



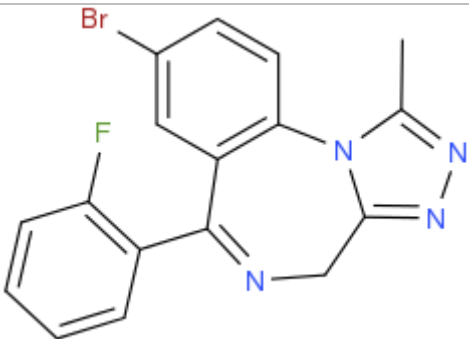
ANALYTICAL REPORT¹

Flubromazolam (C₁₇H₁₂BrFN₄)

8-bromo-6-(2-fluorophenyl)-1-methyl-4H-[1,2,4]triazolo[4,3-a][1,4]benzodiazepine

Remark – other NPS detected: **none**

Sample ID:	1265-15
Sample description:	powder - white
Sample type:	test purchase /RESPONSE -purchasing
Date of sample receipt (M/D/Y):	9/2/2015
Date of entry (M/D/Y) into NFL database:	9/2/2015
Report updates (if any) will be published here:	http://www.policija.si/apps/nfl_response_web/seznam.php

Substance identified (in SFC)- structure ² (base form)	
Systematic name	8-bromo-6-(2-fluorophenyl)-1-methyl-4H-[1,2,4]triazolo[4,3-a][1,4]benzodiazepine
Other names	
Formula (per base form)	C ₁₇ H ₁₂ BrFN ₄
M _w (g/mol)	371,21
Salt form	base
StdInChIKey	VXGSZBZQCBNUIP-UHFFFAOYSA-N
Compound Class	Benzodiazepines
Other NPS detected	none
Add.info (purity..)	pure by GC, HPLC , NMR

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/> DOI: 10.1021/ci100384d

Report updates

date	comments (explanation)

Instrumental methods (if applied) in NFL

1. 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: on 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, then 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.

2. HPLC-TOF (Agilent): 6230B TOF with Agilent 1260 Infinity HPLC with binary pump, column: Zorbax Eclipse XDB-C18, 50 x 4.6 mm, 1.8 micron. Mobile phases (A) 0.1% formic acid and 1mM ammonium formate in water; (B) 0.1% formic acid in methanol (B). Gradient: starting at 5% B, changing to 40% B over 4 min, then to 70% over 2 min and in 5 min to 100%, hold 1 min and back to 5%, equilibration for 1.7 min. The flow rate: 1.0 ml/min; Injection volume 1 µl. MS parameters: 2GHz, Extended Dynamic range mode to a maximum of 1700 amu, acquisition rate 1.30 spectra/sec. Sample ionisation: by Agilent Jet Stream technology (Dual AJS ESI). Ion source: positive ion scan mode with mass scanning from 82 to 1000 amu. Other TOF parameters: drying gas (N₂) and sheath temperature 325 °C; drying gas flow rate 6 l/min; sheath gas flow rate 8 l/min; nebulizer 25 psig; Vcap. 4000 V; nozzle 2000 V; skimmer 65 V; fragmentor 175 V and Octopole RF 750 V.

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

4. GC- (MS)-IR condensed phase (GC-MS (Agilent) & IR (Spectra analyses-Danny)

GC-method: Injection volume 1 ml and split mode (1:5). Injector temperature 280 °C. Chromatographic separation as above (**1**). 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 650, resolution 4 cm⁻¹.

5. IC (anions) (Thermo Scientific, Dionex ICS 2100), Column: IonPac AS19, 2 x 250mm; Eluent: 10mM from 0 to 10 min, 10-58 mM from 10 to 40min; Flow rate: 0.25 ml/min; Temperature: 30°C; Suppressor: AERS 500 2mm, suppressor current 13mA; Inj. Volume: 25 µl

Supporting information

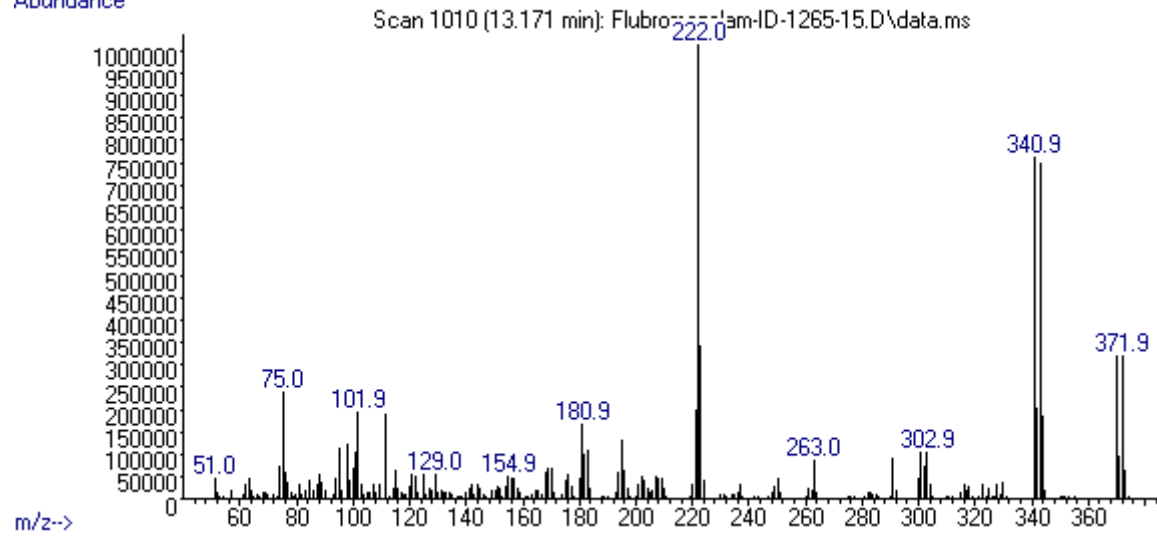
Solubility in	result/remark
CH ₂ Cl ₂	soluble
MeOH	soluble
H ₂ O	not tested

Analytical technique:	applied	remarks
GC-MS (EI ionization)	+	NFL GC-RT (min): 13,2 BP(1): 222; BP(2): 343, BP(3) :341,
HPLC-TOF	+	Exact mass (theoretical): 370,0229; measured value Δppm:0,55; formula:C17H12BrFN4
FTIR-ATR	+	direct measurement
FTIR (condensed phase) always as base form	+	
IC (anions)	+	
NMR	+	
validation		MS consistent by the one reported in J. Forensic Toxicology, 2015, vol33, 388-395: http://link.springer.com/article/10.1007/s11419-015-0277-6
other		

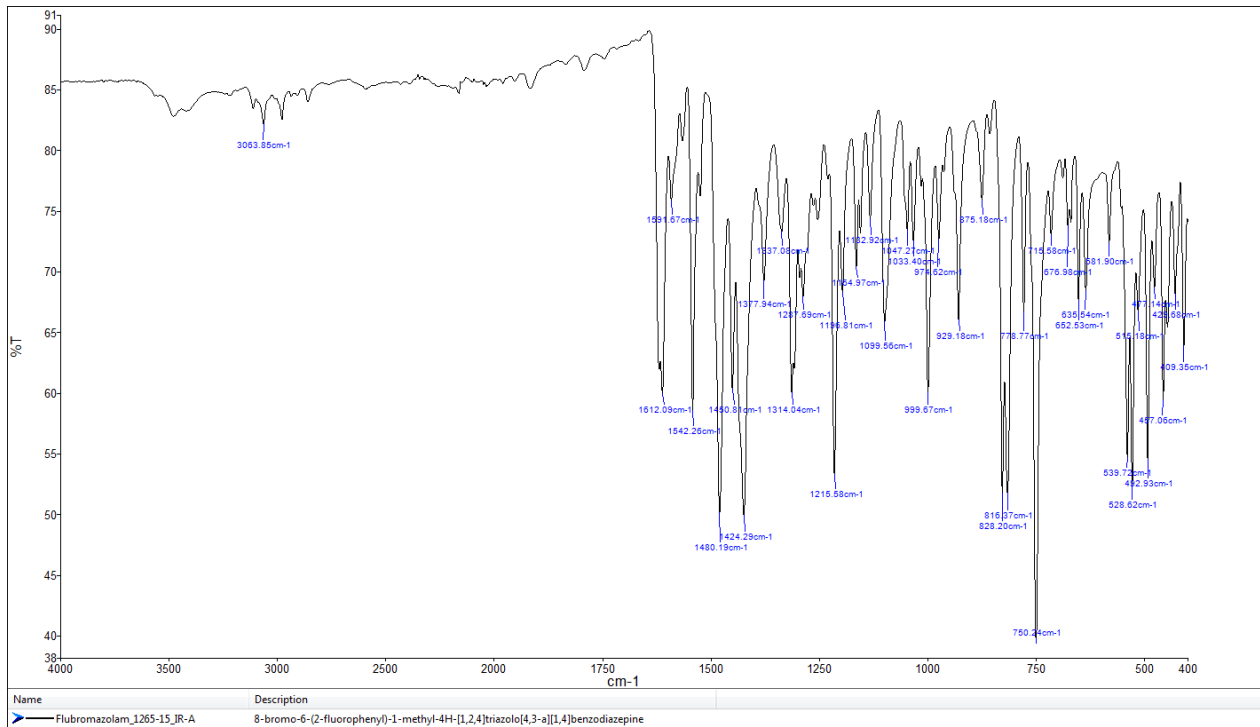
ANALYTICAL RESULTS

MS (EI)

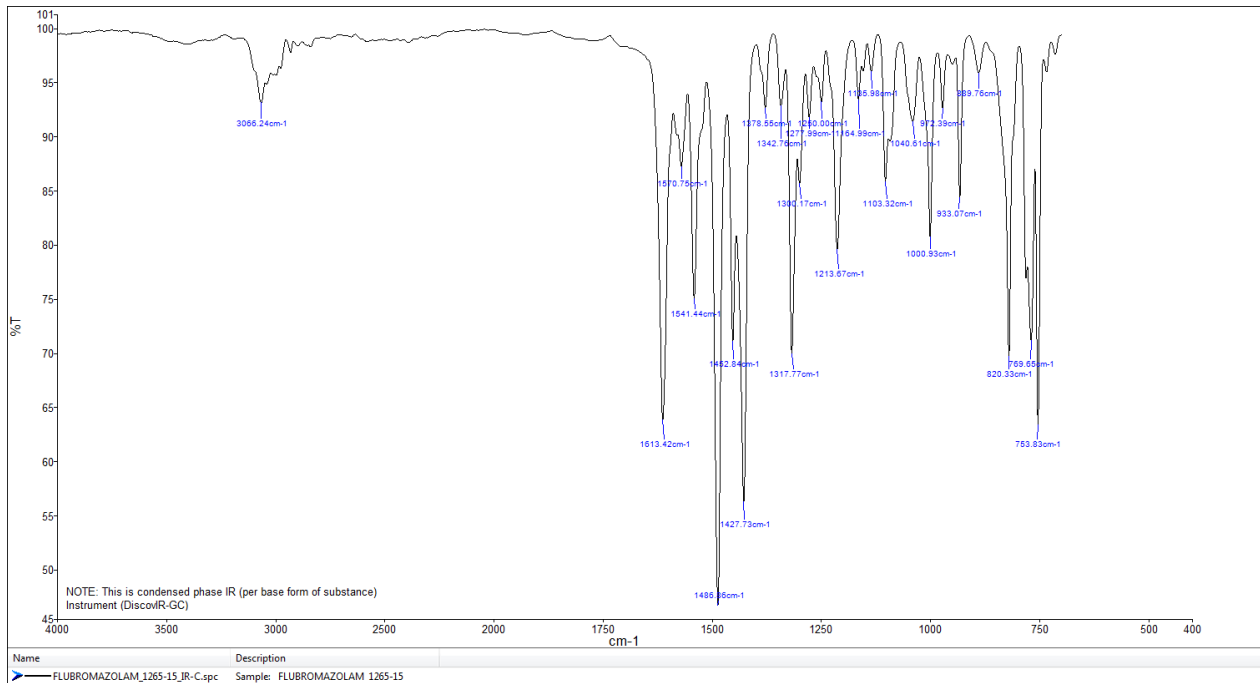
Abundance



FTIR-ATR - direct measurement



IR (condensed phase)



Target Compound Screening Report

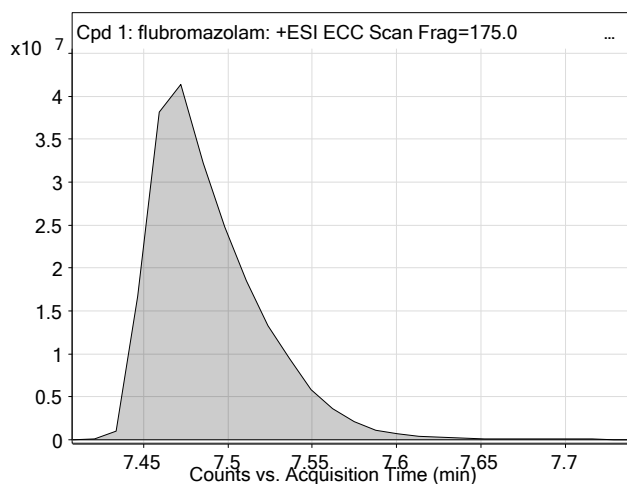
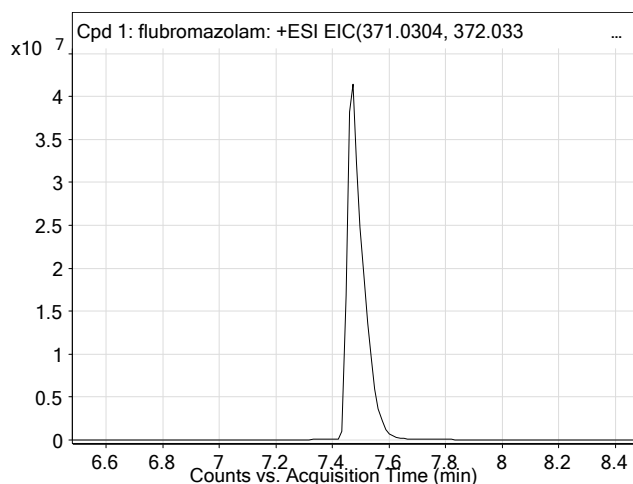
Data File	FLUBROMAZOLAM_1265-15_TOF.d	Sample Name	1265-15
Sample Type	Sample	Position	P1-B7
Instrument Name	6230B TOF LC-MS	User Name	TG
Acq Method	droge general-13-5-2015-XDB-C18-ESI-poz.m	Acquired Time	9/2/2015 2:10:48 PM
IRM Calibration Status	Success	DA Method	Droge_Default.m
Comment	extract in MeOH		

Compound Table

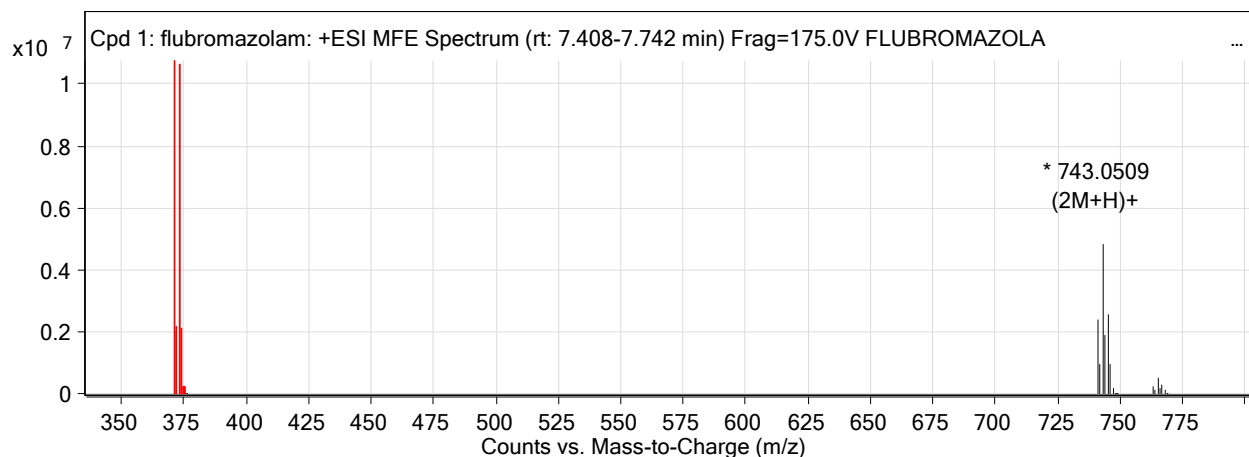
Label	Tgt Name	Obs. RT	Obs. Mass
Cpd 1: flubromazolam	flubromazolam	7.477	370.0227

Name	Obs. m/z	Obs. RT	Obs. Mass	DB RT	DB Formula	DB Mass	DB Mass Error (ppm)	Find Cpd Algorithm
flubromazolam	371.03	7.477	370.0227	4.321	C17 H12 Br F N4	370.0229	0.55	Find by Molecular Feature

Compound Chromatograms



MFE MS Zoomed Spectrum



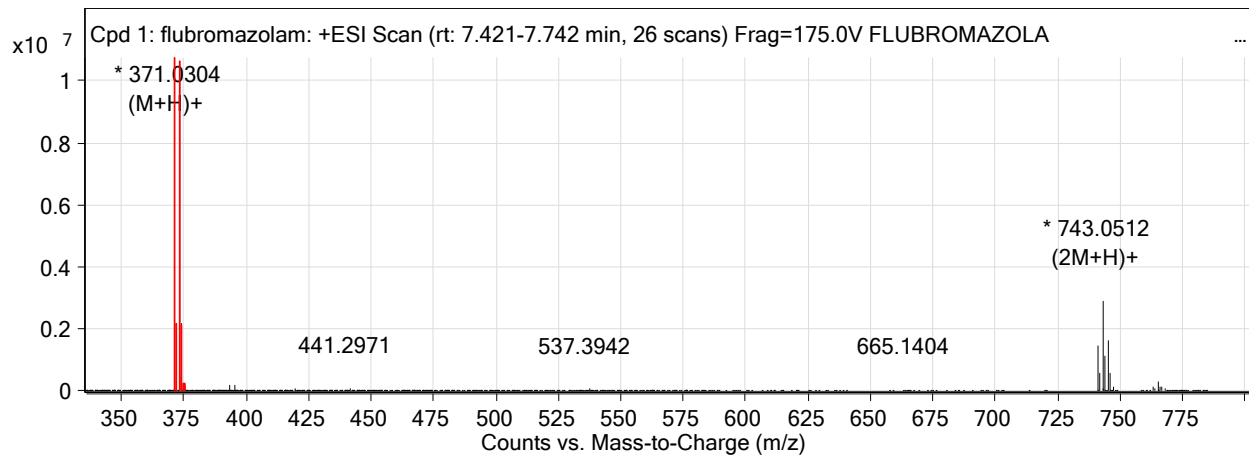
MS Spectrum Peak List

Obs. m/z	Charge	Abund	Formula	Ion/Isotope
371.03	1	10741056	C17 H12 Br F N4	(M+H)+
372.0332	1	2022371.65	C17 H12 Br F N4	(M+H)+
373.028	1	10648758.23	C17 H12 Br F N4	(M+H)+
374.0313	1	2009041.83	C17 H12 Br F N4	(M+H)+
741.0528	1	2404948.81		(2M+H)+
742.0565	1	941619.86		(2M+H)+
743.0509	1	4821983		(2M+H)+

Target Compound Screening Report

744.0539	1	1877801.42	(2M+H) ⁺
745.0499	1	2567790.08	(2M+H) ⁺
746.053	1	950451.21	(2M+H) ⁺

MS Zoomed Spectrum

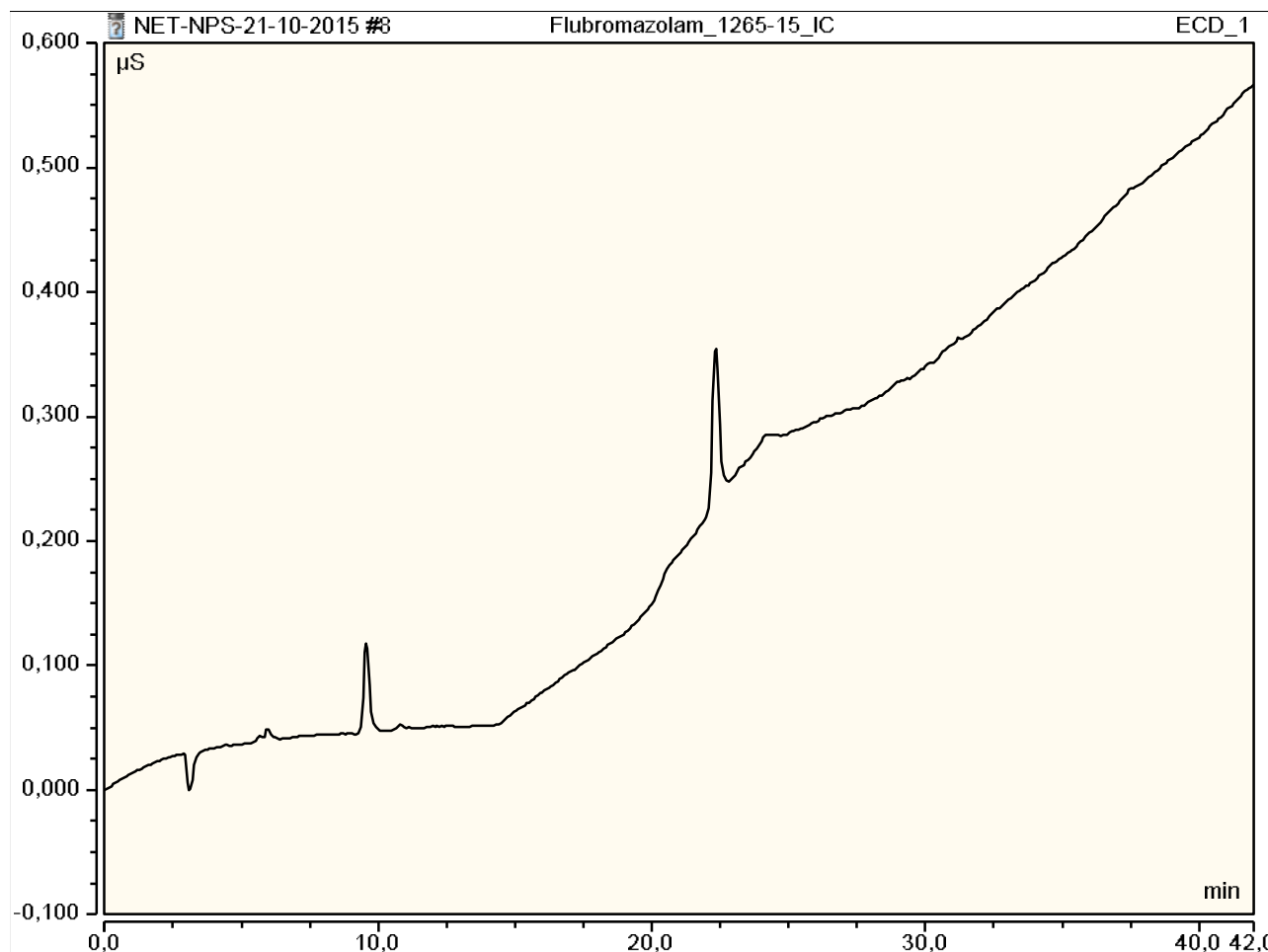


--- End Of Report ---

Peak Integration Report

Sample Name:	Flubromazolam_1265-15_IC	Inj. Vol.:	25,00
Injection Type:	Unknown	Dilution Factor:	1,0000
Program:	ANIONI	Operator:	kemija
Inj. Date / Time:	21-okt-2015 / 19:56	Run Time:	42,00

No.	Time min	Peak Name	Peak Type	Area $\mu\text{S}^*\text{min}$	Height μS	Amount n.a.
TOTAL:				0,00	0,00	0,00





REPORT

Sample ID:	1265-15
Our notebook code:	P-1265-15
NMR sample preparation:	15 mg dissolved in 0.7 mL DMSO- <i>d</i> ₆
NMR experiments:	¹ H, ¹³ C, ¹ H- ¹ H <i>gs</i> -COSY, ¹ H- ¹³ C <i>gs</i> -HSQC.
Proposed structure:	
Chemical name:	8-bromo-6-(2-fluorophenyl)-1-methyl-4H-benzo[f][1,2,4]triazolo[4,3-a][1,4]diazepine
Comments:	- Structure elucidation based on 1D and 2D NMR spectra - Compound is pure by NMR.
Supporting information:	Copies of ¹ H and ¹³ C NMR spectra
Author:	Prof. Dr. Janez Košmrlj, Doc. Dr. Krištof Kranjc
Date of report:	November 6, 2015

P-1265-15

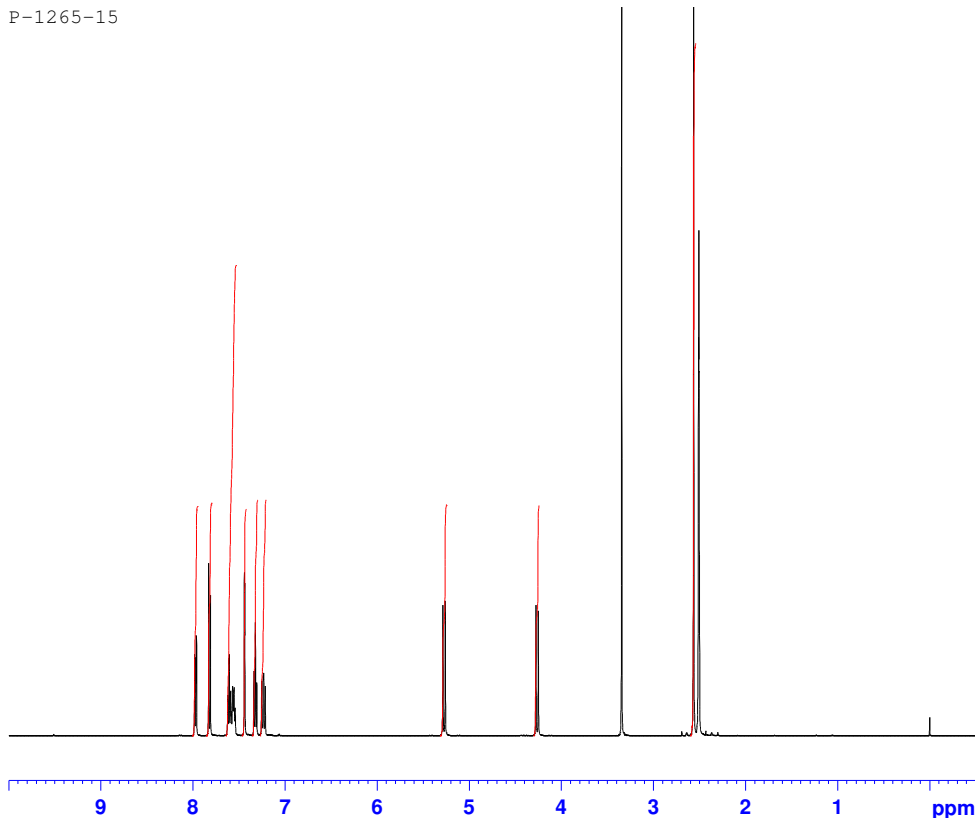


Current Data Parameters
 NAME P-1265-15
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20151101
 Time 13.21
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT DMSO
 NS 16
 DS 2
 SWH 10330.578 Hz
 FIDRES 0.157632 Hz
 AQ 3.1719923 sec
 RG 114
 DW 48.400 usec
 DE 6.50 usec
 TE 296.0 K
 D1 1.00000000 sec

===== CHANNEL f1 =====
 NUC1 1H
 P1 8.90 usec
 PLW1 26.00000000 W
 SFO1 500.1330885 MHz

F2 - Processing parameters
 SI 65536
 SF 500.1300022 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00



P-1265-15



Current Data Parameters
 NAME P-1265-15
 EXPNO 4
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20151101
 Time 16.48
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT DMSO
 NS 5120
 DS 4
 SWH 29761.904 Hz
 FIDRES 0.454131 Hz
 AQ 1.1010548 sec
 RG 2050
 DW 16.800 usec
 DE 6.50 usec
 TE 296.0 K
 D1 1.00000000 sec
 D11 0.03000000 sec

===== CHANNEL f1 =====
 NUC1 13C
 P1 9.00 usec
 PLW1 122.00000000 W
 SFO1 125.7703637 MHz

===== CHANNEL f2 =====
 CPDPRG2 waltz16
 NUC2 1H
 PCPD2 80.00 usec
 PLW2 26.00000000 W
 PLW12 0.32179001 W
 PLW13 0.20595001 W
 SFO2 500.1320005 MHz

F2 - Processing parameters
 SI 32768
 SF 125.7577890 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40

