

## *Supporting Information*

# **Quantitative Paper Spray Mass Spectrometry Analysis of Drugs of Abuse**

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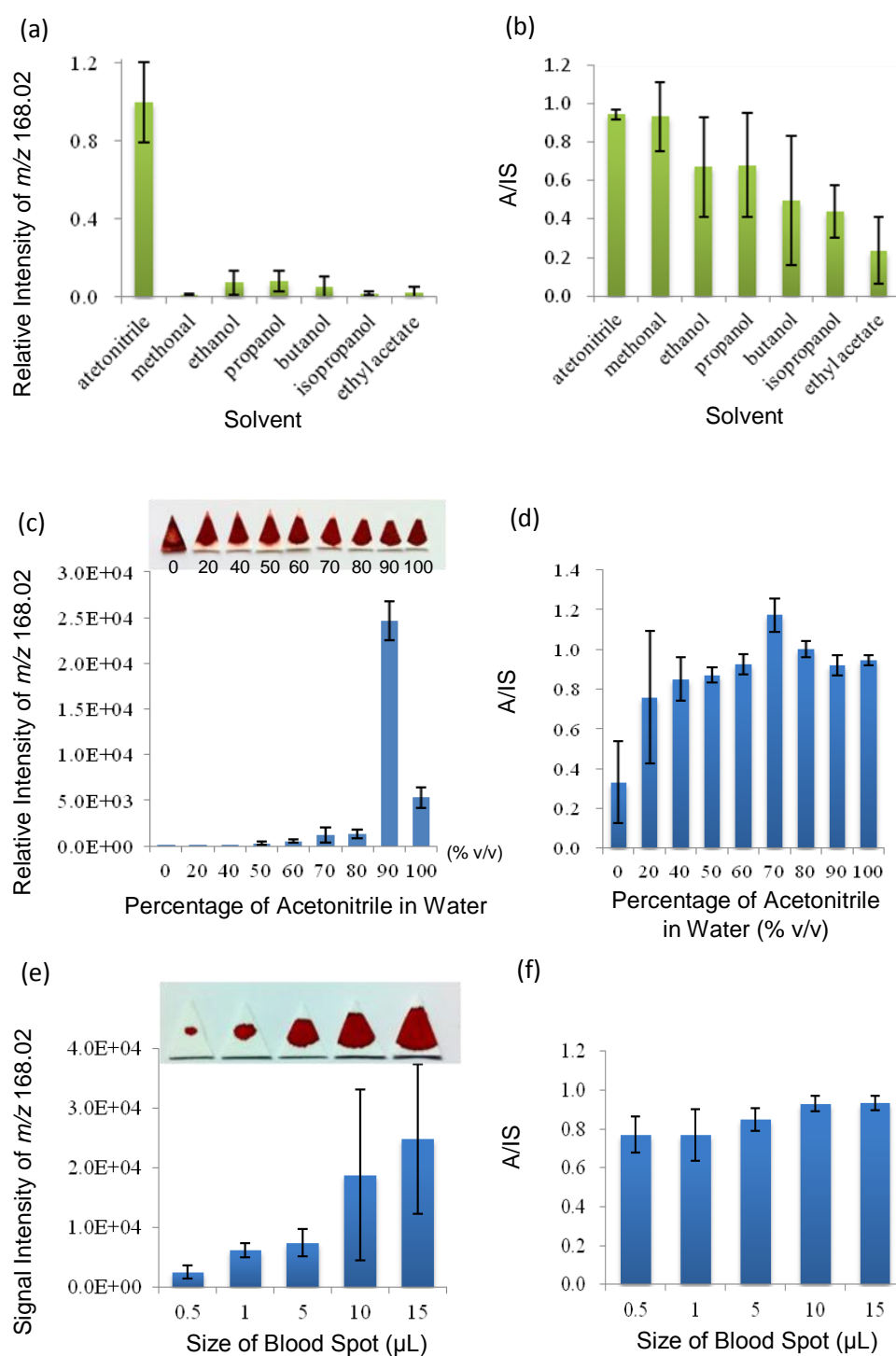
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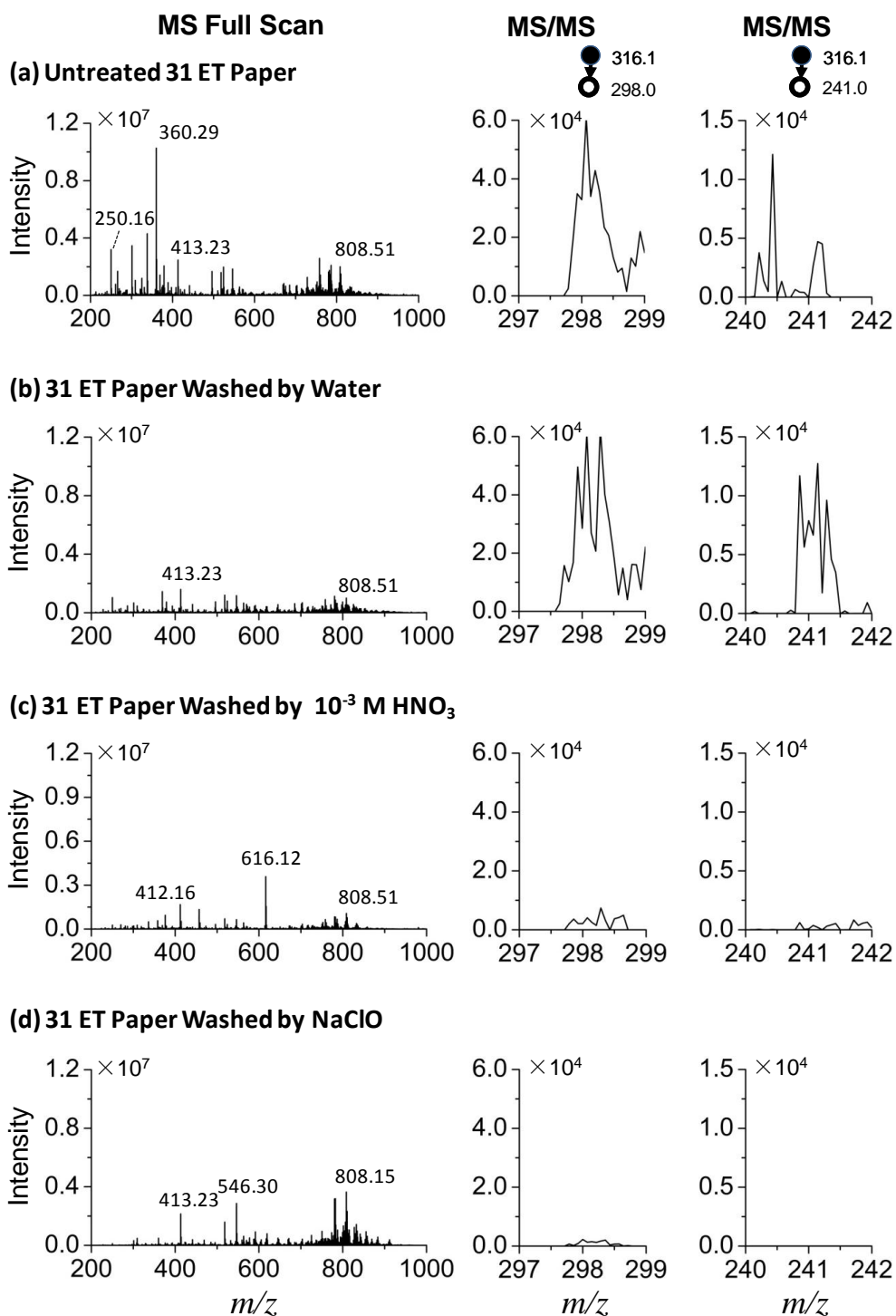
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**Table S-1.** Tandem mass spectrometric parameters for paper spray.

Drug	Precursor ion ( <i>m/z</i> )	Product ion ( <i>m/z</i> )	Collision energy (V)	Tube lens
Morphine [C <sub>17</sub> H <sub>19</sub> NO <sub>3</sub> +H] <sup>+</sup>	286.1	201.0 -(C <sub>4</sub> H <sub>7</sub> NO) <sup>1</sup>	25	102
Morphine-d3	289.1	201.0 -(C <sub>4</sub> H <sub>4</sub> D <sub>3</sub> NO)	25	102
Benzyloecgonine [C <sub>16</sub> H <sub>19</sub> NO <sub>4</sub> +H] <sup>+</sup>	290.0	168.0 -(C <sub>7</sub> H <sub>6</sub> O <sub>2</sub> ) <sup>2</sup>	18	146
Benzyloecgonine-d3	293.0	171.0 -(C <sub>7</sub> H <sub>6</sub> O <sub>2</sub> )	18	146
Cocaine [C <sub>17</sub> H <sub>21</sub> NO <sub>4</sub> +H] <sup>+</sup>	304.0	182.0 -(C <sub>7</sub> H <sub>6</sub> O <sub>2</sub> ) <sup>3</sup>	20	78
Cocaine-d3	307.0	185.0 -(C <sub>7</sub> H <sub>6</sub> O <sub>2</sub> )	20	78
6-acetylmorphine [C <sub>19</sub> H <sub>21</sub> NO <sub>4</sub> +H] <sup>+</sup>	328.3	164.9 -(C <sub>6</sub> H <sub>13</sub> NO <sub>4</sub> ) <sup>4</sup>	26	117
6-acetylmorphine-d3	331.3	164.9 -(C <sub>6</sub> H <sub>10</sub> D <sub>3</sub> NO <sub>4</sub> )	26	117
Methamphetamine [C <sub>10</sub> H <sub>15</sub> N+H] <sup>+</sup>	150.1	91.1 -(C <sub>3</sub> H <sub>9</sub> N) <sup>5</sup>	24	69
Methamphetamine-d8	158.1	93.1 -(C <sub>3</sub> H <sub>3</sub> D <sub>6</sub> N)	24	69
Oxycodone [C <sub>18</sub> H <sub>21</sub> NO <sub>4</sub> +H] <sup>+</sup>	316.1	298.0 -(H <sub>2</sub> O) <sup>6</sup>	20	80
		241.0 -(C <sub>3</sub> H <sub>7</sub> O <sub>2</sub> )	26	80
Oxycodone-d6	322.1	304.8 -(H <sub>2</sub> O)	20	80
		247.0 -(C <sub>3</sub> H <sub>7</sub> O <sub>2</sub> )	26	80
Buprenorphine [C <sub>29</sub> H <sub>41</sub> NO <sub>4</sub> +H] <sup>+</sup>	468.2	396.1 -(C <sub>4</sub> H <sub>8</sub> O) <sup>7</sup>	36	64
Buprenorphine-d4	472.2	400.1 -(C <sub>4</sub> H <sub>8</sub> O)	36	64



**Fig. S1.** Optimization of experimental conditions for quantitative paper spray mass spectrometry. Effect of spray solvent on (a) the signal intensity and (b) the ratio of analyte to internal standard (A/IS) of benzyolecgonine  $[(M+H)^+$ ,  $m/z$  290.0, product ion,  $m/z$  168.0]. Effect of acetonitrile percentage in water on (c) the signal intensity and (d) the ratio of analyte to internal standard (A/IS) of benzyolecgonine. Effect of blood size on (e) the signal intensity and (f) the ratio of analyte to internal standard (A/IS) of benzyolecgonine.



**Fig. S2.** MS spectra (mass range:  $m/z$  200-1000) by Orbitrap and MS/MS spectra (parent ion:  $m/z$  316.1, mass range: 297.0-299.0 and 240.0-242.0) by TSQ for blank dried blood spot with different treatment of paper: (a) untreated 31 ET paper, (b) 31 ET paper washed by water, (c) 31 ET paper washed by  $10^{-3}$  M  $\text{HNO}_3$  aqueous solution and (d) ET paper washed by NaClO aqueous solution ( $\text{Cl}\% = 1.5$  g/L,  $\text{pH}=12$ ). Paper spray solvent: 90% acetonitrile: 10% water solution; solvent volume: 25  $\mu\text{L}$ ; Voltage: 3.5 kV.

## References

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