

| | |
|---------------------------|--|
| Name: | Upadacitinib-D4 (major) |
| Lot#: | GR-19-141 |
| Test Date: | 05/23/2024 (re-test date: 05/23/2029) |
| CAS No.: | 1310726-60-3 (unlabelled) |
| MF: | C ₁₇ H ₁₅ D ₄ F ₃ N ₆ O |
| MW: | 384.39 |
| Appearance: | Off-white solid |
| Purity: | 96.3% by HPLC (average of two sample preparations); >98% atom D |
| ¹H-NMR: | Conforms (shows some Hexanes) |
| MS-ESI (+) | Conforms (shows peaks at m/z = 385.19 [M+H] ⁺ for D4 form and at m/z = 384.18 [M+H] ⁺ for D3 form) |
| Storage | Store at -18°C in a dry place away from direct sunlight |

Approved by:

Date: 05/24/2024



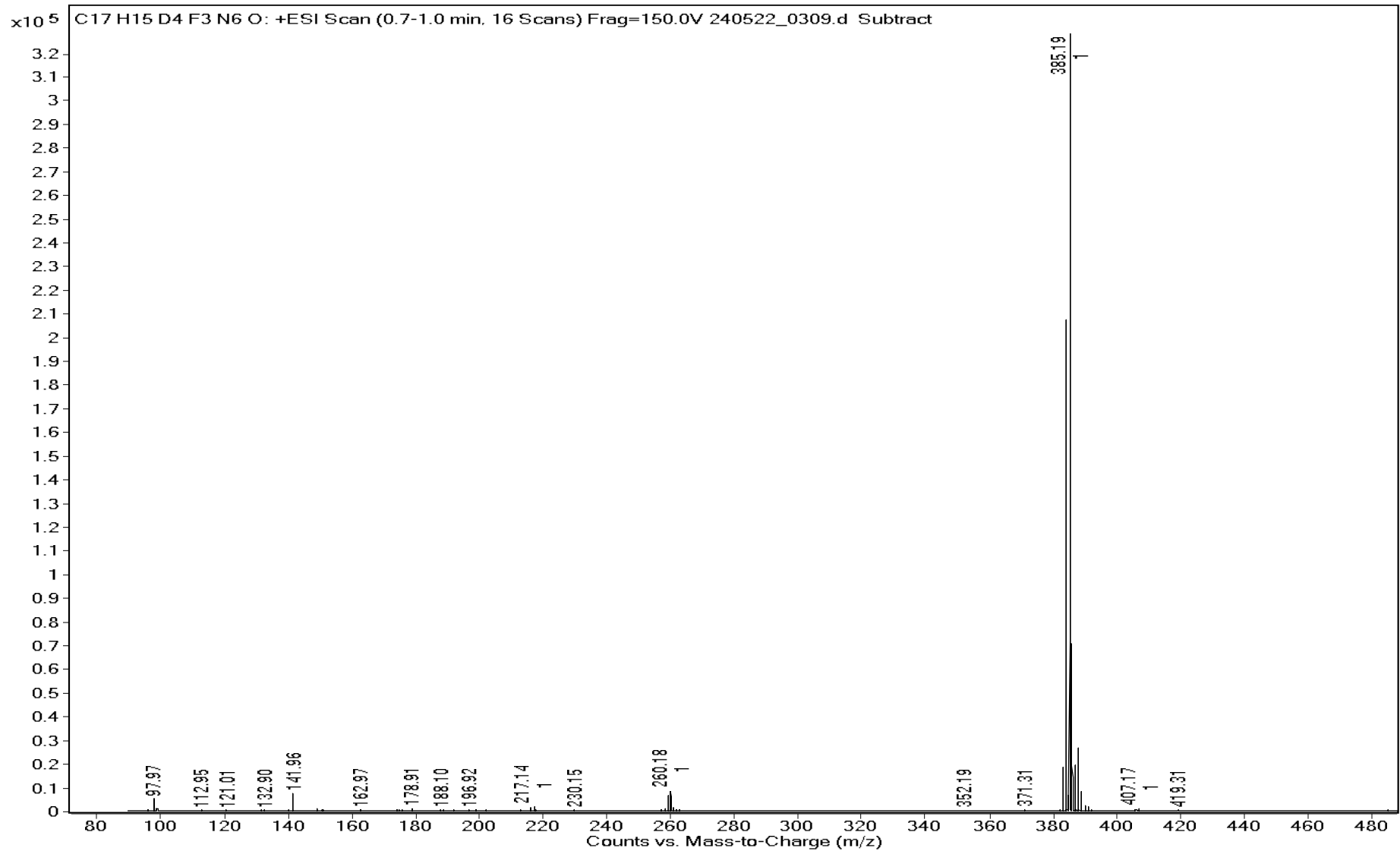
Viorica Rusu, QC/QA Manager

GR-19-141n

Upadacitinib-D4 (major)
1H-NMR, 600 MHz
Solvent: DMSO-D6
Lot No.: GR-19-141



| | | | | | |
|--------------------|----------------------|-------------------|------------------|-----------------------|------------------------|
| Sample Name | GR-19-141 | Data File | 240522_0309.d | Acq Method | HRMS.m |
| DA Method | AIMS_Accurate_Mass.m | Instrument | Agilent 6538 UHD | Acq Date, Time | 22/05/2024 11:51:32 AM |
| Comment | ESI+ | | | | |



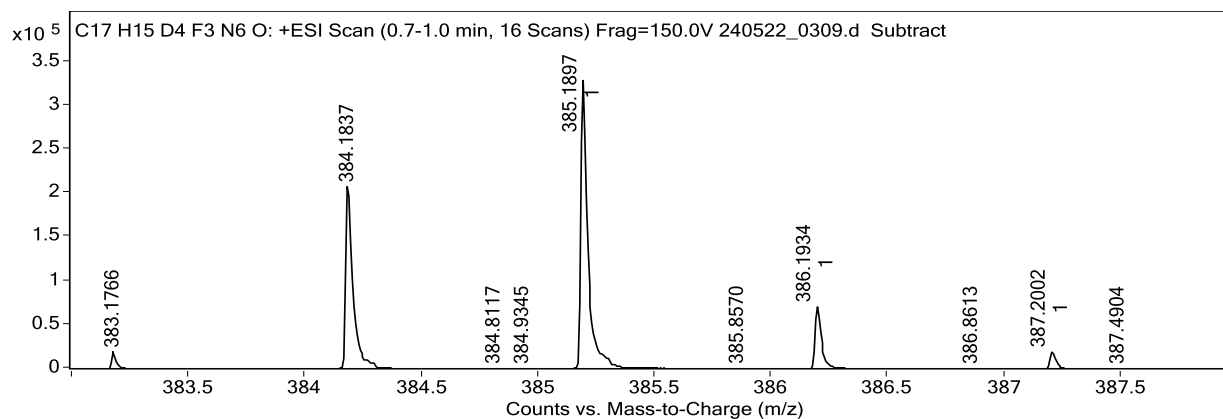
| | | | |
|--------------------|------------------|-----------------------|------------------------|
| Sample Name | GR-19-141 | Data File | 240522_0309.d |
| Acq Method | HRMS.m | DA Method | AIMS_Accurate_Mass.m |
| Instrument | Agilent 6538 UHD | Acq Date, Time | 22/05/2024 11:51:32 AM |
| Comment | ESI+ | | |

Target Ion Species

| Ion Species | m/z | Ionic Formula |
|--------------------|----------|--------------------|
| (M+H) ⁺ | 385.1897 | C17 H16 D4 F3 N6 O |

MFG Calculator Results

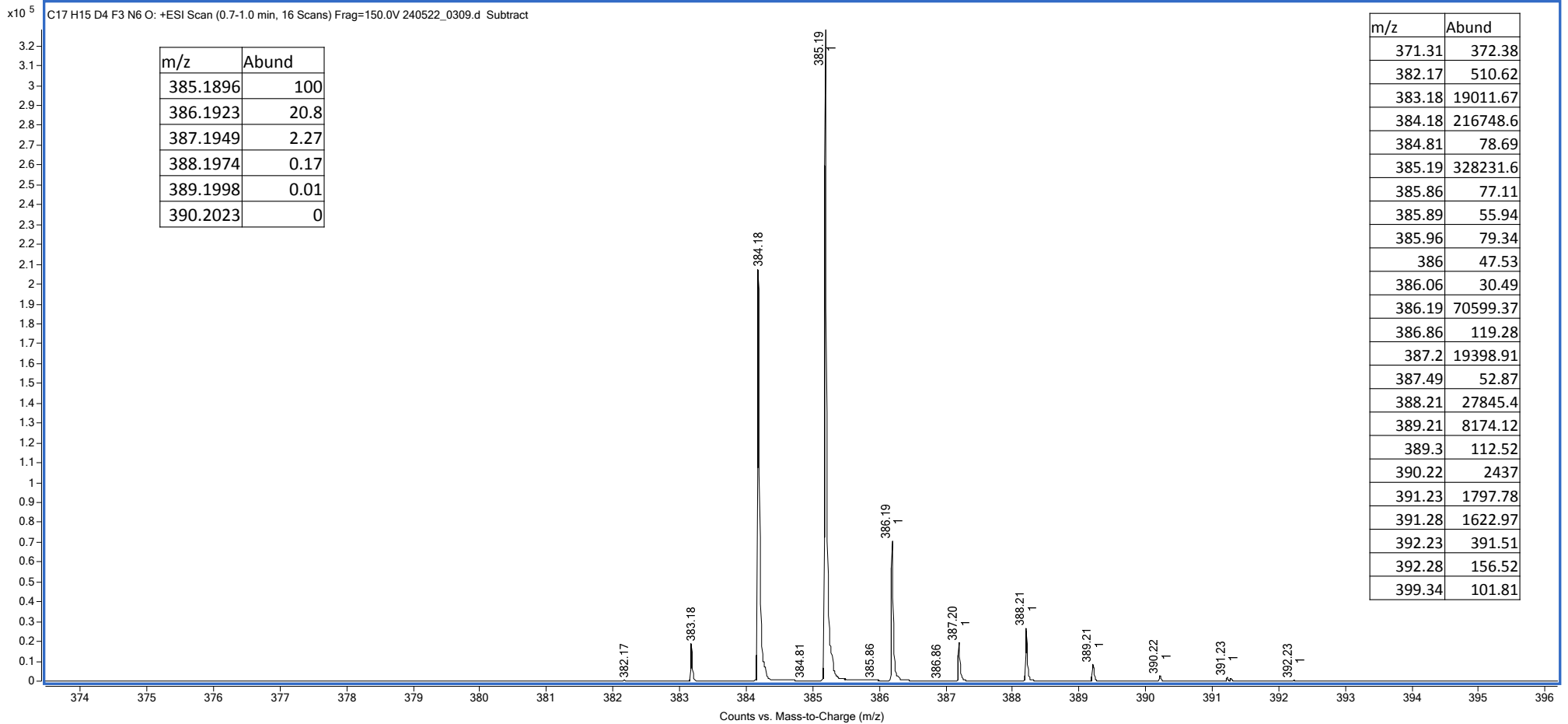
| Target m/z | Ionic Formula | Calc m/z | +/- (mDa) | +/- (ppm) | DBE | MFG Score |
|------------|---------------------|----------|-----------|-----------|------|-----------|
| 385.1897 | C17 H16 D4 F3 N6 O | 385.1896 | 0.1 | 0.3 | 10.0 | 91.04 |
| 385.1897 | C15 H16 D3 F3 N9 | 385.1898 | -0.1 | -0.3 | 10.0 | 88.65 |
| 385.1897 | C16 H24 D2 F3 N2 O5 | 385.1914 | -1.7 | -4.4 | 4.0 | 87.21 |
| 385.1897 | C23 H24 F3 N2 | 385.1886 | 1.1 | 2.9 | 12.0 | 86.04 |
| 385.1897 | C16 H20 D4 F3 N2 O5 | 385.1883 | 1.4 | 3.6 | 5.0 | 84.53 |
| 385.1897 | C14 H24 D F3 N5 O4 | 385.1916 | -1.9 | -4.9 | 4.0 | 83.40 |
| 385.1897 | C14 H20 D3 F3 N5 O4 | 385.1885 | 1.2 | 3.1 | 5.0 | 82.36 |
| 385.0605 | C16 H8 D2 F3 N2 O6 | 385.0611 | -0.6 | -1.6 | 12.0 | 81.60 |
| 385.1897 | C21 H20 D4 F3 O3 | 385.1923 | -2.6 | -6.7 | 9.0 | 80.95 |
| 385.0605 | C14 H8 D F3 N5 O5 | 385.0613 | -0.8 | -2.1 | 12.0 | 79.61 |
| 385.1897 | C12 H20 D2 F3 N8 O3 | 385.1887 | 1.0 | 2.6 | 5.0 | 79.17 |
| 385.1897 | C19 H20 D3 F3 N3 O2 | 385.1925 | -2.8 | -7.3 | 9.0 | 78.86 |
| 385.0605 | C21 H4 D4 F3 O4 | 385.0620 | -1.5 | -3.9 | 17.0 | 78.58 |
| 385.0605 | C19 H4 D3 F3 N3 O3 | 385.0622 | -1.7 | -4.4 | 17.0 | 78.16 |
| 385.0605 | C17 H4 D2 F3 N6 O2 | 385.0624 | -1.9 | -4.9 | 17.0 | 76.96 |
| 385.0605 | C12 H8 F3 N8 O4 | 385.0615 | -1.0 | -2.6 | 12.0 | 76.66 |
| 385.0605 | C13 H12 D F3 N O9 | 385.0600 | 0.5 | 1.3 | 7.0 | 74.91 |
| 385.0605 | C15 H4 D F3 N9 O | 385.0626 | -2.1 | -5.5 | 17.0 | 74.88 |
| 385.0605 | C11 H12 F3 N4 O8 | 385.0602 | 0.3 | 0.8 | 7.0 | 72.89 |
| 385.0605 | C23 H8 F3 N2 O | 385.0583 | 2.2 | 5.7 | 20.0 | 71.19 |



Predicted Isotope Match Table

| Isotope | m/z | Calc m/z | Diff (mDa) | Abund (%) | Calc Abund (%) | +/- |
|---------|----------|----------|------------|-----------|----------------|------|
| 1 | 385.1897 | 385.1896 | 0.1 | 100.0 | 100.0 | 0.0 |
| 2 | 386.1934 | 386.1923 | 1.1 | 21.5 | 20.8 | -0.7 |
| 3 | 387.2002 | 387.1949 | 5.3 | 5.9 | 2.3 | -3.6 |

C17 H15 D4 F3 N6 O: +ESI Scan (0.7-1.0 min, 16 Scans) Frag=150.0V 240522_0309.d Subtract



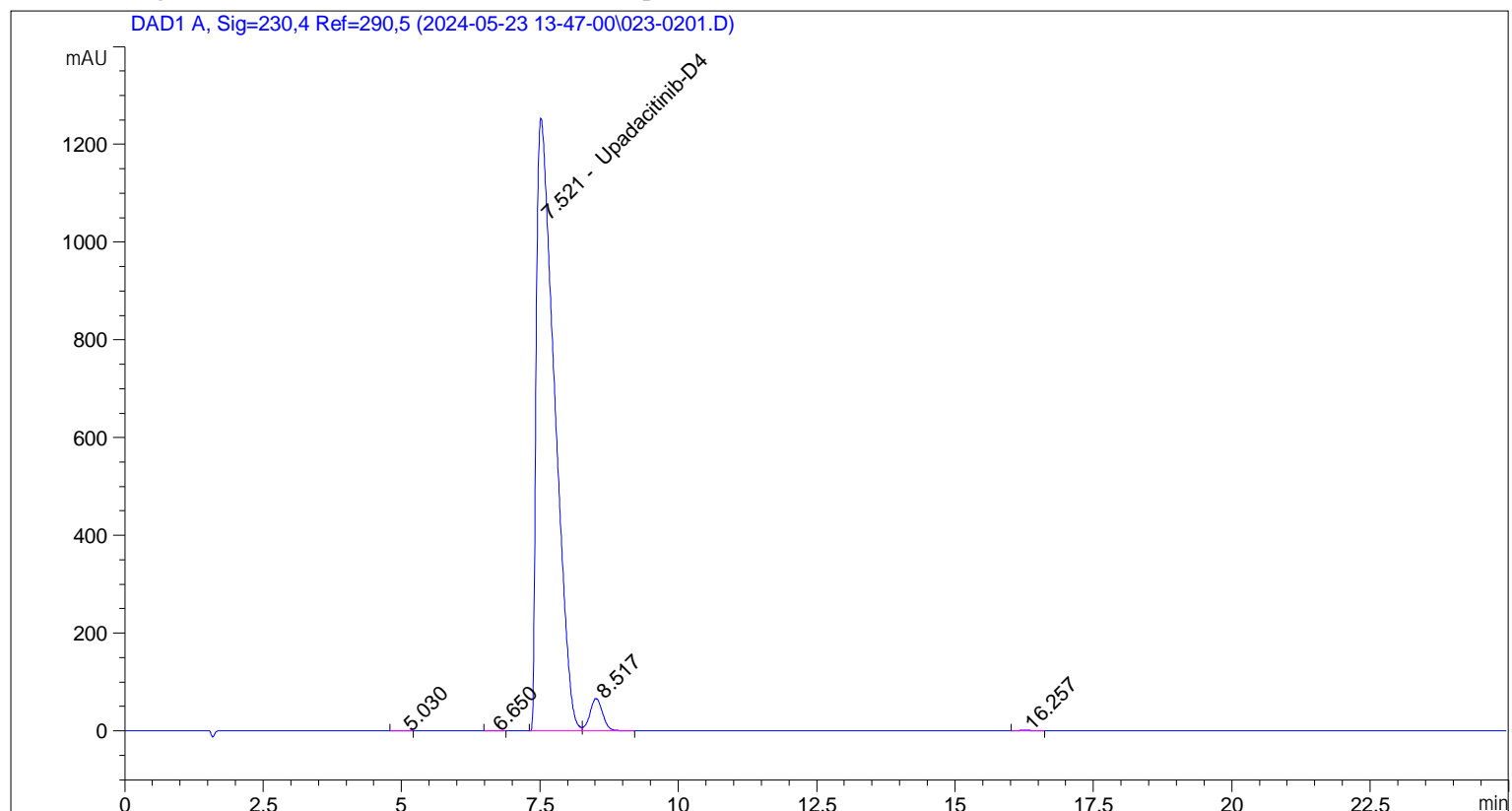
| m/z | Abund |
|----------|-------|
| 385.1896 | 100 |
| 386.1923 | 20.8 |
| 387.1949 | 2.27 |
| 388.1974 | 0.17 |
| 389.1998 | 0.01 |
| 390.2023 | 0 |

| m/z | Abund |
|--------|----------|
| 371.31 | 372.38 |
| 382.17 | 510.62 |
| 383.18 | 19011.67 |
| 384.18 | 216748.6 |
| 384.81 | 78.69 |
| 385.19 | 328231.6 |
| 385.86 | 77.11 |
| 385.89 | 55.94 |
| 385.96 | 79.34 |
| 386 | 47.53 |
| 386.06 | 30.49 |
| 386.19 | 70599.37 |
| 386.86 | 119.28 |
| 387.2 | 19398.91 |
| 387.49 | 52.87 |
| 388.21 | 27845.4 |
| 389.21 | 8174.12 |
| 389.3 | 112.52 |
| 390.22 | 2437 |
| 391.23 | 1797.78 |
| 391.28 | 1622.97 |
| 392.23 | 391.51 |
| 392.28 | 156.52 |
| 399.34 | 101.81 |

```
=====
Acq. Operator   : vrusu                      Seq. Line :    2
Acq. Instrument : Instrument 1                Location  : Vial 23
Injection Date  : 5/23/2024 2:16:59 PM       Inj       :    1
                                                    Inj Volume: 10.0 µl

Acq. Method     : C:\CHEM32\1\DATA\2024-05-23 13-47-00\VR052324_141.M
Last changed    : 5/23/2024 2:15:37 PM by vrusu
                  (modified after loading)

Analysis Method : C:\CHEM32\1\METHODS\VR052424_141PM.M
Last changed    : 5/24/2024 7:46:08 AM by vrusu
=====
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                          Area Percent Report
=====
```

```
Sorted By           :      Signal
Calib. Data Modified :      5/24/2024 7:44:27 AM
Multiplier:         :      1.0000
Dilution:           :      1.0000
Use Multiplier & Dilution Factor with ISTDs
```

Signal 1: DAD1 A, Sig=230,4 Ref=290,5

| Peak # | RetTime [min] | Type | Width [min] | Area [mAU*s] | Area % | Name |
|--------|---------------|------|-------------|--------------|---------|-----------------|
| 1 | 5.030 | BB | 0.1556 | 6.80405 | 0.0229 | ? |
| 2 | 6.650 | BB | 0.1439 | 4.79774 | 0.0162 | ? |
| 3 | 7.521 | BV | 0.3440 | 2.85849e4 | 96.3889 | Upadacitinib-D4 |
| 4 | 8.517 | VB | 0.2472 | 1046.55920 | 3.5290 | ? |
| 5 | 16.257 | BB | 0.2105 | 12.72879 | 0.0429 | ? |

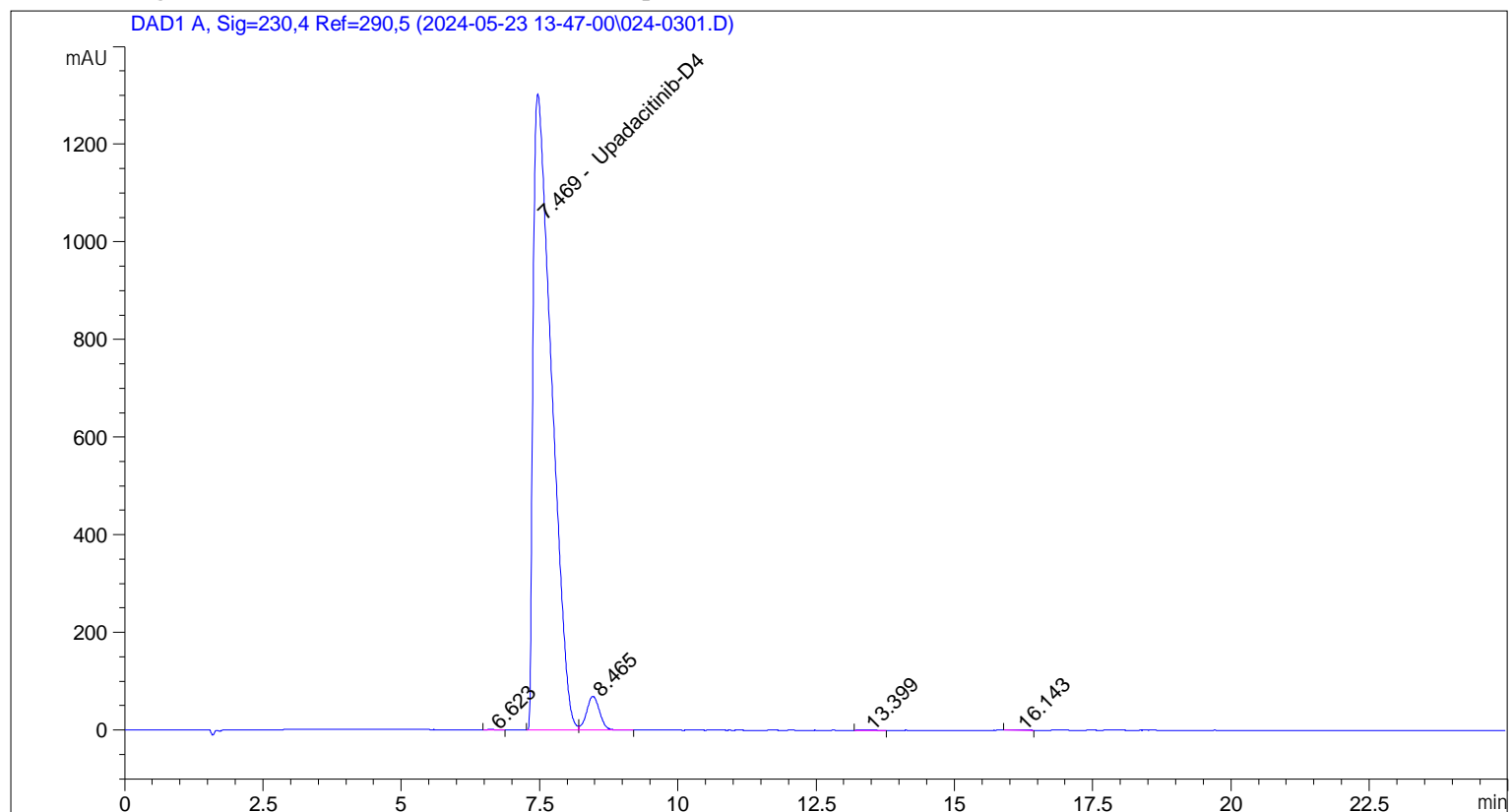
Totals : 2.96558e4

Sample Name: GR-19-141

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*** End of Report ***

=====
Acq. Operator : vrusu Seq. Line : 3
Acq. Instrument : Instrument 1 Location : Vial 24
Injection Date : 5/23/2024 2:43:23 PM Inj : 1
Inj Volume : 10.0 µl
Acq. Method : C:\CHEM32\1\DATA\2024-05-23 13-47-00\VR052324_141.M
Last changed : 5/23/2024 2:15:37 PM by vrusu
(modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\VR052424_141PM.M
Last changed : 5/24/2024 7:46:08 AM by vrusu



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

Sorted By : Signal
Calib. Data Modified : 5/24/2024 7:44:27 AM
Multiplier: : 1.0000
Dilution: : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: DAD1 A, Sig=230,4 Ref=290,5

| Peak # | RetTime [min] | Type | Width [min] | Area [mAU*s] | Area % | Name |
|--------|---------------|------|-------------|--------------|---------|-----------------|
| 1 | 6.623 | BB | 0.1266 | 9.42116 | 0.0302 | ? |
| 2 | 7.469 | BV | 0.3373 | 3.00708e4 | 96.2874 | Upadacitinib-D4 |
| 3 | 8.465 | VB | 0.2552 | 1135.25513 | 3.6351 | ? |
| 4 | 13.399 | BB | 0.1932 | 5.03826 | 0.0161 | ? |
| 5 | 16.143 | BB | 0.1803 | 9.72519 | 0.0311 | ? |

Totals : 3.12302e4

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*** End of Report ***