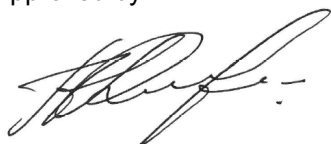


Name:	Levonorgestrel EP Impurity W
Lot#:	GR-18-113
Test Date:	06/07/2023 (re-test date: 06/07/2028)
CAS No.:	155683-59-3
MF:	C ₂₁ H ₂₄ O ₂
MW:	308.41
Appearance:	Beige solid
Purity:	98.2% by HPLC (average of two sample preparations)
¹H-NMR:	Conforms (shows a trace of EtOAc)
MS-ESI (+)	Conforms (shows peaks at m/z = 309.2 [M+H] ⁺ and 326.2 [M+NH ₄] ⁺)
Storage	Store at 0-5°C in a dry place away from direct sunlight

Approved by:

Date: 06/08/2023

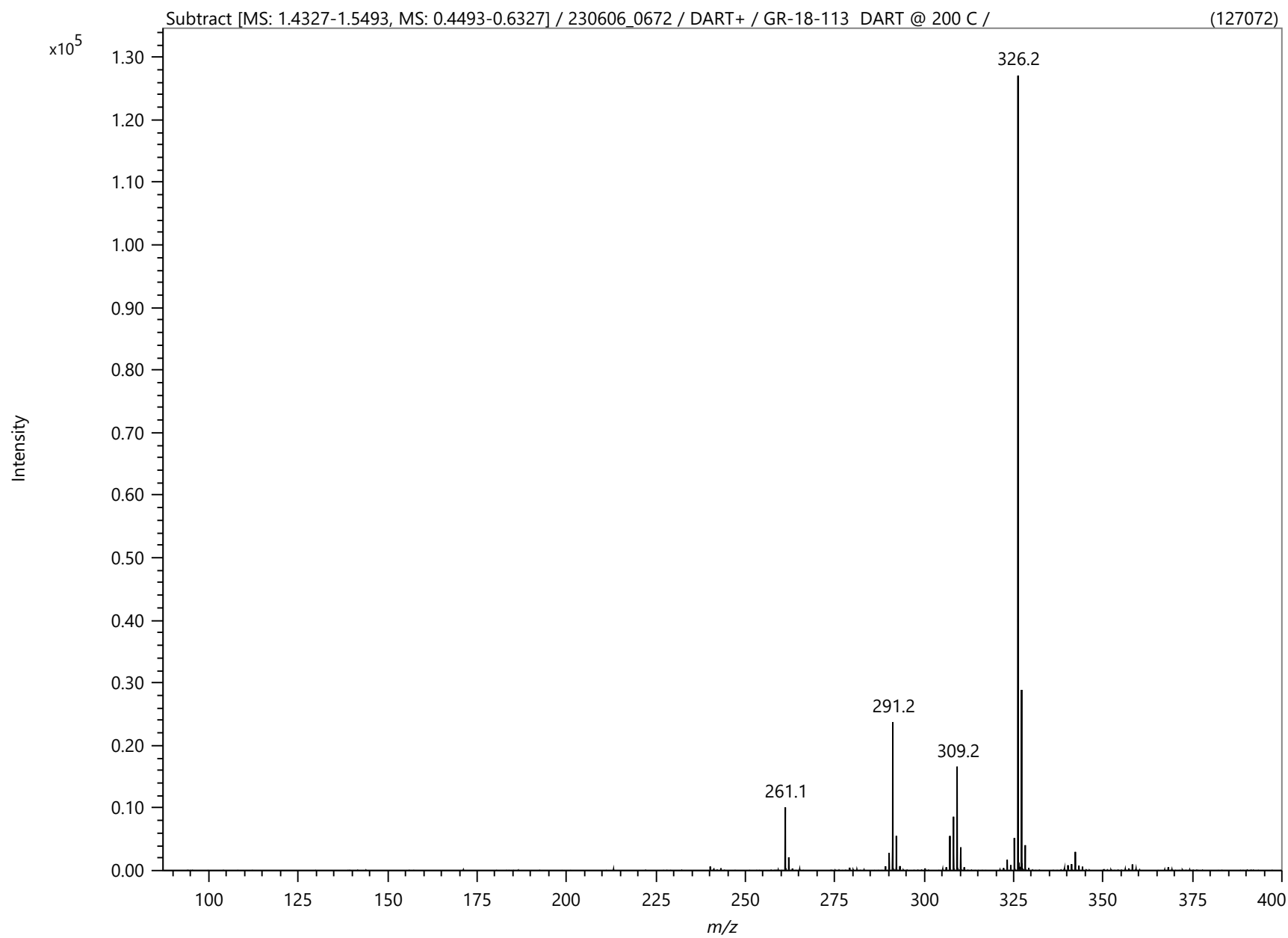


Viorica Rusu, QC/QA Manager

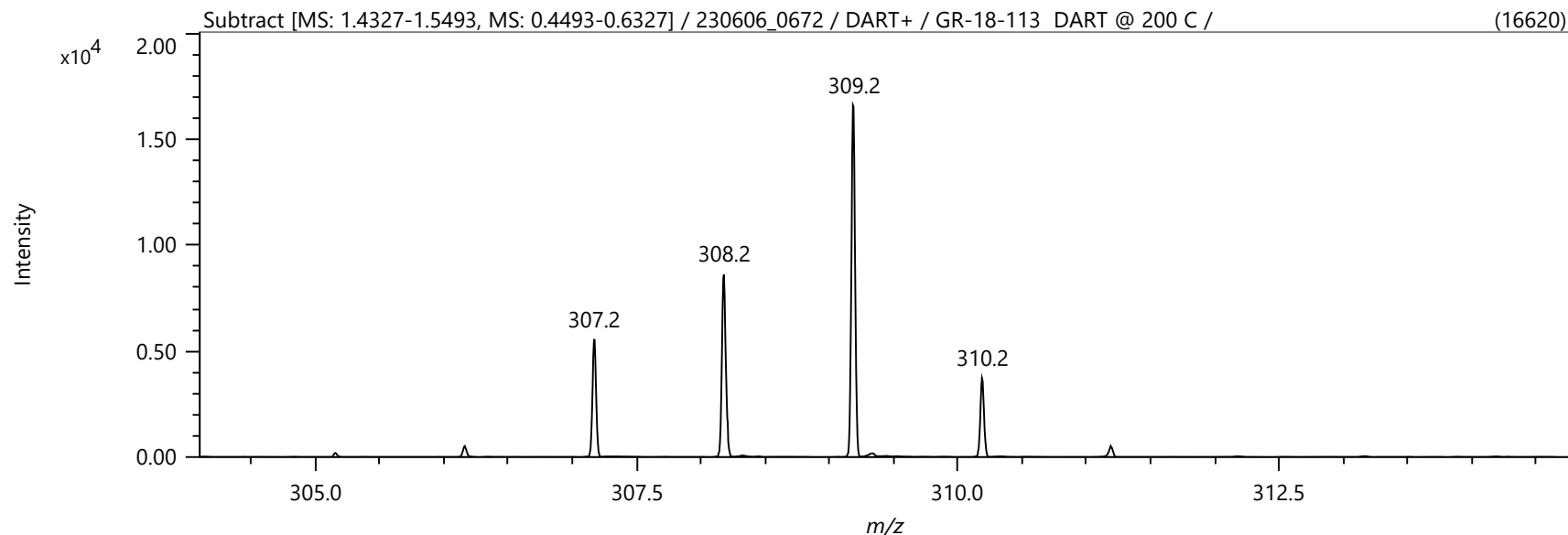
GR-18-113

Levonorgestrel EP Impurity W
1H-NMR, 600 MHz
Solvent: DMSO-D6
Lot No.: GR-18-113





Spectrum



Elemental Composition

Parameters

Tolerance: ±10.00 mDa
 Electron: Even
 Charge: +1
 DBE: -1.5 - 100.0

Elements Set 1:

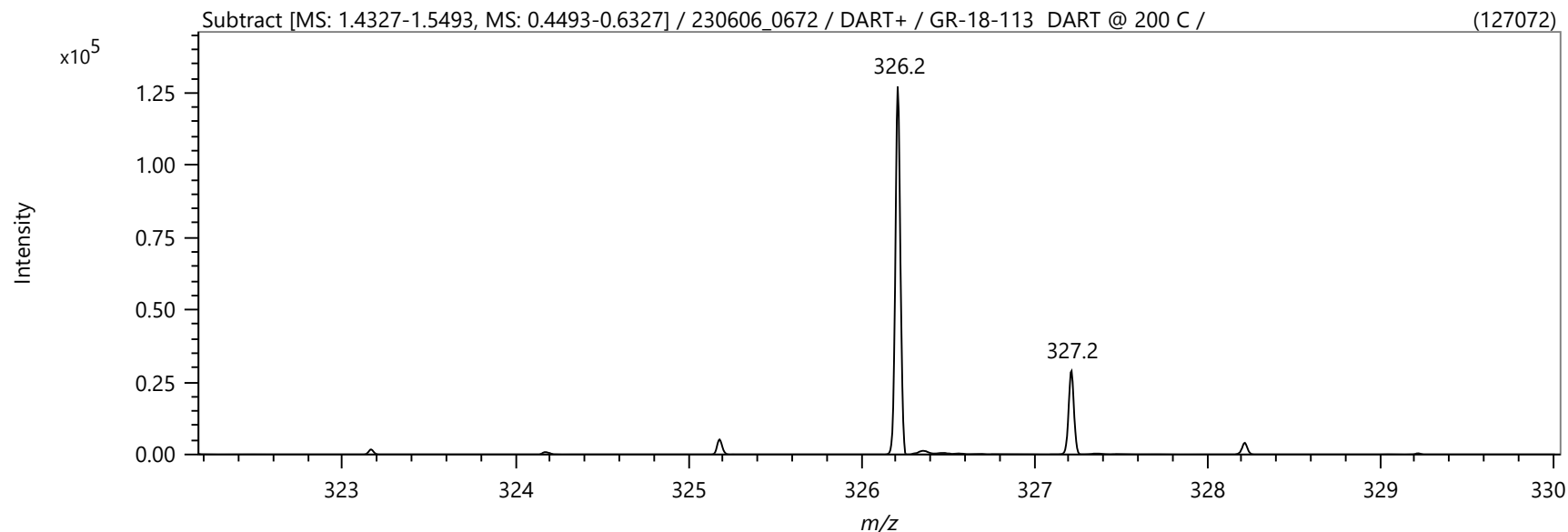
Symbol	C	H	O	N
Min	0	0	0	0
Max	100	200	20	10

Results

Mass	Intensity	Formula	Calculated Mass	Mass Difference [mDa]	Mass Difference [ppm]	DBE
309.18561	16619.87	C21 H25 O2	309.18491	0.71	2.28	9.5
		C10 H25 N6 O5	309.18809	-2.48	-8.03	1.5
		C17 H21 N6	309.18222	3.39	10.97	10.5
		C11 H21 N10 O	309.18943	-3.82	-12.35	6.5
		C16 H25 N2 O4	309.18088	4.73	15.29	5.5
		C14 H29 O7	309.19078	-5.17	-16.71	0.5

Mass	Intensity	Formula	Calculated Mass	Mass Difference [mDa]	Mass Difference [ppm]	DBE
		C15 H25 N4 O3	309.19212	-6.51	-21.04	5.5
		C12 H21 N8 O2	309.17820	7.41	23.98	6.5
		C11 H25 N4 O6	309.17686	8.75	28.30	1.5

Spectrum



Elemental Composition

Parameters

Elements Set 1:

Tolerance: ±10.00 mDa
 Electron: Even
 Charge: +1
 DBE: -1.5 - 100.0

Symbol	C	H	O	N
Min	0	0	0	0
Max	100	200	20	10

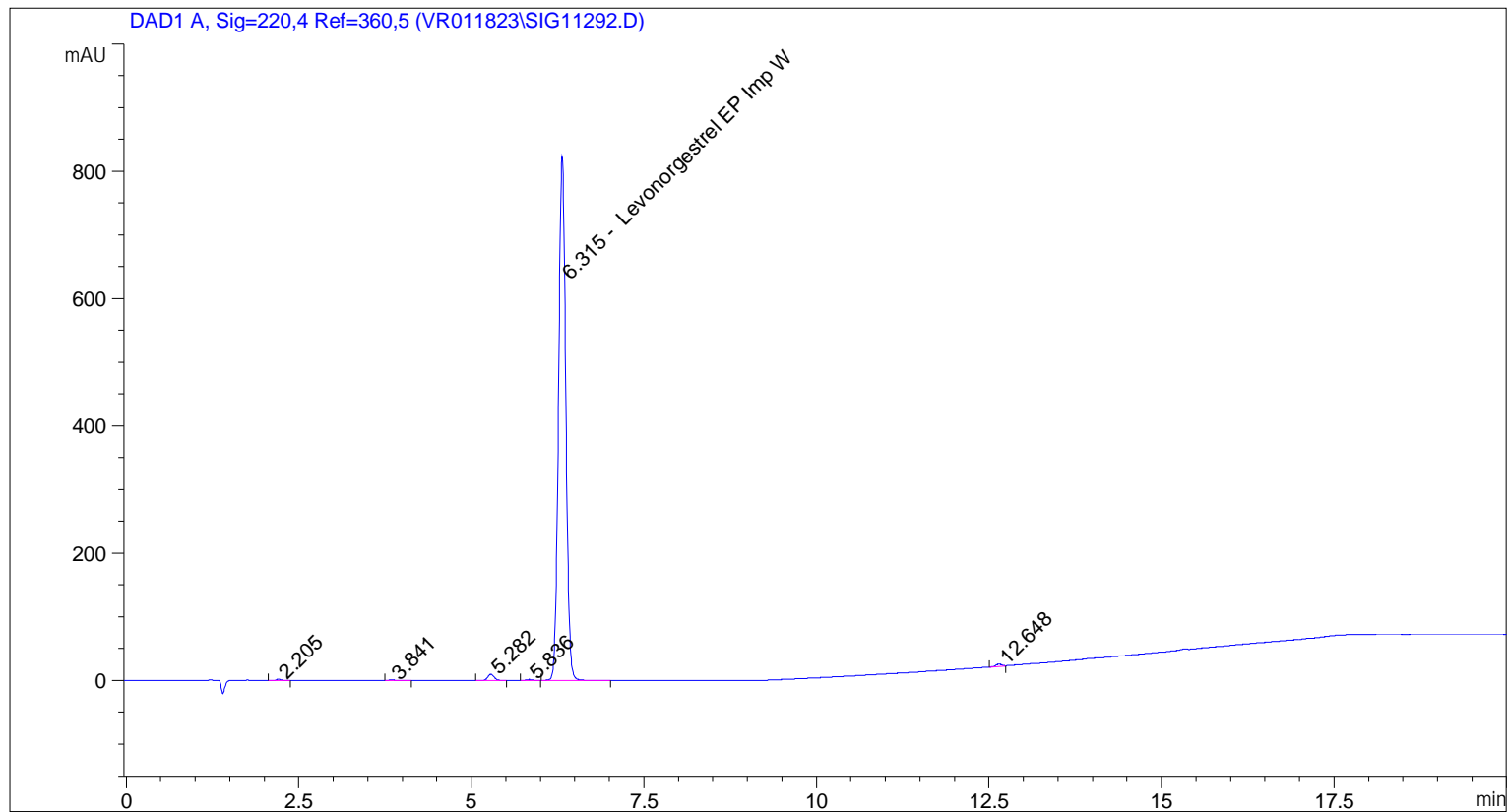
Results

Mass	Intensity	Formula	Calculated Mass	Mass Difference [mDa]	Mass Difference [ppm]	DBE
326.21194	127071.84	C ₂₁ H ₂₈ N O ₂	326.21146	0.49	1.49	8.5
		C ₁₀ H ₂₈ N ₇ O ₅	326.21464	-2.70	-8.28	0.5
		C ₁₇ H ₂₄ N ₇	326.20877	3.17	9.72	9.5
		C ₁₆ H ₂₈ N ₃ O ₄	326.20743	4.51	13.82	4.5
		C ₁₄ H ₃₂ N O ₇	326.21733	-5.39	-16.52	-0.5
		C ₁₅ H ₂₈ N ₅ O ₃	326.21867	-6.73	-20.62	4.5

Mass	Intensity	Formula	Calculated Mass	Mass Difference [mDa]	Mass Difference [ppm]	DBE
		C12 H24 N9 O2	326.20475	7.19	22.05	5.5
		C11 H28 N5 O6	326.20341	8.53	26.15	0.5

```

=====
Acq. Operator   : vrusu
Acq. Instrument : Instrument 1                Location : Vial 17
Injection Date  : 6/7/2023 1:33:23 PM
                                           Inj Volume : 5.0 µl
Acq. Method    : C:\CHEM32\1\METHODS\VR060723_113.M
Last changed   : 6/7/2023 1:32:23 PM by vrusu
Analysis Method : C:\CHEM32\1\METHODS\VR060723_113PM.M
Last changed   : 6/7/2023 2:36:36 PM by vrusu
  
```



=====
 Area Percent Report
 =====

```

Sorted By      :      Signal
Calib. Data Modified :      6/7/2023 12:56:21 PM
Multiplier:    :      1.0000
Dilution:      :      1.0000
Use Multiplier & Dilution Factor with ISTDs
  
```

Signal 1: DAD1 A, Sig=220,4 Ref=360,5

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Area %	Name
1	2.205	BB	0.0735	9.39155	0.1533	?
2	3.841	BB	0.0869	7.37201	0.1203	?
3	5.282	BB	0.1021	67.55733	1.1026	?
4	5.836	BB	0.1065	10.18626	0.1663	?
5	6.315	BB	0.1133	6012.02783	98.1252	Levonorgestrel EP Imp W
6	12.648	BB	0.0878	20.35871	0.3323	?

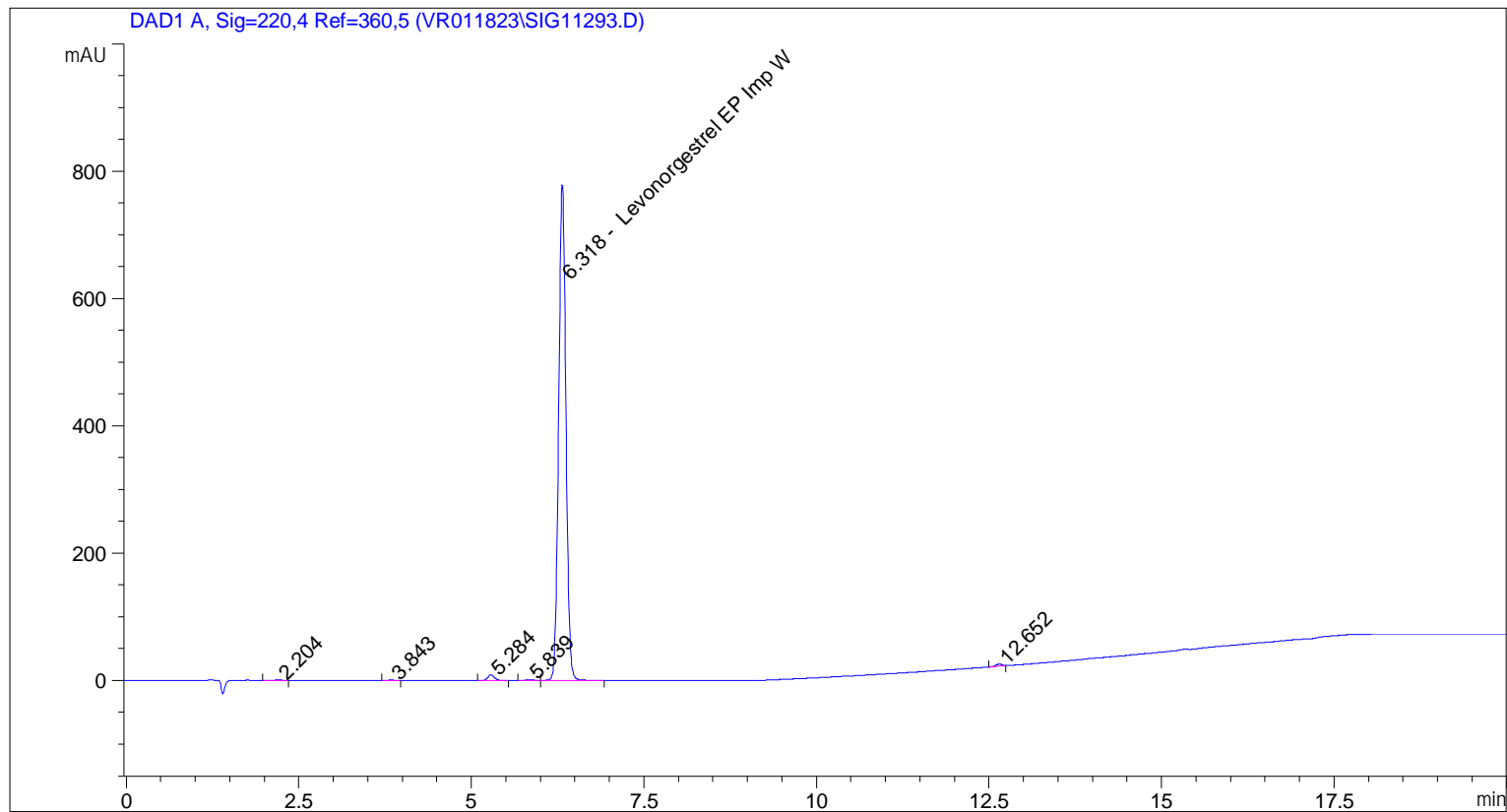
Totals : 6126.89370

=====

*** End of Report ***

```

=====
Acq. Operator   : vrusu
Acq. Instrument : Instrument 1                Location : Vial 18
Injection Date  : 6/7/2023 1:59:13 PM
                                           Inj Volume : 5.0 µl
Acq. Method    : C:\CHEM32\1\METHODS\VR060723_113.M
Last changed   : 6/7/2023 1:58:11 PM by vrusu
Analysis Method: C:\CHEM32\1\METHODS\VR060723_113PM.M
Last changed   : 6/7/2023 2:36:36 PM by vrusu
  
```



=====
 Area Percent Report
 =====

```

Sorted By      : Signal
Calib. Data Modified : 6/7/2023 12:56:21 PM
Multiplier:    : 1.0000
Dilution:     : 1.0000
Use Multiplier & Dilution Factor with ISTDs
  
```

Signal 1: DAD1 A, Sig=220,4 Ref=360,5

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Area %	Name
1	2.204	BB	0.0791	7.02124	0.1210	?
2	3.843	BB	0.0850	4.14886	0.0715	?
3	5.284	BB	0.1017	62.41786	1.0753	?
4	5.839	BB	0.1022	9.74795	0.1679	?
5	6.318	BB	0.1134	5701.69482	98.2234	Levonorgestrel EP Imp W
6	12.652	BB	0.0894	19.79491	0.3410	?

Totals : 5804.82565

=====

*** End of Report ***