

CHEM-GOLD INTERNATIONAL, INC

CERTIFICATE OF ANALYSIS

Chemical Name: Estradiol-D4

Batch Number: GR-11-099

Chemical Structure:

CAS Registry No.: 66789-03-5

Product ID: CG-ES-0328

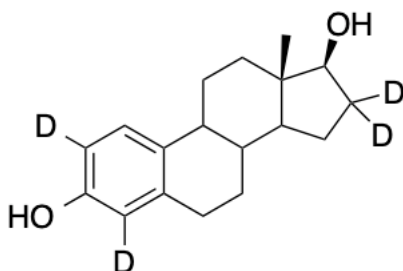
Manufacture Date: 2023-07

Long-term Storage: -18°C in a dry place away from direct sunlight

Formula: C₁₈H₂₂D₄O₂

Molecular Weight: 276.41 g/mol

Expire Date: 2028-07



Analysis Data:

Test:	Result:
Purity:	99.1% by HPLC; >98% atom D
¹H-NMR :	Conforms
MS-ESI (-):	Conforms (shows peak at m/z = 275.20 [M-H]-)
Appearance:	Off-white solid

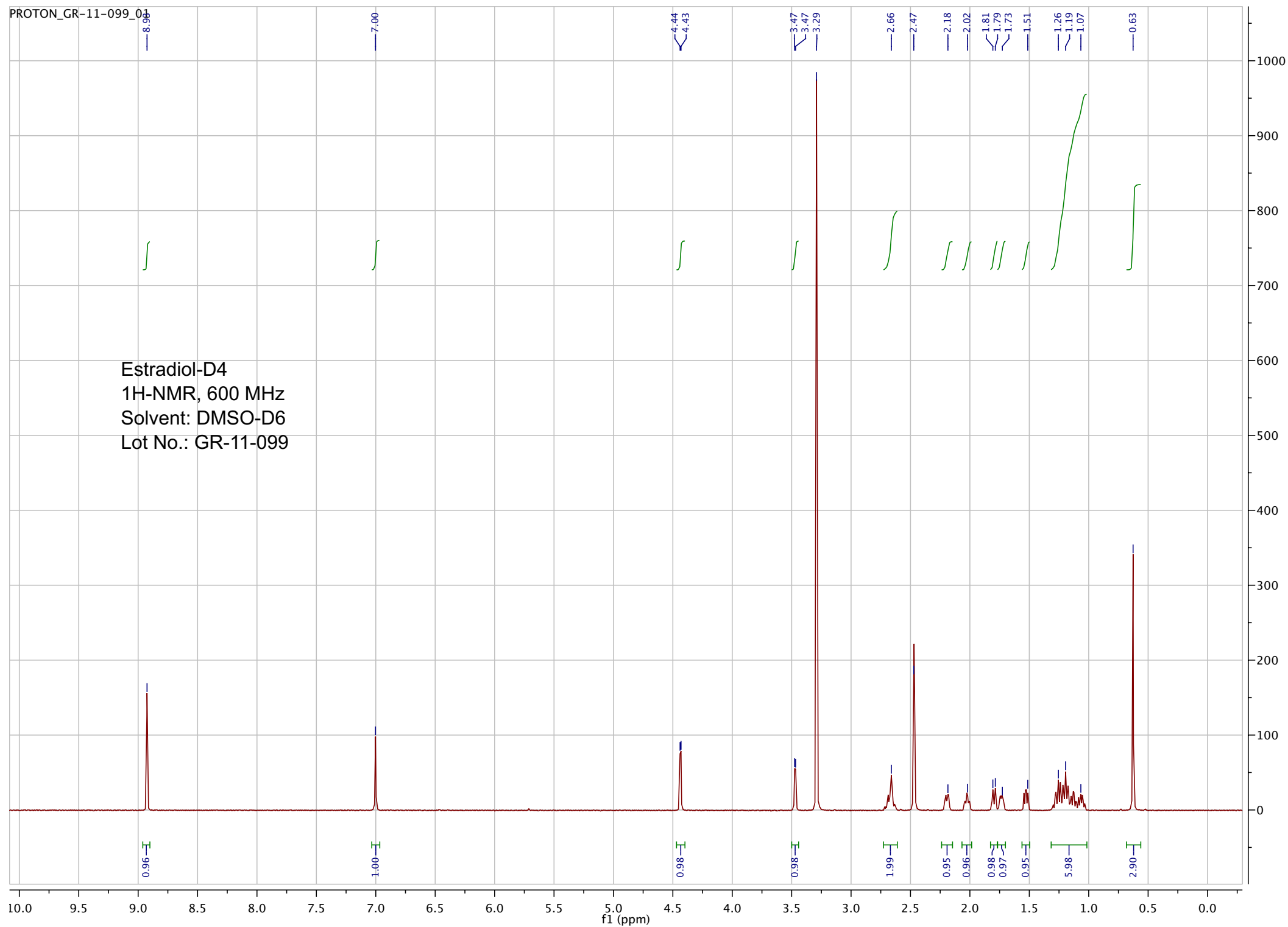
Conclusion: The above product meets the specifications of Chem-Gold
For laboratory use only

The foregoing is a copy of the Certificate of Analysis as provided by our supplier

Transport Temperature: Some products are transported at ambient temperature even though the recommended storage temperature is Refrigerated or Frozen. Please be assured that as long as the transportation occurs over a brief period, it will not affect the product quality, and that degradation caused by exposure to ambient temperature has not been reported in these short time frames. Furthermore, we give full consideration to the transportation of products that are sensitive to short-term exposure, and specially ship these with refrigerants so as to prevent degradation..


Analyst: Paul Baltrum

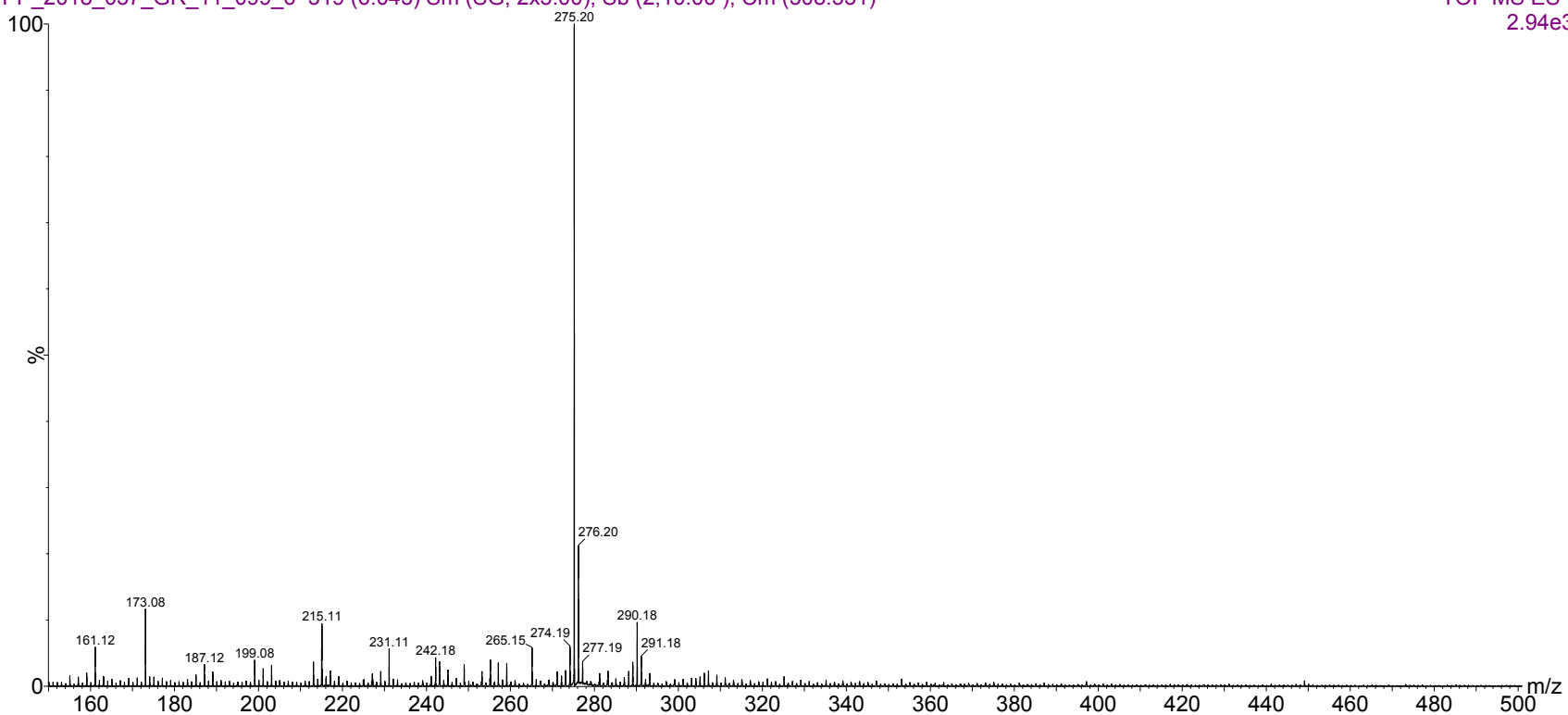
Estradiol-D4
1H-NMR, 600 MHz
Solvent: DMSO-D6
Lot No.: GR-11-099



05-Apr-2018, 16:06:48

TOF MS ES-
2.94e3

PP_2018_037_GR_11_099_6 319 (6.043) Sm (SG, 2x5.00); Sb (2,10.00); Cm (308:331)

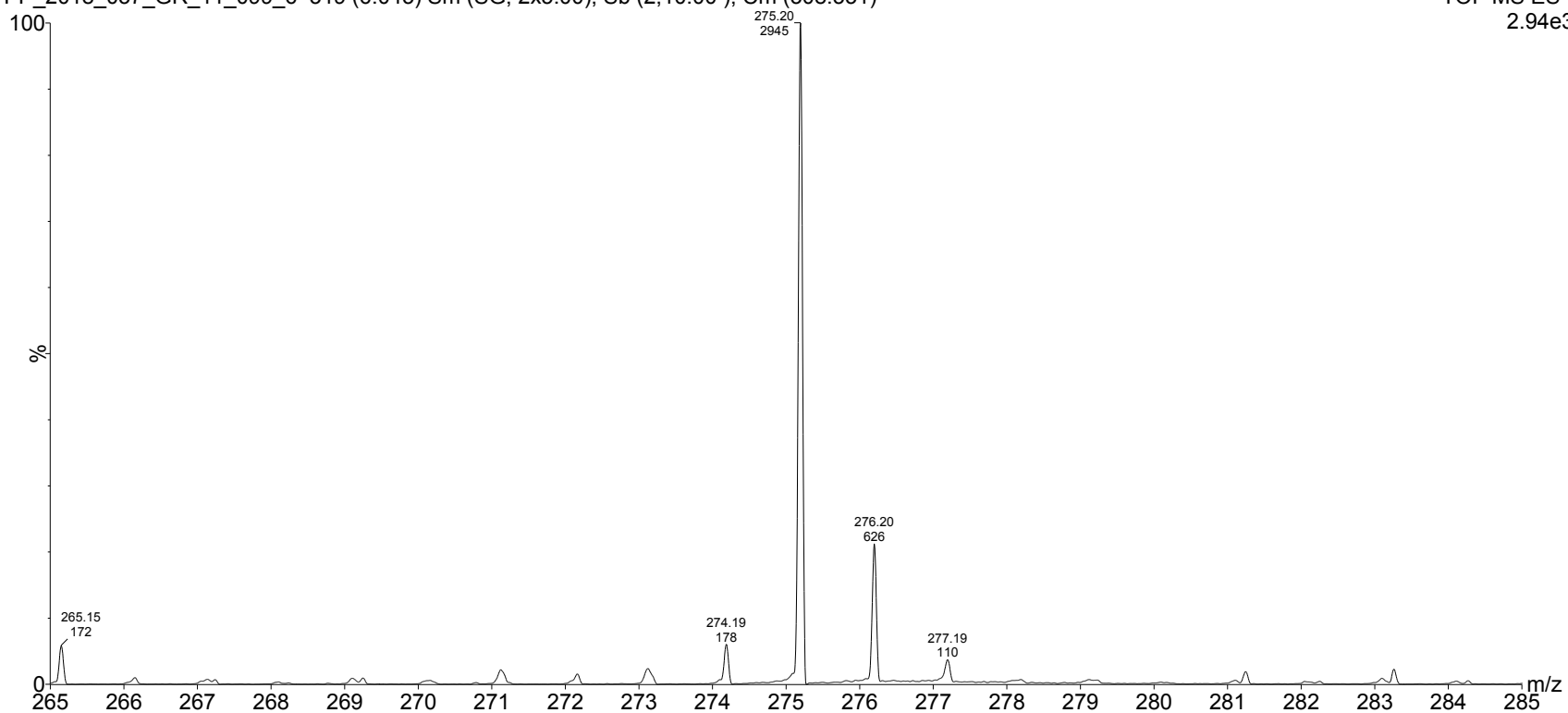


ESI-MS spectrum for sample GR-11-099 Second sample. Shows monoisotopic $[M+H]^+$ mass.

05-Apr-2018, 16:06:48

TOF MS ES-
2.94e3

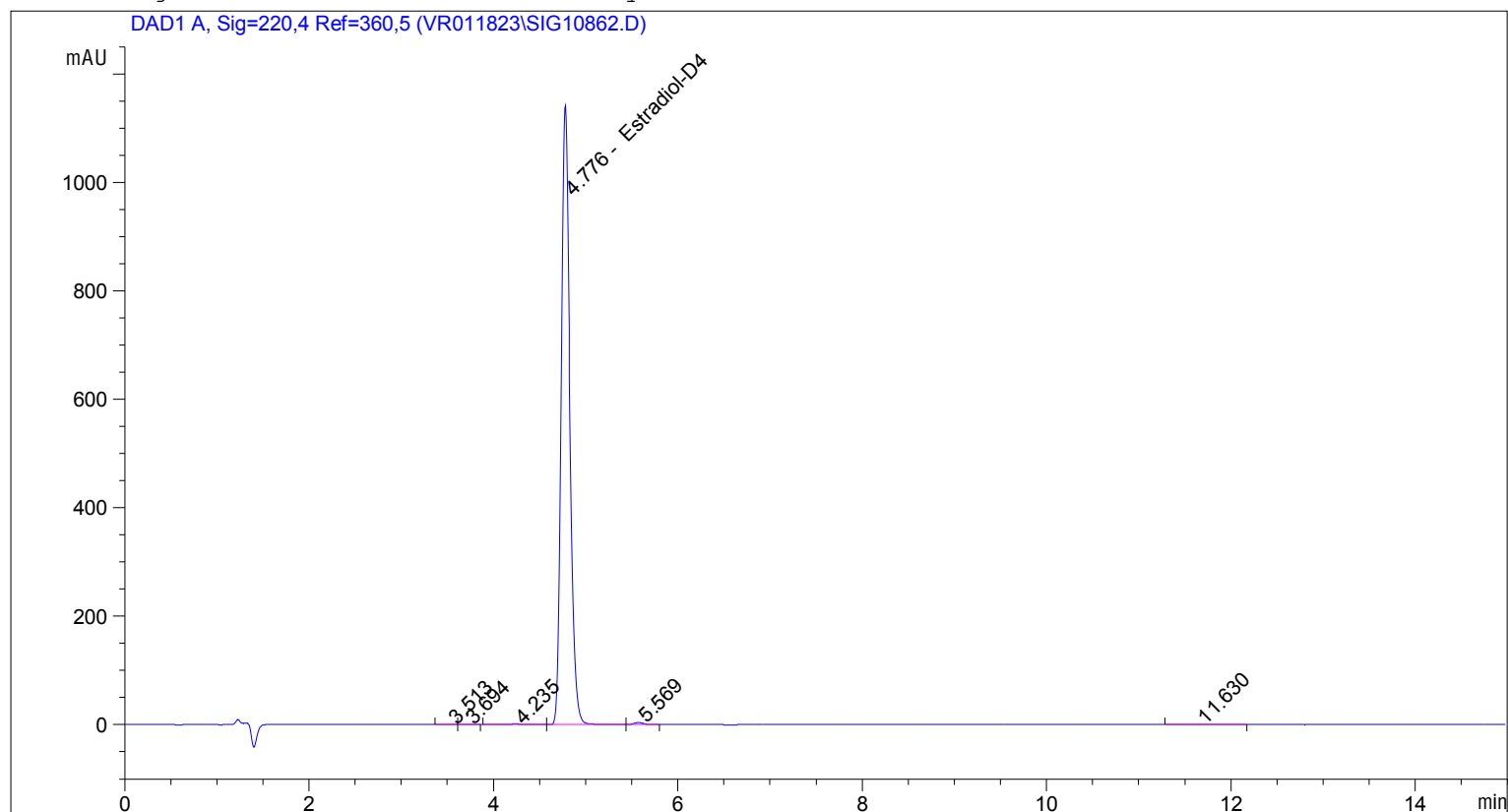
PP_2018_037_GR_11_099_6 319 (6.043) Sm (SG, 2x5.00); Sb (2,10.00); Cm (308:331)



Expansion of above showing intensity labels.

Sample Name: GR-11-099

```
=====
Acq. Operator   : vrusu
Acq. Instrument : Instrument 1                Location : Vial 8
Injection Date  : 2/7/2023 1:54:01 PM
                                           Inj Volume : 10.0 µl
Acq. Method     : C:\CHEM32\1\METHODS\VR020723_099.M
Last changed    : 2/7/2023 1:53:05 PM by vrusu
Analysis Method : C:\CHEM32\1\METHODS\VR020723_099PM.M
Last changed    : 2/7/2023 2:34:19 PM by vrusu
=====
```



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

```
Sorted By           :      Signal
Calib. Data Modified :      2/7/2023 2:31:05 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	3.513	BV	0.0892	5.36869	0.0710	?
2	3.694	VB	0.0973	5.48040	0.0725	?
3	4.235	BV	0.1347	13.02200	0.1722	?
4	4.776	VV	0.1005	7495.93750	99.1309	Estradiol-D4
5	5.569	VB	0.1086	27.68747	0.3662	?
6	11.630	BB	0.2069	14.15749	0.1872	?

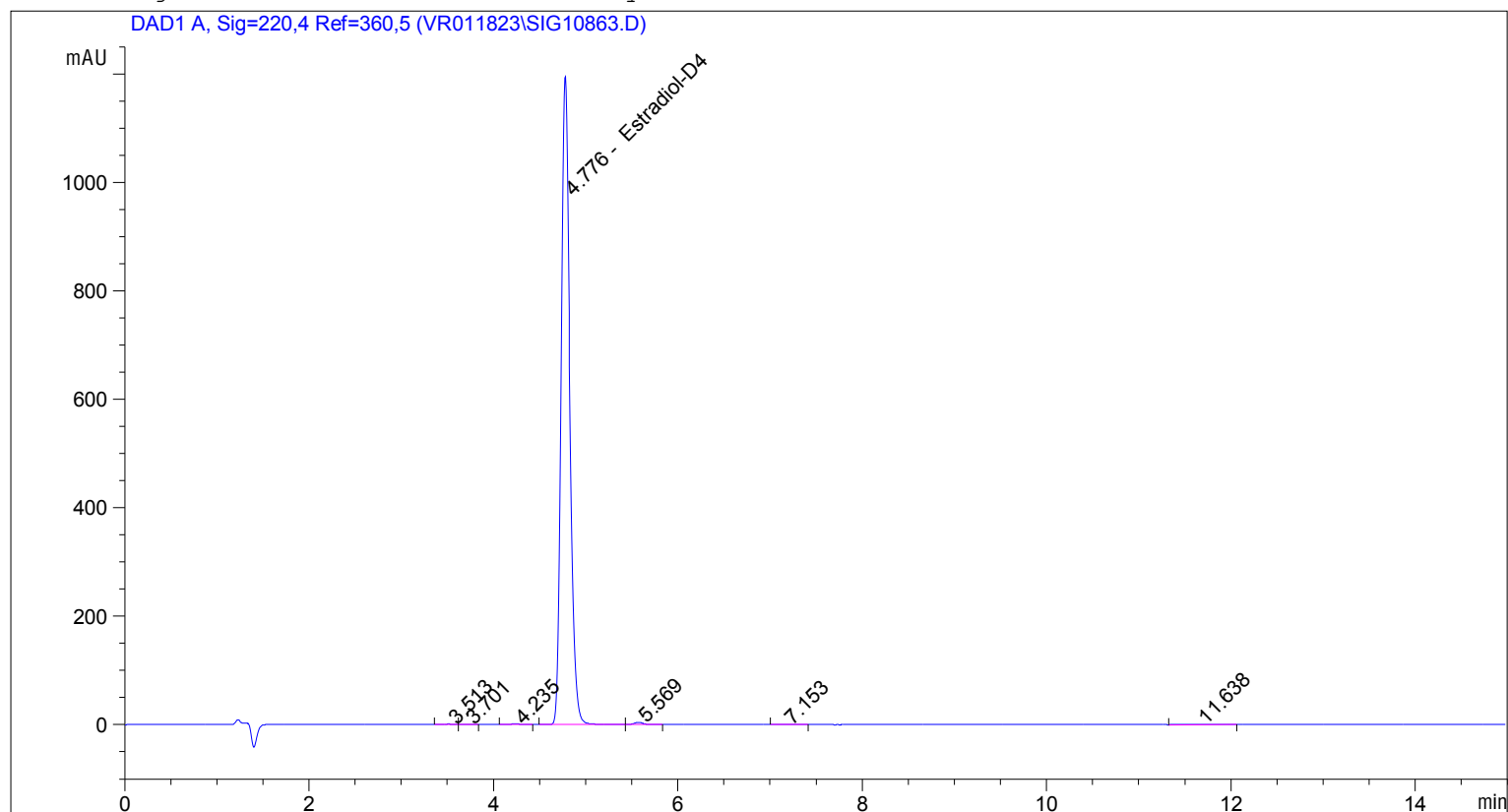
```
Totals :                               7561.65355
```

Sample Name: GR-11-099

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*** End of Report ***

Sample Name: GR-11-099 spl-2

```
=====
Acq. Operator   : vrusu
Acq. Instrument : Instrument 1                Location : Vial 9
Injection Date  : 2/7/2023 2:12:04 PM
                                           Inj Volume : 10.0 µl
Acq. Method     : C:\CHEM32\1\METHODS\VR020723_099.M
Last changed    : 2/7/2023 2:11:04 PM by vrusu
Analysis Method : C:\CHEM32\1\METHODS\VR020723_099PM.M
Last changed    : 2/7/2023 2:34:19 PM by vrusu
=====
```



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

```
Sorted By           :      Signal
Calib. Data Modified :      2/7/2023 2:31:05 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	3.513	BV	0.0892	6.80931	0.0857	?
2	3.701	VB	0.0913	3.87641	0.0488	?
3	4.235	BB	0.1099	9.57088	0.1205	?
4	4.776	BV	0.1008	7875.79590	99.1283	Estradiol-D4
5	5.569	VB	0.1082	30.33156	0.3818	?
6	7.153	BB	0.1257	3.19794	0.0403	?
7	11.638	BB	0.2111	15.47178	0.1947	?

Sample Name: GR-11-099 spl-2

Totals : 7945.05379

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*** End of Report ***