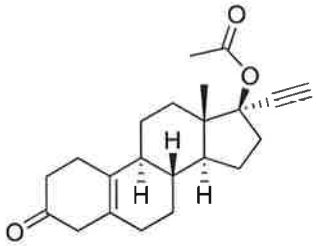
DALTON
Pharma Services
Accelerated Drug Discovery And Development

Certificate of Analysis

Name of Product:		Lot Number:
delta-5(10)-Didehydronorethindrone acetate (*Norethindrone acetate EP Imp B)*		HAP-3-97
Manufacture Date: 12/06/23	**Retested On:** n/a	**Next Retest Date:** 12/05/26

Recommended Storage Conditions:

☐ Ambient atmosphere ☒ Inert atmosphere
☐ Ambient temperature ☐ 0-10°C (refrigeration) ☒ -20°C or below (freezer)

Structure:	Molecular Formula:
	$C_{22}H_{28}O_3$
	Molecular Weight: 340.47
	CAS Number: 19637-28-6

Appearance: White Solid

Purity: 90.3 % by AUC at 200 nm (HPLC)

Identity: ^{1}H-NMR - conforms to structure

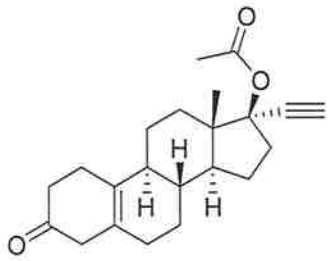
MS(ESI+ve): $[M+CH_3OH+H]^+$ = 373.3; $[M+Na]^+$ = 363.3 - conforms to structure

Dalton Pharma Services hereby certifies that the above information is authentic and accurate.

Zemin Li Digitally signed by Zemin Li Date: 2023.12.14 15:15:07 -05'00' Zemin Li, Ph.D., Chemistry Supervisor	Date: 12/14/23

349 Wildcat Rd., Toronto, ON M3J 2S3 • Tel: 416-661-2102 • 1-800-567-5060 • Fax: 416-661-2108
www.dalton.com

HAP-3-97, 1H-NMR, DMSO-d6, 12/12/23 Retest



$C_{22}H_{28}O_3$

VPR
12/13/23

3.552
3.325
2.845
2.796
2.504
2.500
1.980
1.649
1.632
1.605
0.841

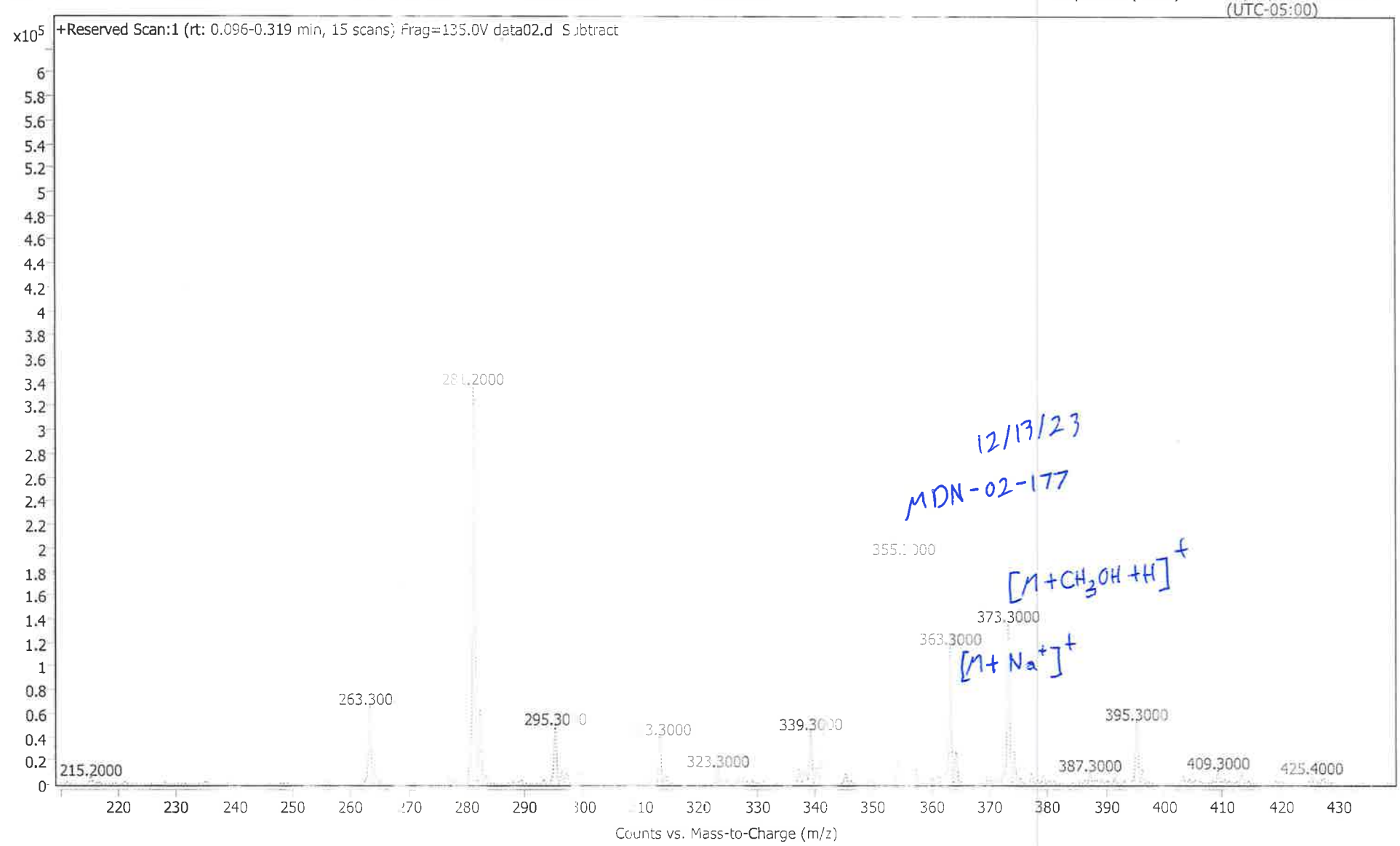
1.0
0.9
2.0
4.0
7.1
5.1
1.1
2.0
2.0
3.0

10.0 9.0 8.0 7.0 6.0 5.0 4.0 3.0 2.0 1.0 0.0
ppm (t1)

Spectrum Plot Report

Agilent | Trusted Answers

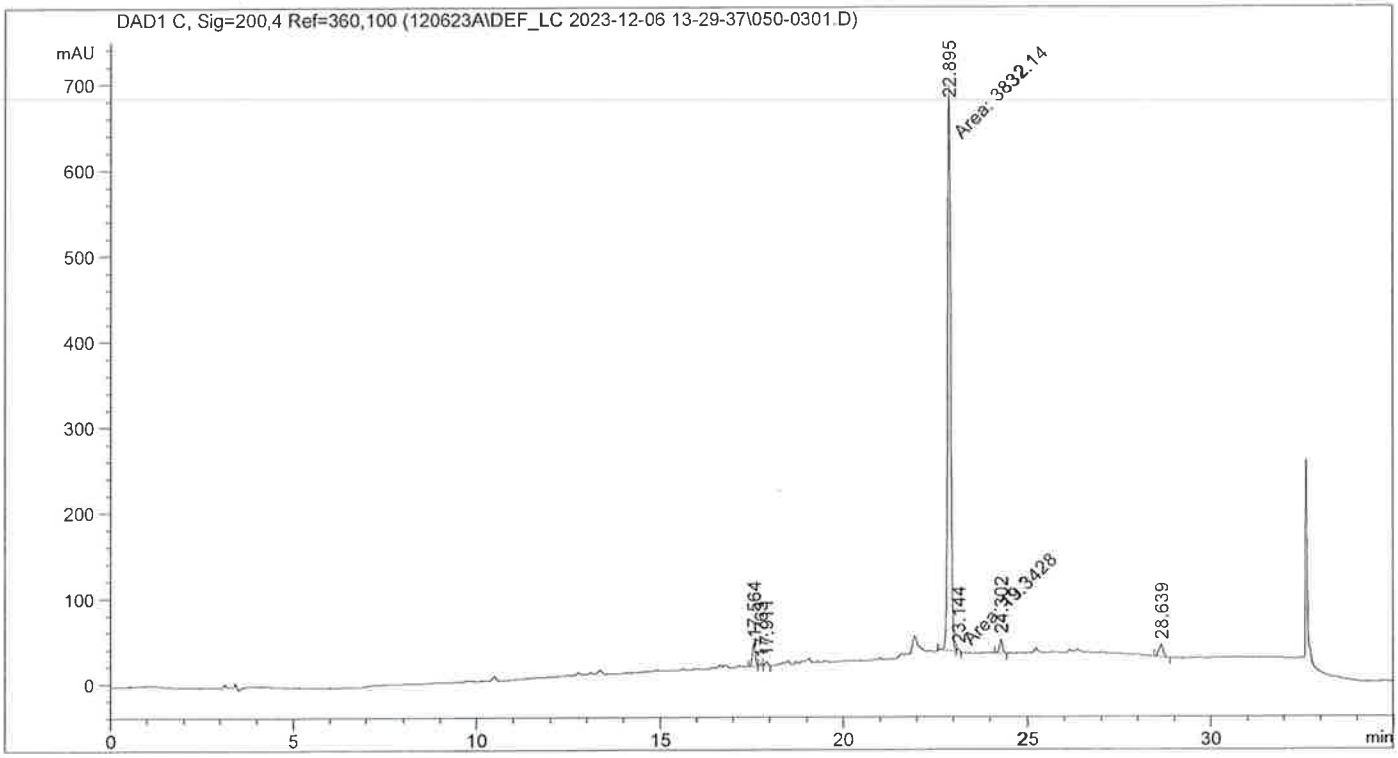
Name	RDS#03003	Rack Pos.		Instrument	Agilent LC-MS	Operator	Matthew Di Nino (DALTON\MDiNino)
Inj. Vol. (ul)	2	Plate Pos.		IRM Status			
Data File	data02.d	Method (Acq)	MS Scan.m	Comment		Acq. Time (Local)	12/13/23 2:05:45 PM (UTC-05:00)



Generated at 3:20 PM on 12/13/23

Data File C:\CHEM32\1\DATA\120623A\DEF_LC 2023-12-06 13-29-37\050-0301.D
Sample Name: HAP-3-97

Acq. Operator : VPR
Acq. Instrument : HPLC#2
Injection Date : 12/06/23 2:44:15 PM
Seq. Line : 3
Location : Vial 50
Inj : 1
Inj Volume : 5.000 µl
Acq. Method : C:\CHEM32\1\DATA\120623A\DEF_LC 2023-12-06 13-29-37\OTS3.M
Last changed : 12/06/23 8:17:57 AM by VPR
Analysis Method : C:\CHEM32\1\METHODS\OTS.M
Last changed : 12/07/23 8:57:15 AM by SKG
(modified after loading)
Additional Info : Peak(s) manually integrated



Area Percent Report

Sorted By : Signal
Multiplier: : 1.0000
Dilution: : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: DAD1 C, Sig=200,4 Ref=360,100

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	17.564	BV	0.0830	143.11610	26.49359	3.3706
2	17.763	VV	0.0863	16.70721	3.03207	0.3935
3	17.911	VB	0.0825	26.20574	4.73693	0.6172
4	22.895	MM	0.0966	3832.13940	661.38983	90.2536
5	23.144	MM	0.0892	19.34281	3.61476	0.4556
6	24.302	BB	0.0828	88.77506	16.48158	2.0908
7	28.639	BB	0.1343	119.67983	13.91535	2.8187

VPR 12/08/23

Data File C:\CHEM32\1\DATA\120623A\DEF_LC 2023-12-06 13-29-37\050-0301.D
Sample Name: HAP-3-97

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
Totals :				4245.96616	729.66411	

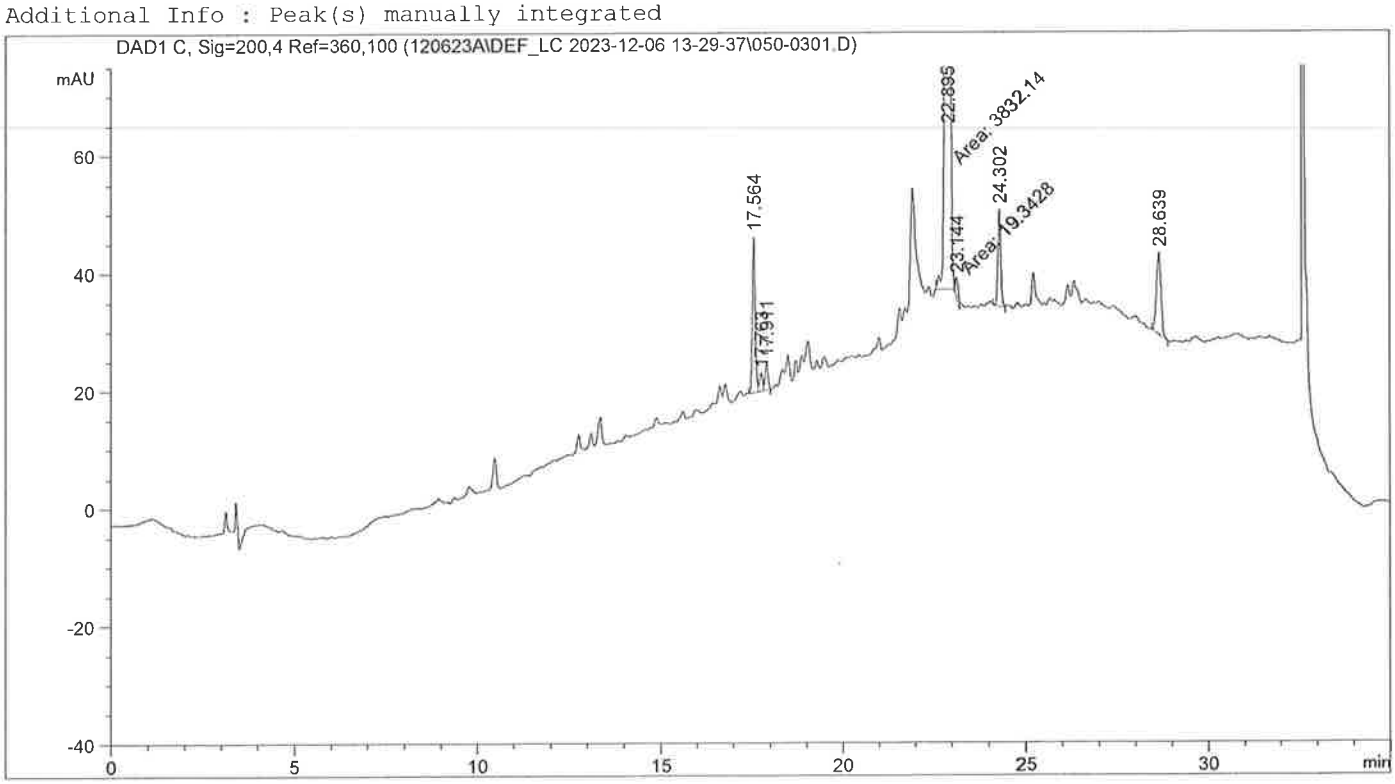
*** End of Report ***

VPR
12/08/23

Data File C:\CHEM32\1\DATA\120623A\DEF_LC 2023-12-06 13-29-37\050-0301.D
Sample Name: HAP-3-97

Acq. Operator : VPR
Acq. Instrument : HPLC#2
Injection Date : 12/06/23 2:44:15 PM
Seq. Line : 3
Location : Vial 50
Inj : 1
Inj Volume : 5.000 µl

Acq. Method : C:\CHEM32\1\DATA\120623A\DEF_LC 2023-12-06 13-29-37\OTS3.M
Last changed : 12/06/23 8:17:57 AM by VPR
Analysis Method : C:\CHEM32\1\METHODS\OTS.M
Last changed : 12/07/23 8:56:55 AM by SKG
(modified after loading)
Additional Info : Peak(s) manually integrated



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Dilution: : 1.0000
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VPR 12/08/23

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Sample Name: HAP-3-97

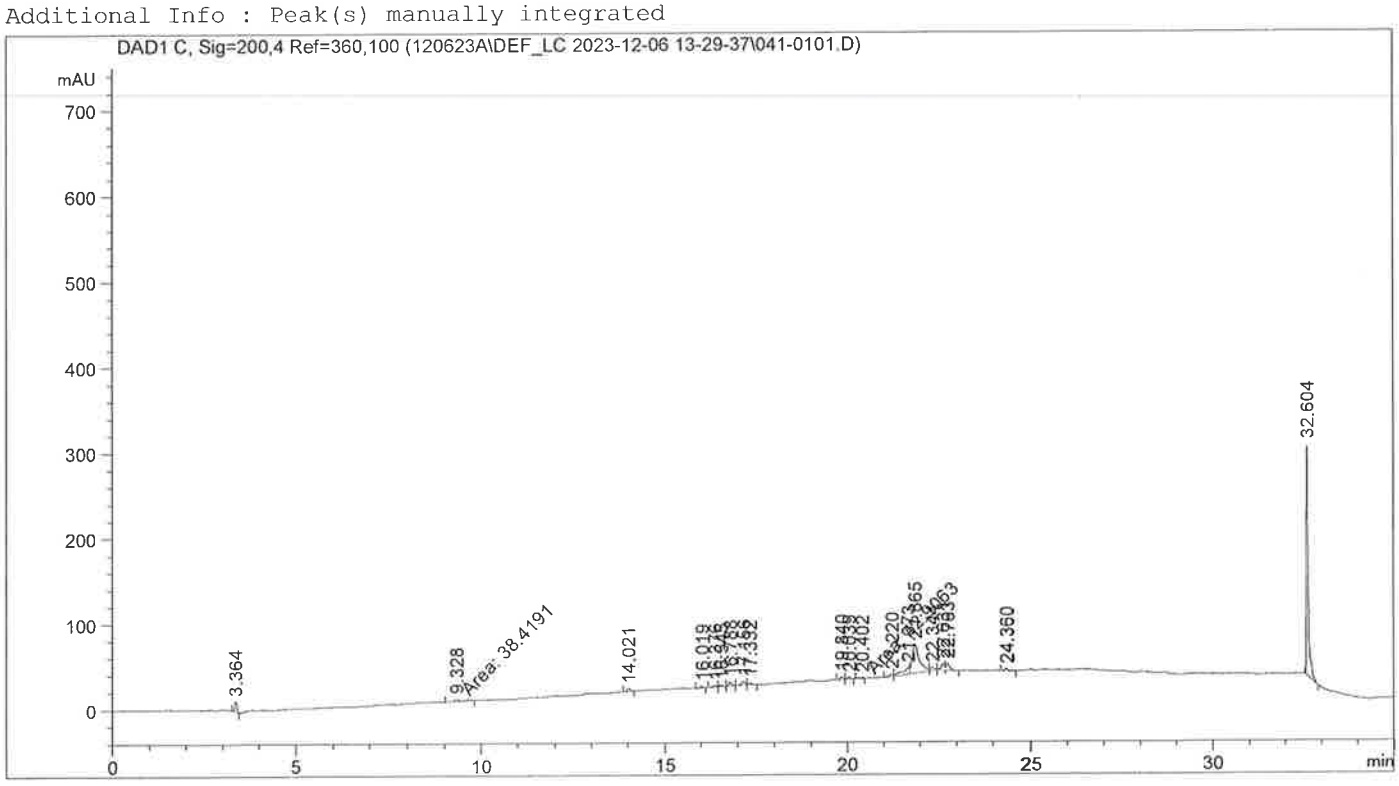
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
Totals :				4245.96616	729.66411	

*** End of Report ***

VPR 12/08/23

Data File C:\CHEM32\1\DATA\120623A\DEF_LC 2023-12-06 13-29-37\041-0101.D
Sample Name: BLANK

Acq. Operator : VPR
Acq. Instrument : HPLC#2
Injection Date : 12/06/23 1:31:05 PM
Seq. Line : 1
Location : Vial 41
Inj : 1
Inj Volume : 5.000 µl
Different Inj Volume from Sequence ! Actual Inj Volume : 10.000 µl
Acq. Method : C:\CHEM32\1\DATA\120623A\DEF_LC 2023-12-06 13-29-37\OTS3.M
Last changed : 12/06/23 8:17:57 AM by VPR
Analysis Method : C:\CHEM32\1\METHODS\OTS.M
Last changed : 12/07/23 9:01:59 AM by SKG
(modified after loading)
Additional Info : Peak(s) manually integrated



Area Percent Report

Sorted By : Signal
Multiplier: : 1.0000
Dilution: : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: DAD1 C, Sig=200,4 Ref=360,100

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	3.364	BB	0.0639	54.90646	12.34979	2.8806
2	9.328	MM	0.2709	38.41914	2.36409	2.0156
3	14.021	BB	0.1039	23.71240	3.37716	1.2441
4	16.019	BB	0.0878	10.11734	1.84919	0.5308
5	16.376	BV	0.1054	11.25609	1.61250	0.5905
6	16.545	VB	0.1043	12.05703	1.84349	0.6326

VPR 12/08/23

Data File C:\CHEM32\1\DATA\120623A\DEF_LC 2023-12-06 13-29-37\041-0101.D
Sample Name: BLANK

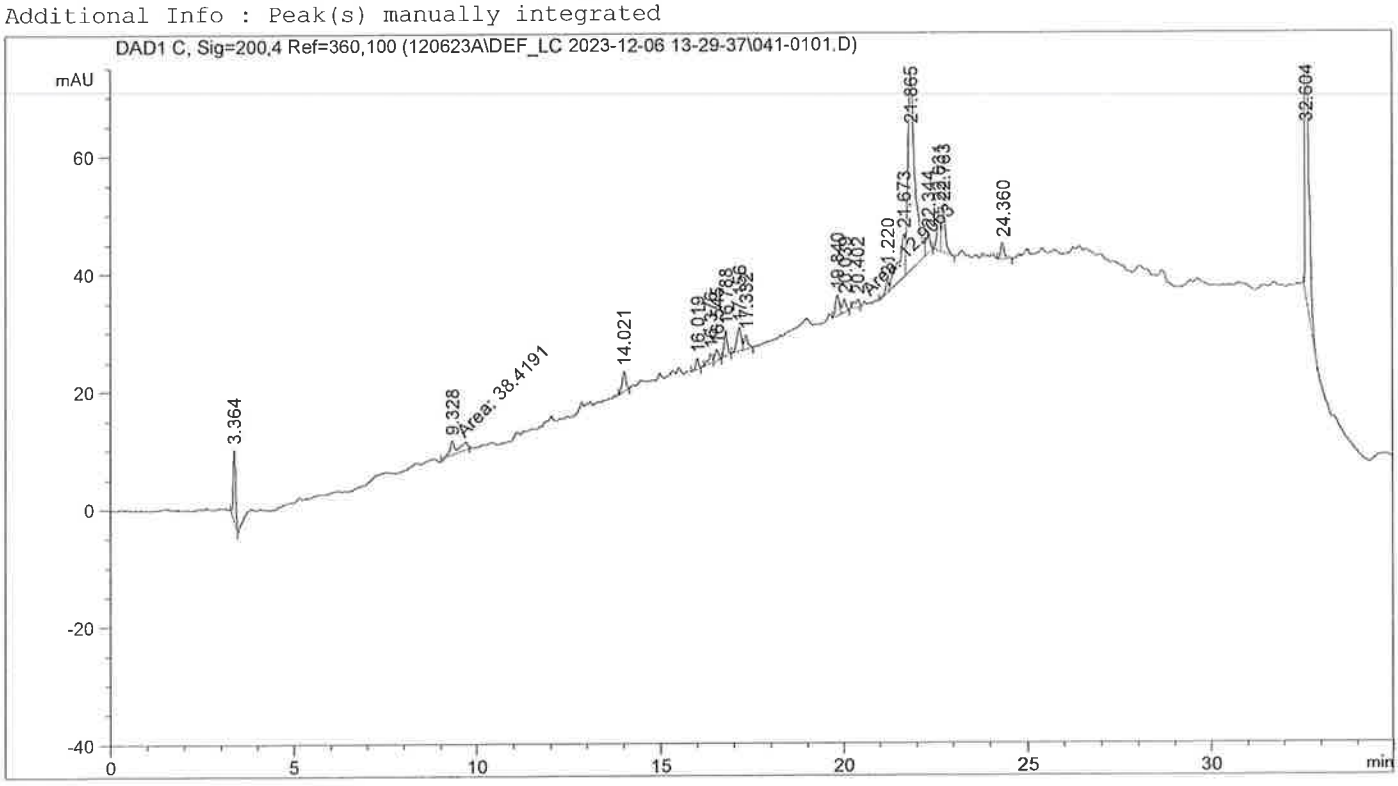
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
7	16.788	BB	0.0843	24.18017	4.38483	1.2686
8	17.156	BV	0.1231	32.33650	4.05079	1.6965
9	17.332	VB	0.0991	16.43123	2.36267	0.8621
10	19.840	VV	0.1096	24.83536	3.55157	1.3030
11	20.039	VB	0.0963	15.98265	2.26466	0.8385
12	20.402	MM	0.1555	12.90633	1.38345	0.6771
13	21.220	BV	0.0921	12.25068	2.03999	0.6427
14	21.673	VV	0.1698	92.90140	7.33123	4.8740
15	21.865	VV	0.1943	451.12888	33.68097	23.6681
16	22.344	VB	0.1152	25.67805	3.35948	1.3472
17	22.631	BV	0.0916	44.50285	7.46464	2.3348
18	22.763	VB	0.0999	52.00600	7.79079	2.7285
19	24.360	BB	0.1074	19.63062	2.74766	1.0299
20	32.604	BB	0.0540	930.82202	271.22745	48.8348
Totals :				1906.06120	377.03641	

*** End of Report ***

VPR
12/08/23

Data File C:\CHEM32\1\DATA\120623A\DEF_LC 2023-12-06 13-29-37\041-0101.D
Sample Name: BLANK

Acq. Operator : VPR
Acq. Instrument : HPLC#2
Injection Date : 12/06/23 1:31:05 PM
Seq. Line : 1
Location : Vial 41
Inj : 1
Inj Volume : 5.000 µl
Different Inj Volume from Sequence ! Actual Inj Volume : 10.000 µl
Acq. Method : C:\CHEM32\1\DATA\120623A\DEF_LC 2023-12-06 13-29-37\OTS3.M
Last changed : 12/06/23 8:17:57 AM by VPR
Analysis Method : C:\CHEM32\1\METHODS\OTS.M
Last changed : 12/07/23 9:01:59 AM by SKG
(modified after loading)
Additional Info : Peak(s) manually integrated



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*** End of Report ***

VPR 12/08/23