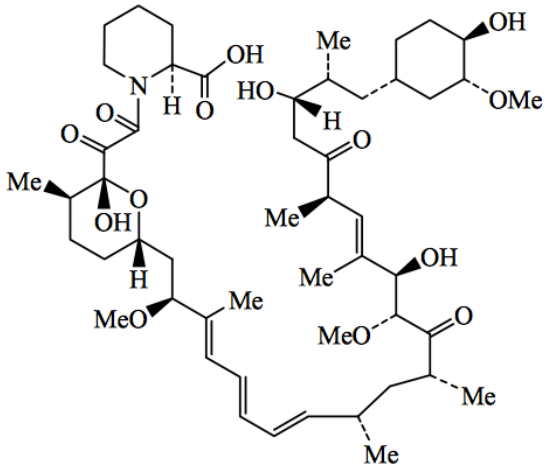
Certificate of Analysis

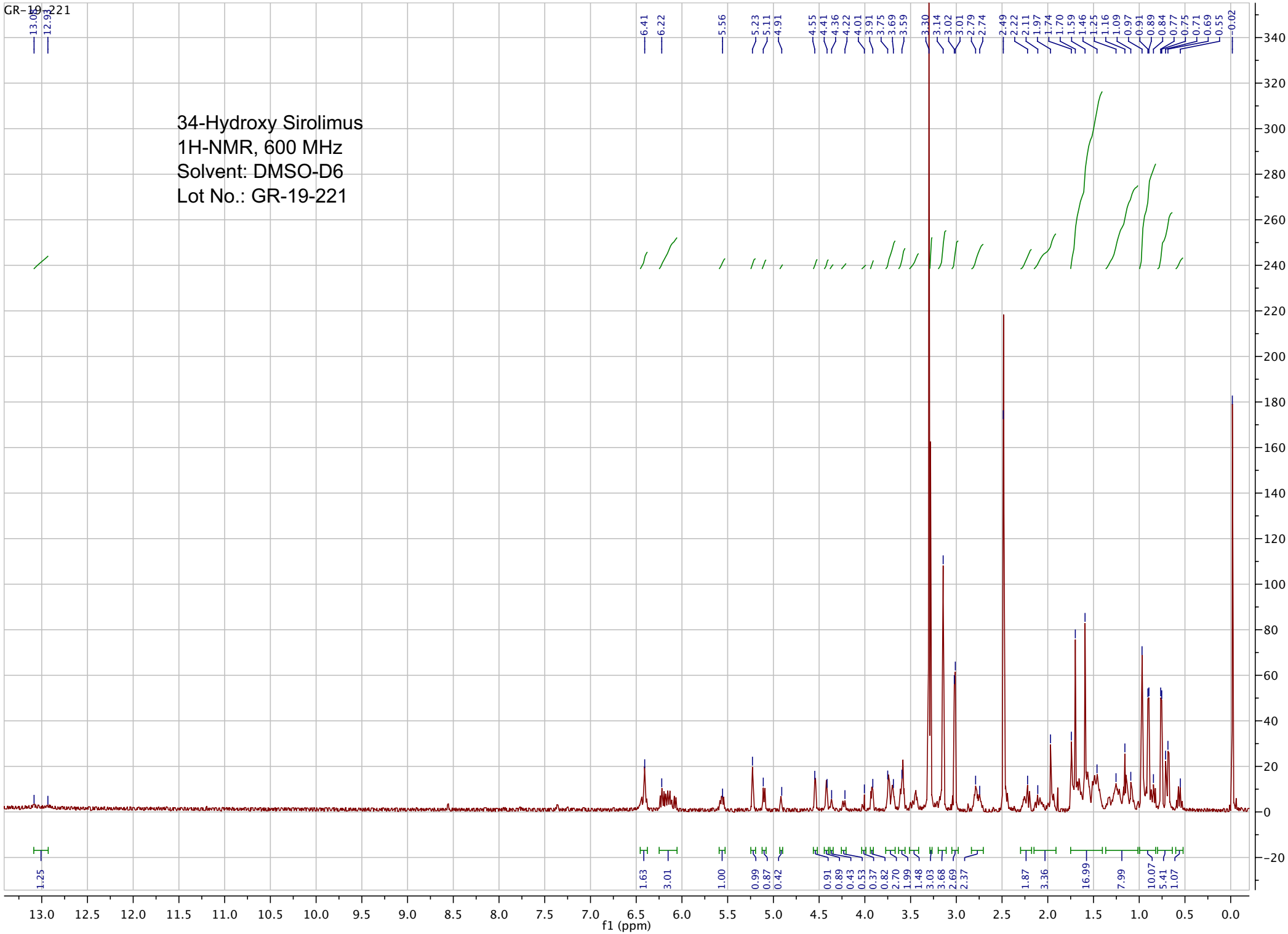


Name:	**34-Hydroxy Sirolimus**
Lot#:	GR-19-221
Manufacture Date:	02/04/2025 (valid until: 02/04/2027)
CAS No.:	185107-79-3
MF:	$C_{51}H_{81}NO_{14}$
MW:	932.19
Appearance:	Off-white solid
Purity:	96.2% by HPLC (average of two sample preparations)
^{1}H-NMR:	Conforms (contains ~1% of MeOH)
MS-ESI (+)	Conforms (shows peaks at m/z = 931.59 $[M+H]^+$ and 949.60 $[M+NH_4]^+$)
Storage	Store at -18°C under nitrogen in a dry place away from direct sunlight

Approved by: Date: 02/05/2025

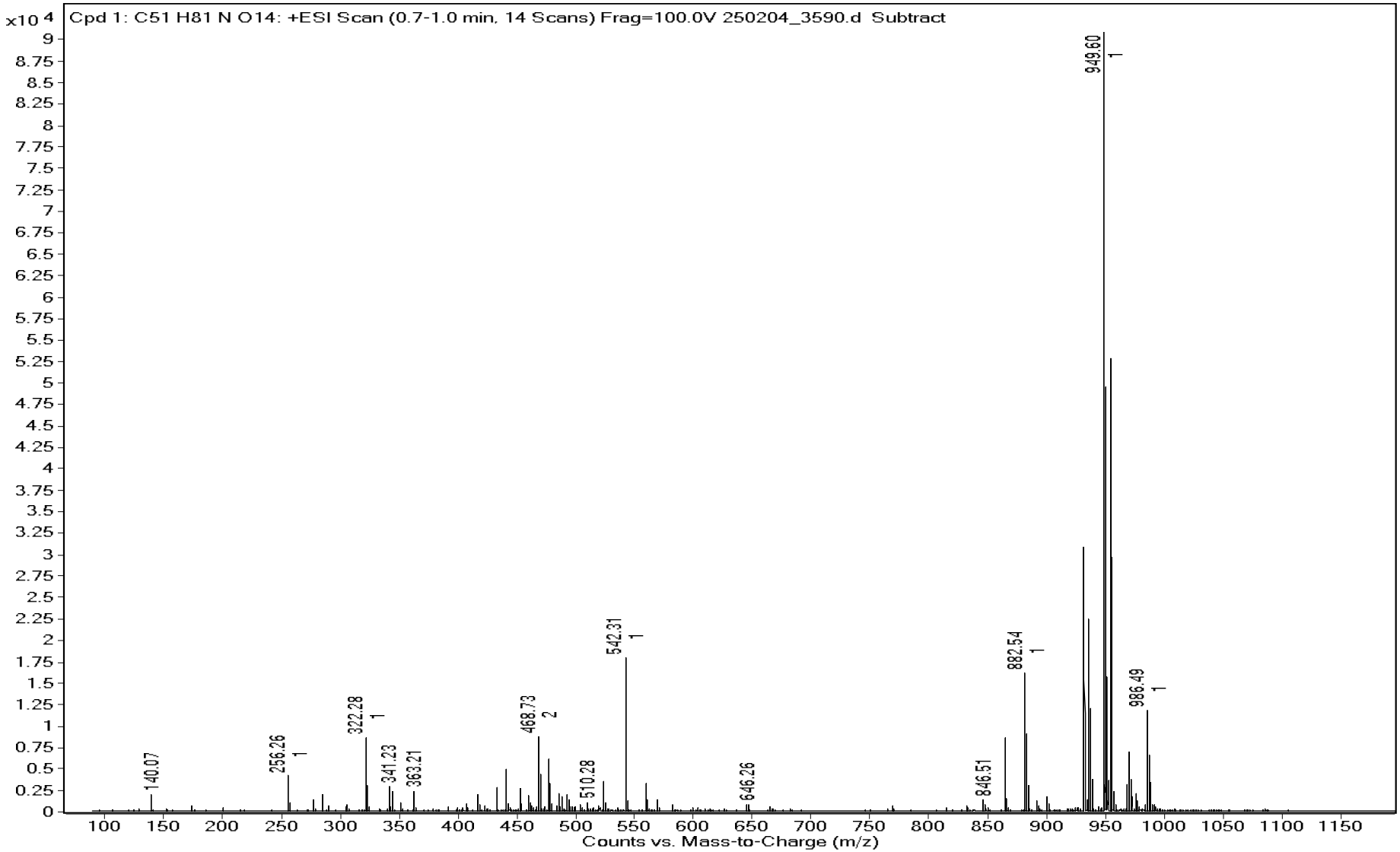
Viorica Rusu, QC/QA Manager

700, Collip Circle, The Research Park, London, ON, N6G 4X8
Ph: (647)4079078, e-mail: grusu@esschemco.com, www.esschemco.com


GR-19-221
34-Hydroxy Sirolimus
1H-NMR, 600 MHz
Solvent: DMSO-D6
Lot No.: GR-19-221
f1 (ppm)

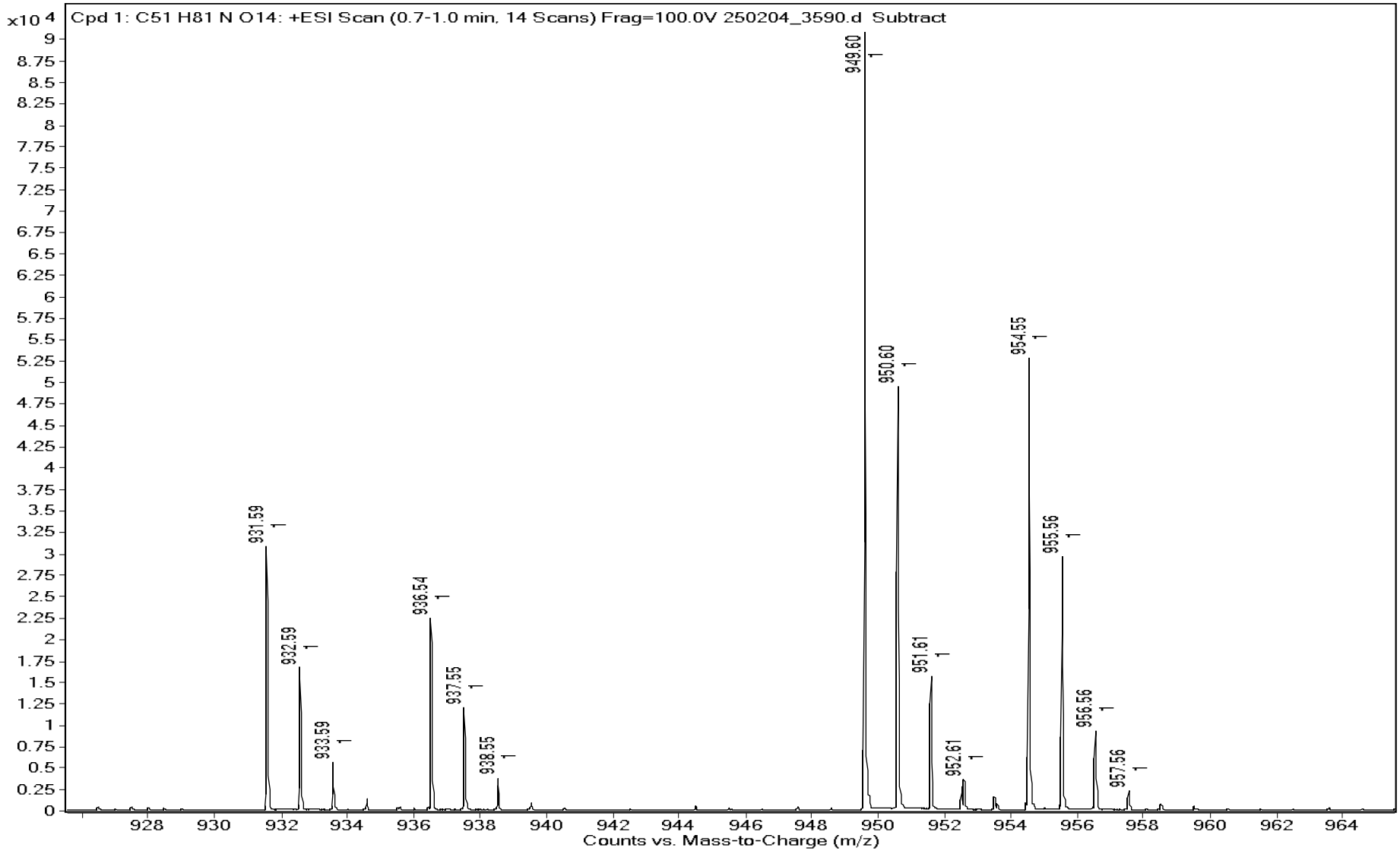
ESI Mass Spectrum

Sample Name	GR-19-221	**Data File**	250204_3590.d	**Acq Method**	HRMS.m
DA Method	AIMS_Accurate_Mass.m	**Instrument**	Agilent 6538 UHD	**Acq Date, Time**	04/02/2025 11:11:56 AM
Comment	ESI+				



ESI Mass Spectrum

Sample Name	GR-19-221	**Data File**	250204_3590.d	**Acq Method**	HRMS.m
DA Method	AIMS_Accurate_Mass.m	**Instrument**	Agilent 6538 UHD	**Acq Date, Time**	04/02/2025 11:11:56 AM
Comment	ESI+				



ESI-MS Report
Molecular Formula Generation (MFG)

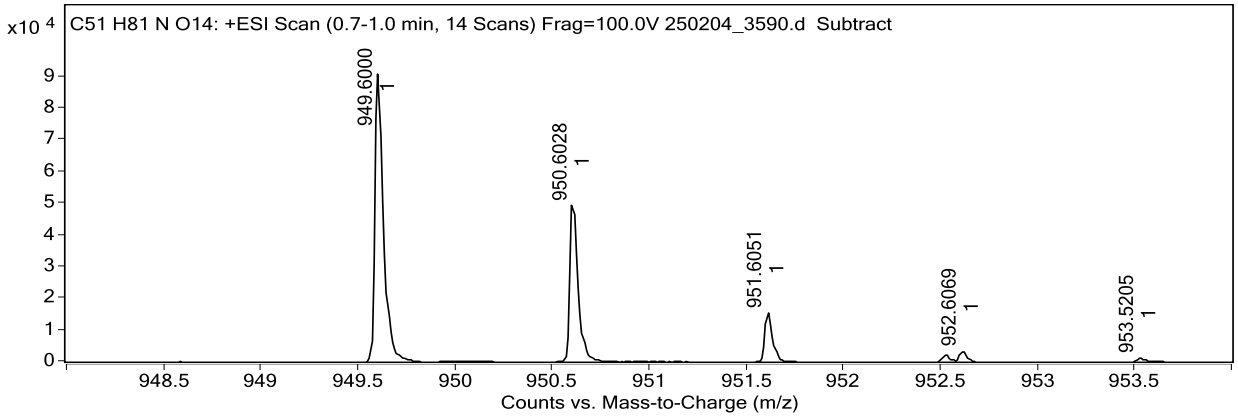
Sample Name	GR-19-221	**Data File**	250204_3590.d
Acq Method	HRMS.m	**DA Method**	AIMS_Accurate_Mass.m
Instrument	Agilent 6538 UHD	**Acq Date, Time**	04/02/2025 11:11:56 AM
Comment	ESI+		

Target Ion Species

Ion Species	*m/z*	*Ionic Formula*
(M+NH4)+	949.6	C51 H85 N2 O14

MFG Calculator Results

Target m/z	*Ionic Formula*	*Calc m/z*	*+/- (mDa)*	*+/- (ppm)*	*DBE*	*MFG Score*
949.6000	C51 H85 N2 O14	949.5995	0.5	0.5	12.0	99.16
949.6000	C52 H81 N6 O10	949.6009	-0.9	-0.9	17.0	97.89
949.6000	C53 H77 N10 O6	949.6022	-2.2	-2.3	22.0	93.38
949.6000	C47 H81 N8 O12	949.5968	3.2	3.4	13.0	92.51
949.6000	C64 H77 N4 O3	949.5990	1.0	1.1	30.0	90.80
949.6000	C40 H85 N8 O17	949.6027	-2.7	-2.8	4.0	88.22
949.6000	C46 H85 N4 O16	949.5955	4.5	4.7	8.0	85.20
949.6000	C60 H73 N10 O	949.5963	3.7	3.9	31.0	83.97
949.6000	C59 H77 N6 O5	949.5950	5.0	5.3	26.0	78.91

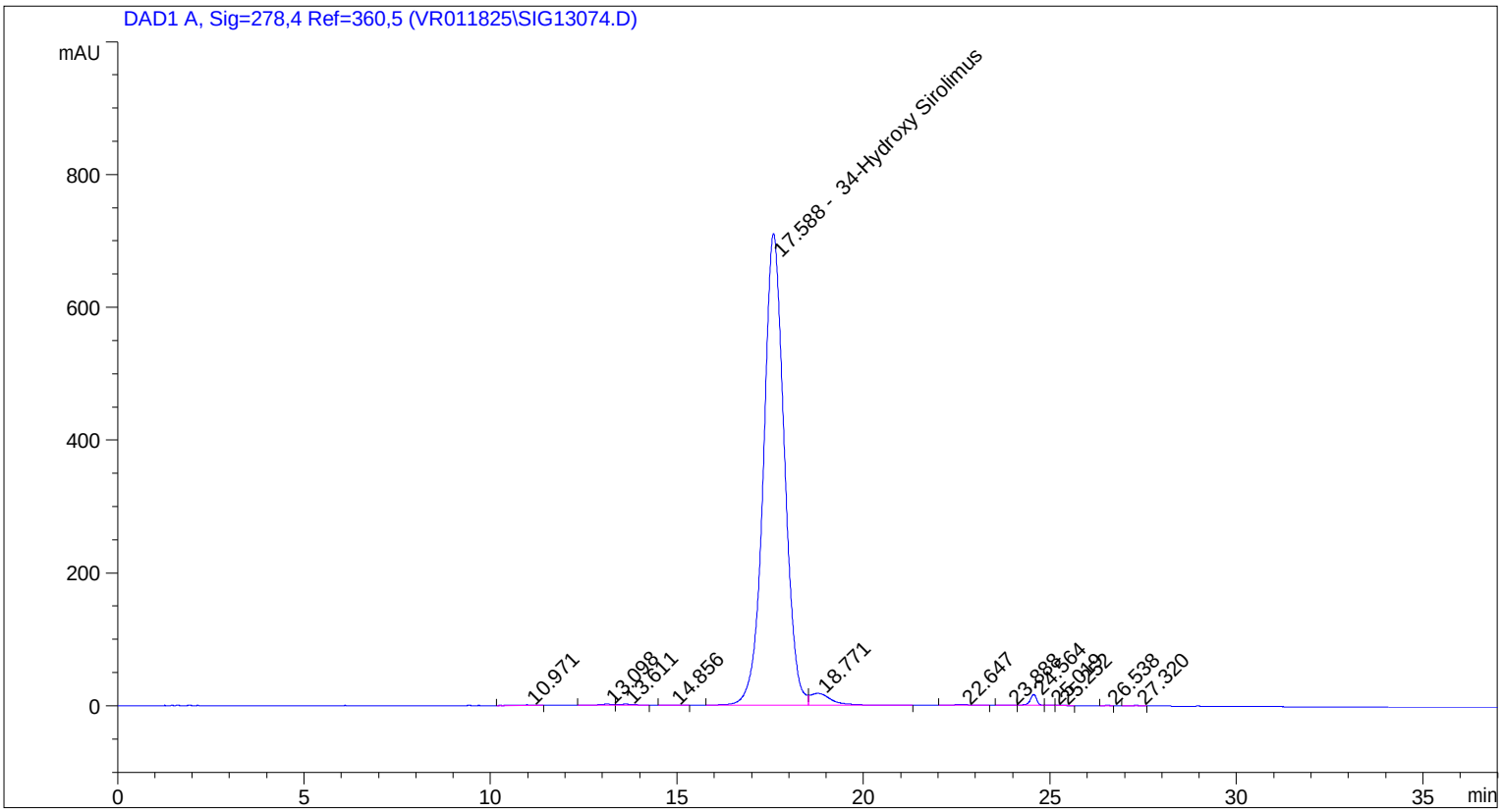


Predicted Isotope Match Table

Isotope	*m/z*	*Calc m/z*	Diff (mDa)	Abund (%)	Calc Abund (%)	+/-
1	949.6000	949.5995	0.5	100.0	100.0	0.0
2	950.6028	950.6029	-0.1	56.5	57.4	0.9
3	951.6051	951.6058	-0.7	17.2	19.1	1.9
4	952.6069	952.6087	-1.8	4.1	4.6	0.5

Data File C:\CHEM32\1\DATA\VR011825\SIG13074.D
Sample Name: GR-19-221

```
==========================================================================
Acq. Operator   : vrusu
Acq. Instrument : Instrument 1                    Location : Vial 31
Injection Date  : 2/5/2025 8:32:28 AM
                                                  Inj Volume : 20.0 µl
Acq. Method     : C:\CHEM32\1\METHODS\VR020425_221.M
Last changed    : 2/5/2025 8:29:26 AM by vrusu
Analysis Method : C:\CHEM32\1\METHODS\VR020525_221PM.M
Last changed    : 2/5/2025 11:08:19 AM
```




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

Sorted By             :      Signal
Calib. Data Modified  :      2/5/2025 11:07:23 AM
Multiplier:                   :      1.0000
Dilution:                     :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=278,4 Ref=360,5

Peak RetTime  Type   Width     Area      Area    Name
  #   [min]          [min]   [mAU*s]       %
----|-------|------|-------|----------|--------|--------------------
   1  10.971 BB      0.3468   27.68308   0.0964 ?
   2  13.098 BV      0.3344   48.27812   0.1681 ?
   3  13.611 VB      0.3690   51.98524   0.1810 ?
   4  14.856 BB      0.2948   10.26384   0.0357 ?
   5  17.588 BV      0.5937 2.76151e4   96.1355 34-Hydroxy Sirolimus
   6  18.771 VB      0.5875  711.93115   2.4784 ?
   7  22.647 BB      0.4100   25.64778   0.0893 ?
   8  23.888 BV      0.2504    7.19215   0.0250 ?
```

Data File C:\CHEM32\1\DATA\VR011825\SIG13074.D
Sample Name: GR-19-221

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Area %	Name
9	24.564	VB	0.1824	195.00188	0.6789	?
10	25.019	BV	0.1405	4.58967	0.0160	?
11	25.252	VB	0.1776	6.57096	0.0229	?
12	26.538	BB	0.1265	7.22485	0.0252	?
13	27.320	BB	0.1768	13.71241	0.0477	?

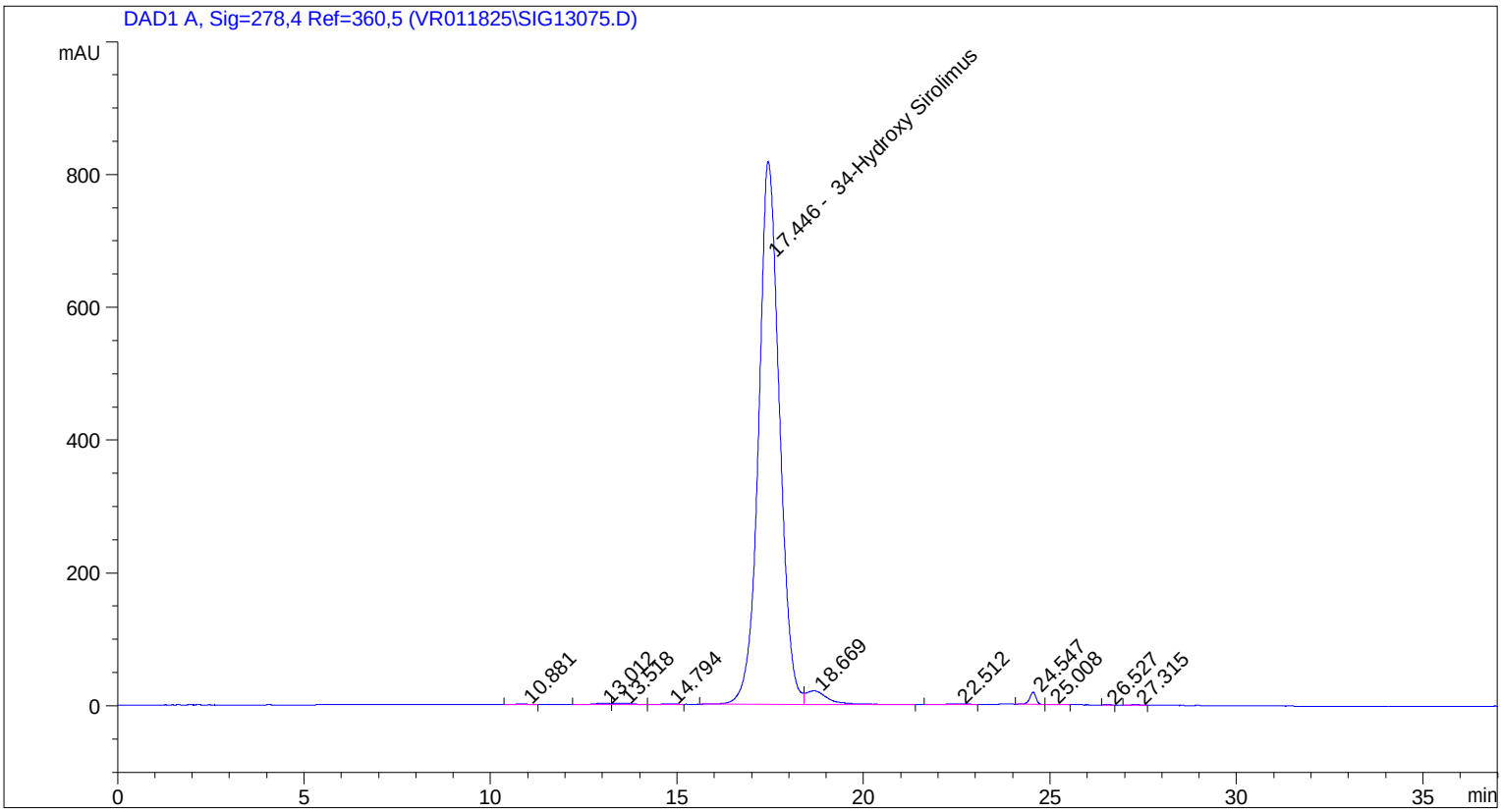
Totals : 2.87252e4

==========

*** End of Report ***

Data File C:\CHEM32\1\DATA\VR011825\SIG13075.D
Sample Name: GR-19-221 spl-2

```
==========================================================================
Acq. Operator   : vrusu
Acq. Instrument : Instrument 1                    Location : Vial 32
Injection Date  : 2/5/2025 9:13:08 AM
                                                  Inj Volume : 20.0 µl
Acq. Method     : C:\CHEM32\1\METHODS\VR020425_221.M
Last changed    : 2/5/2025 9:11:57 AM by vrusu
Analysis Method : C:\CHEM32\1\METHODS\VR020525_221PM.M
Last changed    : 2/5/2025 11:08:19 AM
```




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

Sorted By             :      Signal
Calib. Data Modified  :      2/5/2025 11:07:23 AM
Multiplier:                   :      1.0000
Dilution:                     :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: DAD1 A, Sig=278,4 Ref=360,5
```

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Area %	Name
1	10.881	BB	0.3535	28.04476	0.0849	?
2	13.012	BV	0.3284	54.55125	0.1652	?
3	13.518	VB	0.4001	60.98972	0.1847	?
4	14.794	BB	0.3192	11.39984	0.0345	?
5	17.446	BV	0.5774	3.17613e4	96.1839	34-Hydroxy Sirolimus
6	18.669	VB	0.5979	821.26715	2.4871	?
7	22.512	BB	0.4244	27.70090	0.0839	?
8	24.547	BB	0.1821	220.46558	0.6676	?

Data File C:\CHEM32\1\DATA\VR011825\SIG13075.D
Sample Name: GR-19-221 spl-2

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Area %	Name
9	25.008	BB	0.2728	11.28654	0.0342	?
10	26.527	BB	0.1325	8.82607	0.0267	?
11	27.315	BB	0.1731	15.59591	0.0472	?

Totals : 3.30214e4

==========

*** End of Report ***