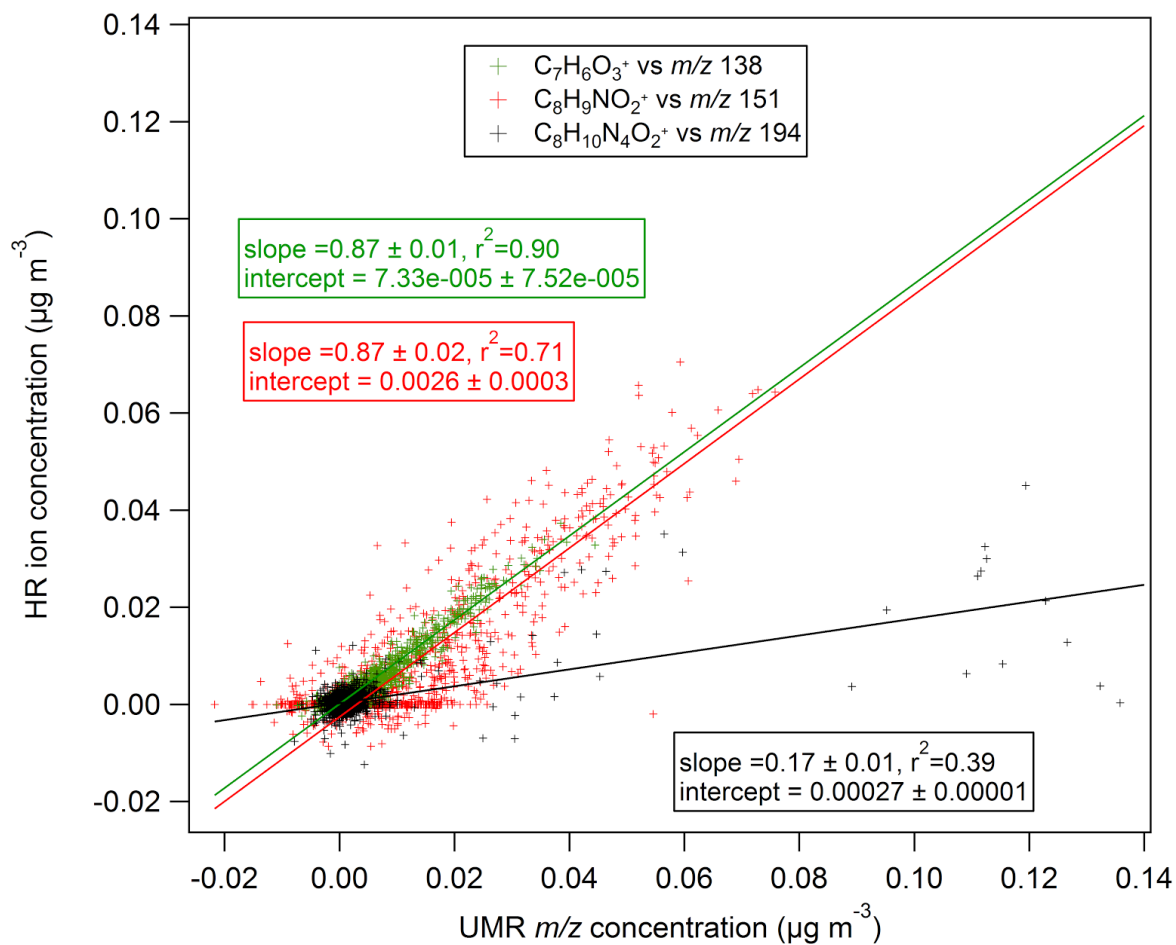


Figure S-2. Scatter plots for high-resolution (HR) fitted ions vs unit mass resolution (UMR) integrated signal for the AMS signals used in constructing the Neuralgin tablet spatial mapping image plots shown in Figure 4. Linear regression fits lines and parameters are shown in corresponding colors.