ANALYTICAL REPORT

W-15

Acknowledgement

Analytically evaluated sample was kindly provided by the Forensic Science Institute (FSI) Zurich, Switzerland. NMR analyses were performed in ETH Zürich Institute of Pharmaceutical Sciences by Dr. Bernhard Pfeiffer and are enclosed in this report by the permission of Dr. Michael Bovens.

MS and FTIR measurements shown in this report were done in NFL.
ANALYTICAL REPORT

W-15 (C19H21ClN2O2S)

4-chloro-N-[1-(2-phenylethyl)-2-piperidinylidene]-benzenesulfonamide

Remark – other active cpd. detected: none

<table>
<thead>
<tr>
<th>Sample ID:</th>
<th>1435-16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample description:</td>
<td>powder - white</td>
</tr>
<tr>
<td>Sample type:</td>
<td>collected/Kindly provided by Forensic Science Institute Zurich, Switzerland (NMR confirmed);</td>
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<tr>
<td>Comments¹:</td>
<td></td>
</tr>
<tr>
<td>Date of entry:</td>
<td>1/15/2016</td>
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<table>
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<tr>
<th>Substance identified-structure² (base form)</th>
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<tbody>
<tr>
<td><img src="" alt="Chemical Structure" /></td>
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</table>

Systematic name: 4-chloro-N-[1-(2-phenylethyl)-2-piperidinylidene]-benzenesulfonamide

Other names:

Formula (per base form) C19H21ClN2O2S

M_w (g/mol) 376,9

Salt form: base

StdInChIKey VJHXSSVOCOBVMI-UHFFFAOYSA-N

Compound Class Opioids

Other active cpd. detected none

Add.info (purity..) app. 98%

¹ This report has been produced with the financial support of the Prevention of and fight against crime Programme of the European Union (grant agreement number JUST/2013/ISEC/DRUGS/AG/6413). The contents of this report are the sole responsibility of the National Forensic Laboratory and can in no way be taken to reflect the views of the European Commission.

² Created by OPSIN free tool: [http://opsin.ch.cam.ac.uk/](http://opsin.ch.cam.ac.uk/) DOi: 10.1021/ci100384d
Report updates

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Supporting information

<table>
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<tr>
<th>Analytical technique:</th>
<th>applied</th>
<th>remarks</th>
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<tbody>
<tr>
<td>GC-MS (EI ionization)</td>
<td>+</td>
<td>NFL GC-RT (min): 15,84 BP(1): 207; BP(2): 104, BP(3): 111,</td>
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<tr>
<td>FTIR-ATR</td>
<td>+</td>
<td>direct measurement</td>
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<tr>
<td>GC-IR (condensed phase)</td>
<td>+</td>
<td>consistent by FSI Zurich spectrum QM &gt; 0.99</td>
</tr>
</tbody>
</table>

**GC-MS (Agilent):**
- GC-method is RT locked to tetracosane (RT=9.53 min).
- Injection volume 1 ml and split mode (1:50).
- Injector temperature: 280 °C.
- Chromatographic separation
- Column: HP1-MS (100% dimethylpolysiloxane), length 30 m, internal diameter 0.25 mm, film thickness 0.25 mm.
- Carrier gas He: flow-rate 1.2 ml/min. GC oven program: 170 °C for 1 min, followed by heating up to 293 °C at a rate of 18 °C/min, hold for 6.1 min, than heating at 50 °C/min up to 325 °C and finally 2.8 min isothermal.
- MSD source EI = 70 eV. GC-MS transfer line T= 235°C, source and quadropole temperatures 280°C and 180°C, respectively. Scan range m/z scan range: from 50 (40) to 550 amu.

**FTIR-ATR (Perkin Elmer):** scan range 4000-400 cm-1; resolution 4cm-1

**GC-(MS)-IR condensed phase (GC-MS (Agilent) & IR (Spectra analyses-Danny)** IR scan range 4000 to 700, resolution 4cm-1
- GC-method:
- Injection volume 1 ml and split mode (1:5).
- Injector temperature: 280 °C.
- Chromatographic separation
- Column: HP1-MS (100% dimethylpolysiloxane), length 30 m, internal diameter 0.25 mm, film thickness 0.25 mm.
- Carrier gas He: flow-rate 1.2 ml/min. GC oven program: 170 °C for 1 min, followed by heating up to 293 °C at a rate of 18 °C/min, hold for 6.1 min, than heating at 50 °C/min up to 325 °C and finally 2.8 min isothermal.
- Split MS : IR : (1:9)
- MSD source EI = 70 eV. GC-MS transfer line T= 235°C, source and quadropole temperatures 280°C and 180°C, respectively. Scan range m/z scan range: from 50 (40) to 550 amu.
- IR (condensed phase): IR scan range 4000 to 700, resolution 4cm-1
FIGURES OF SPECTRA

MS (EI)

Abundance

Scan 2977 (15.841 µs) \V/15_1435-16.D\data.ms

m/z→ 40 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380

0 51.1 75.0 104.0 140.0 174.9 243.1 205.0 311.1 342.1 376.1

2000000 1900000 1800000 1700000 1600000 1500000 1400000 1300000 1200000 1100000 1000000 900000 800000 700000 600000 500000 400000 300000 200000 100000
FTIR-ATR

IR-Condensed phase

NOTE: This is condensed phase IR (per base form of substance) instrument (DicksonIR-GC)

END OF NFL data