

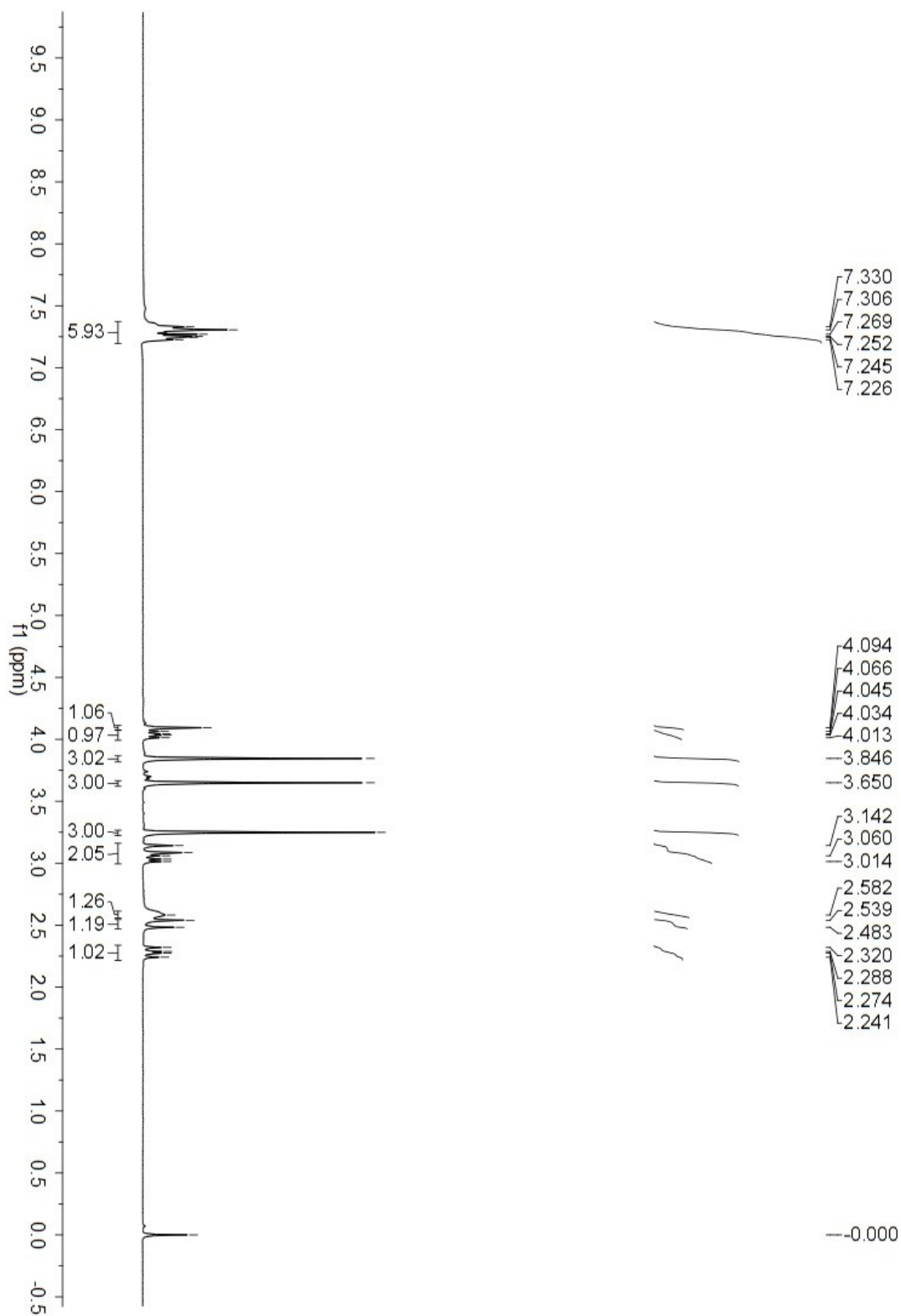
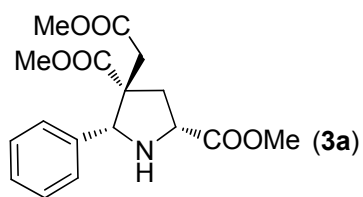
Supporting Information

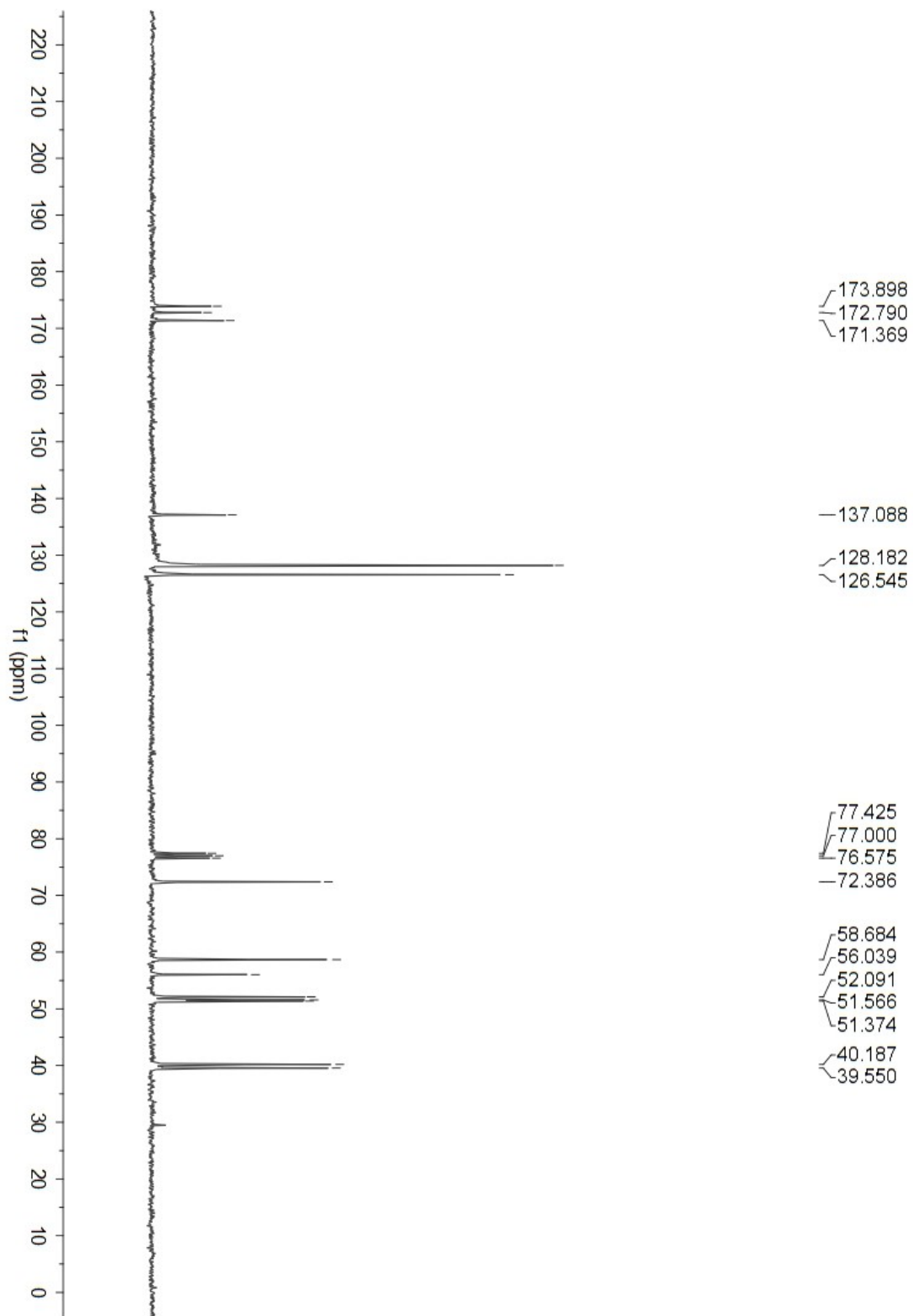
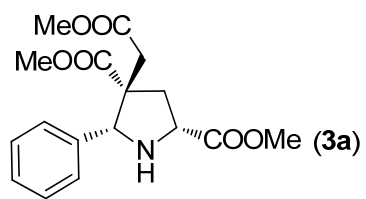
Cu(I)/TF-BiphamPhos-Catalyzed Asymmetric 1,3-Dipolar Cycloaddition of Azomethine Ylides with Dimethyl Itaconate and 2-Methyleneglutarate

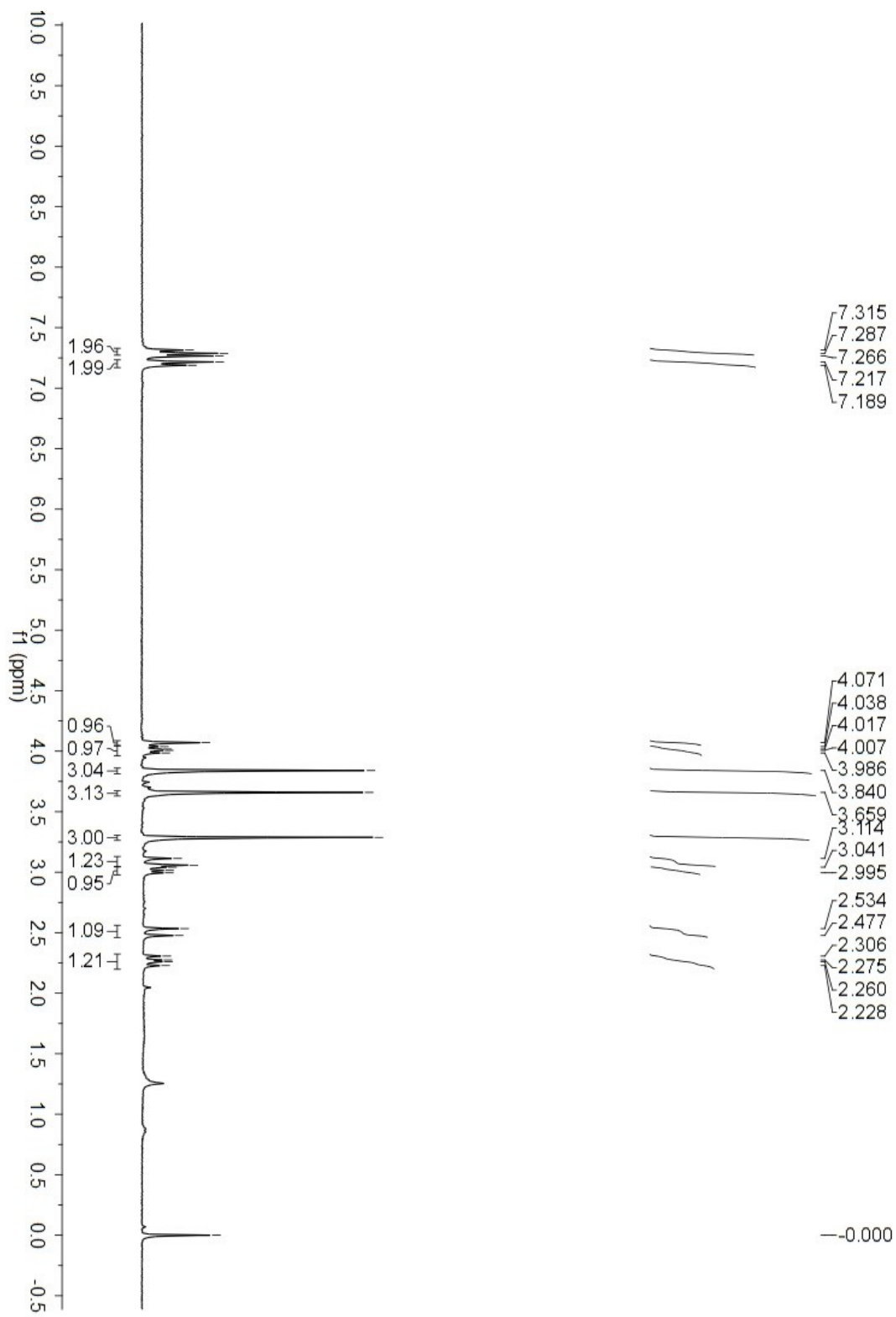
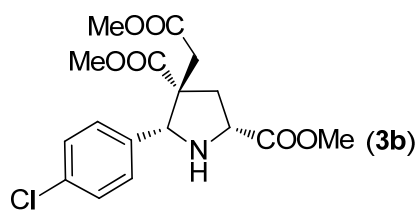
Table of Contents

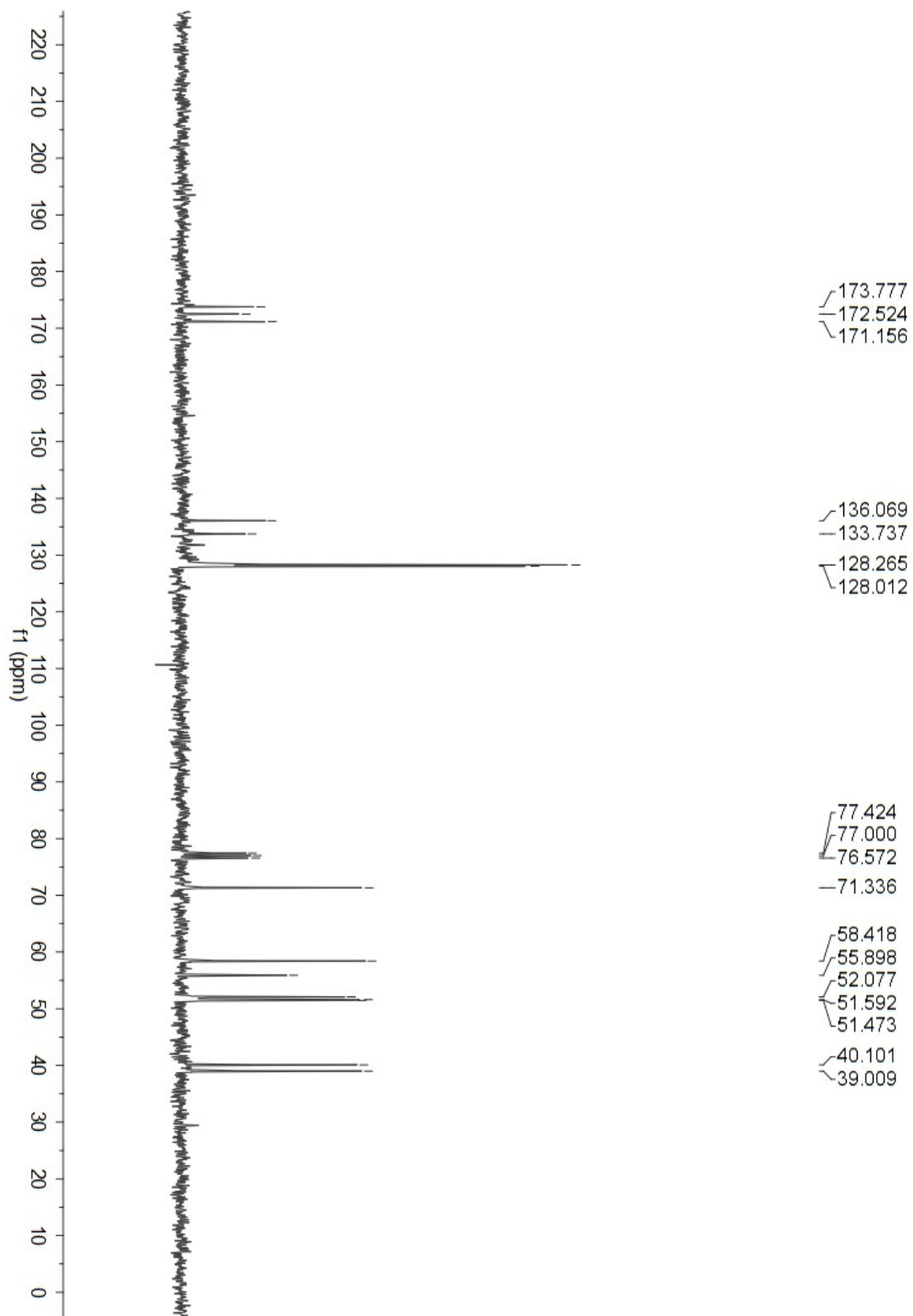
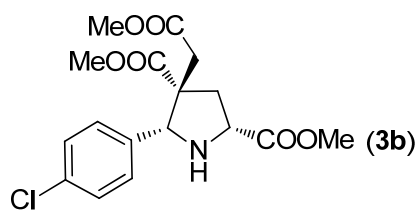
| | |
|--|--------|
| I. ¹ H NMR and ¹³ C NMR Spectra..... | S2-27 |
| II. HPLC Chromatograms..... | S28-53 |

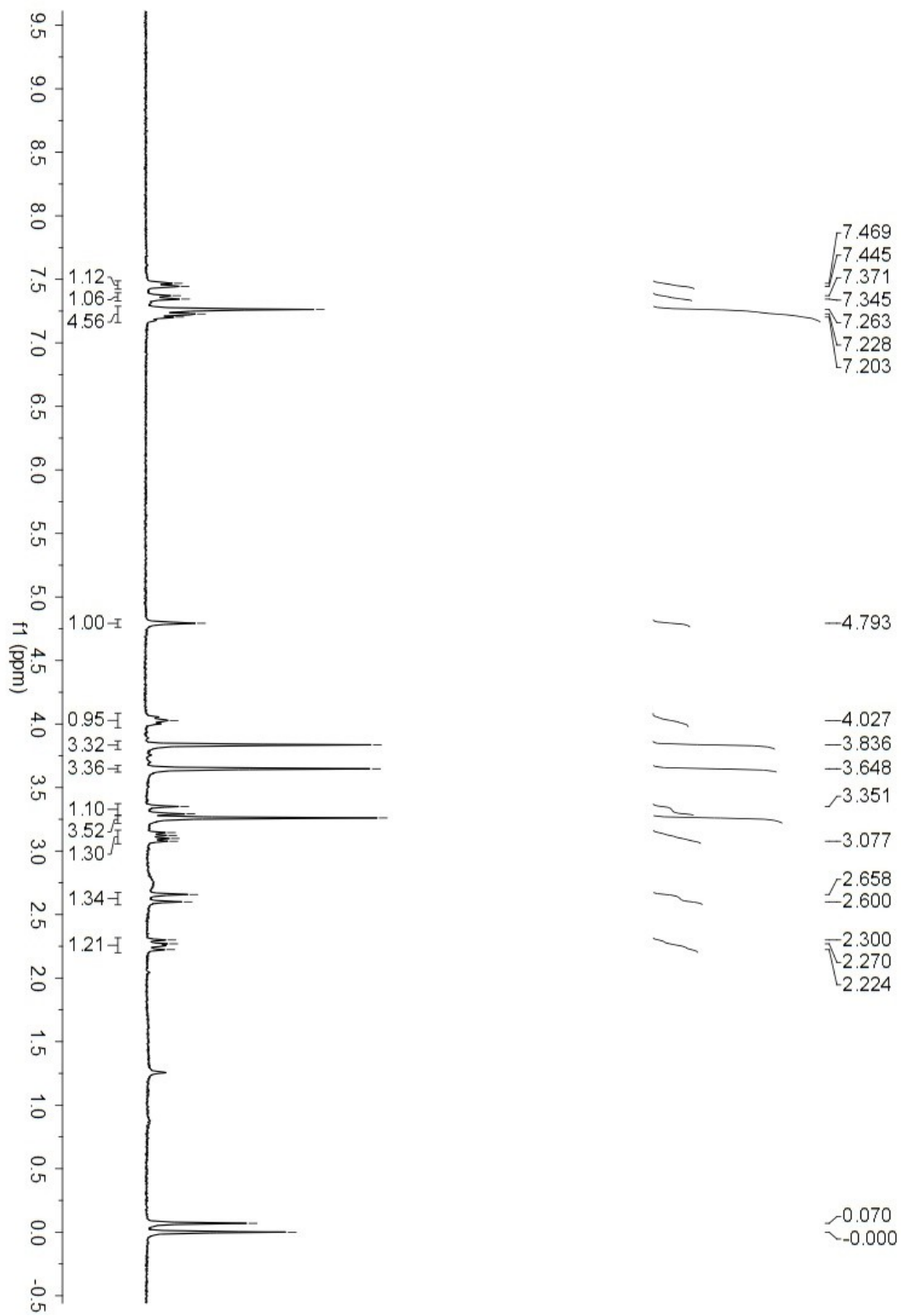
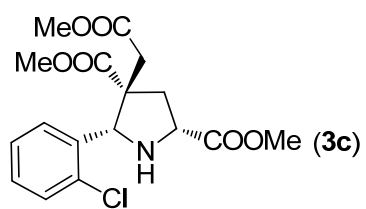
I. ^1H NMR and ^{13}C NMR Spectra

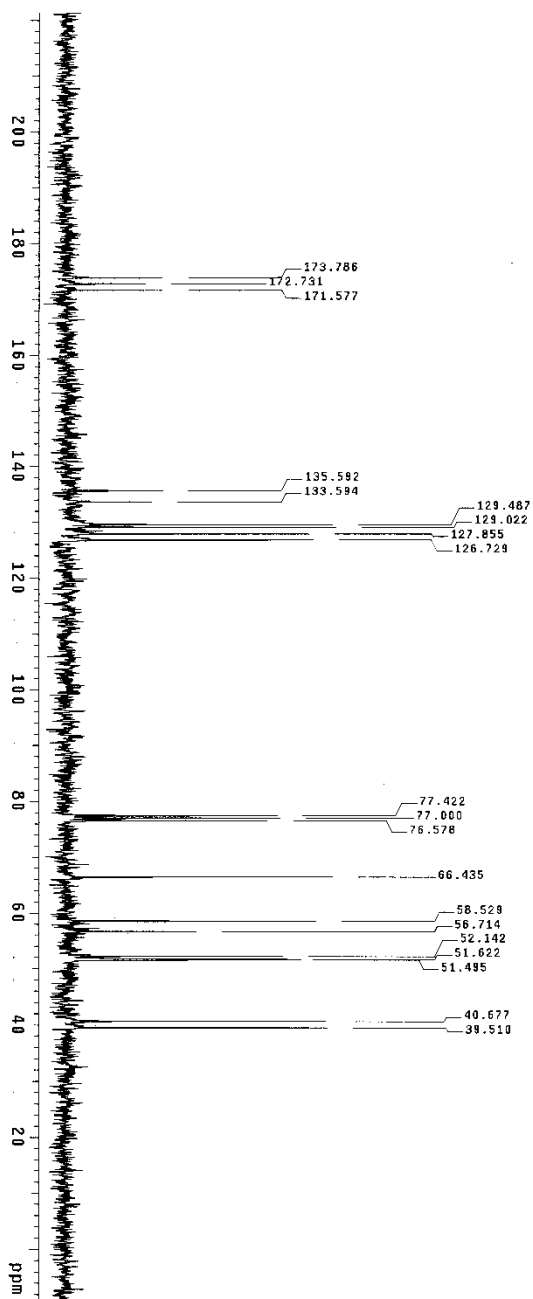
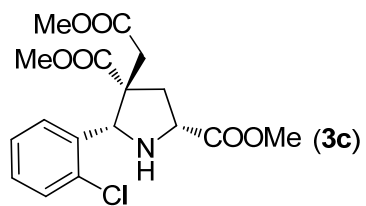




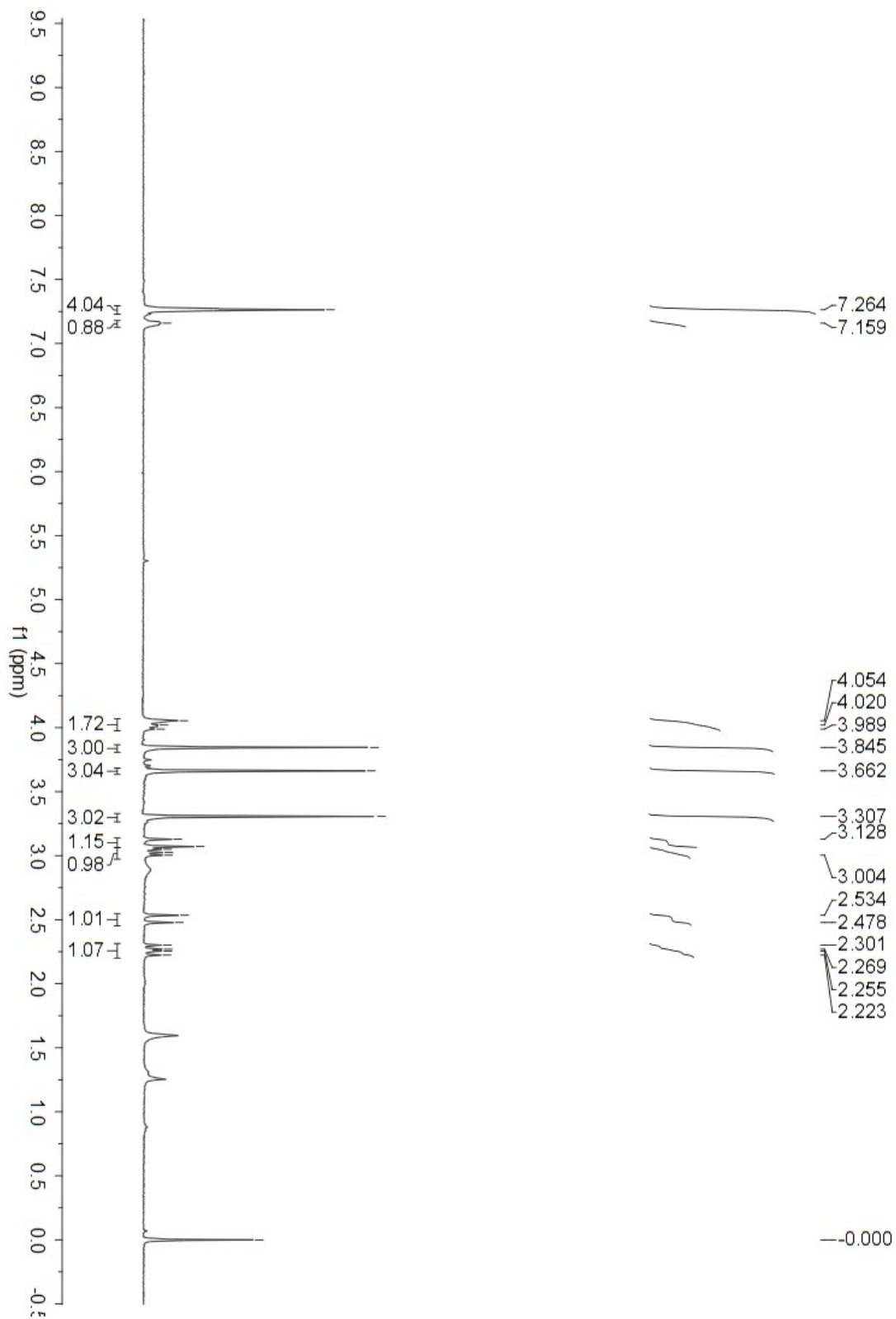
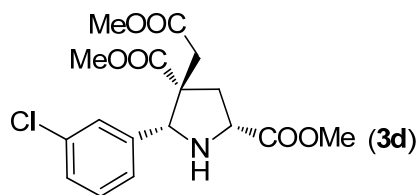


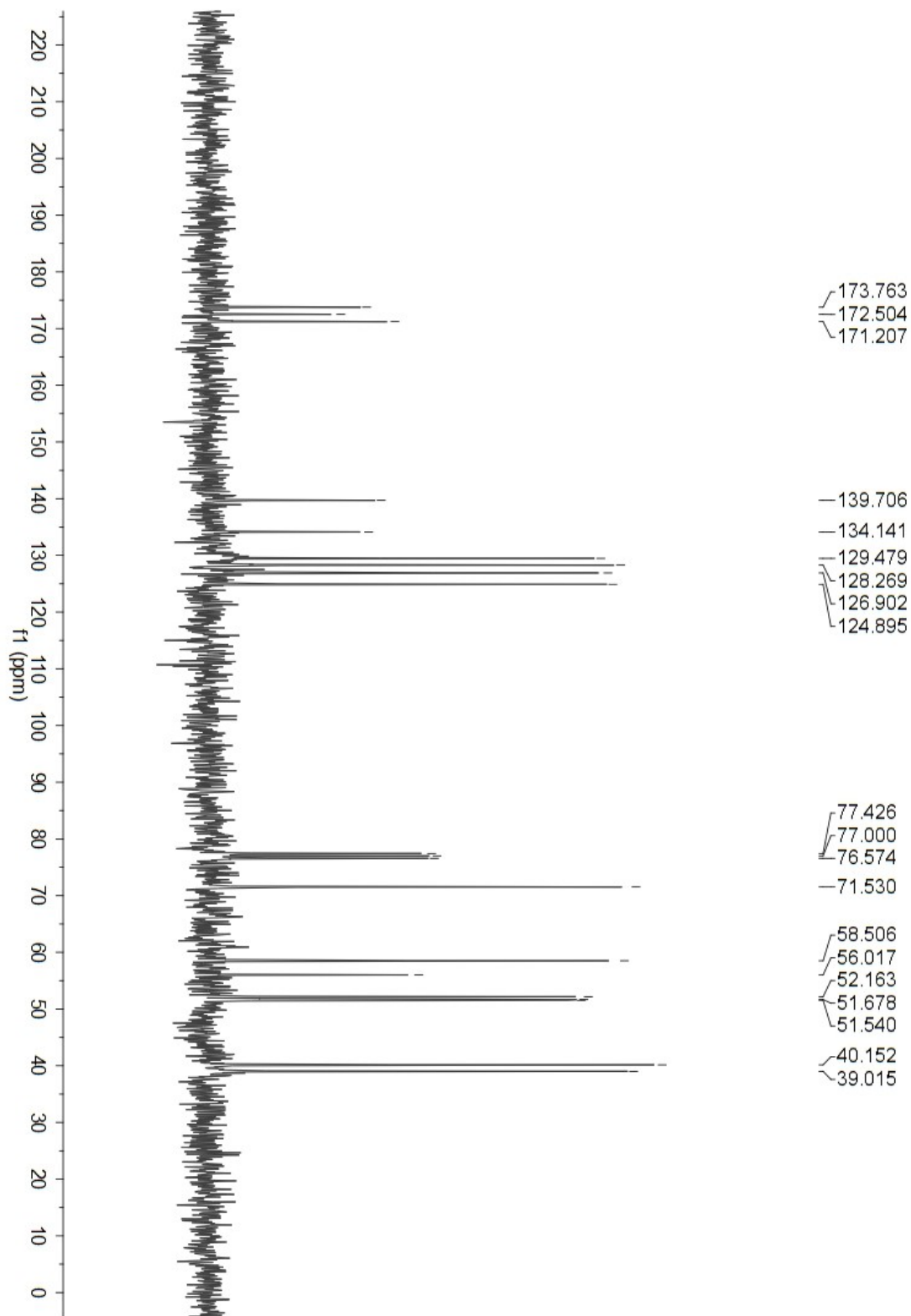
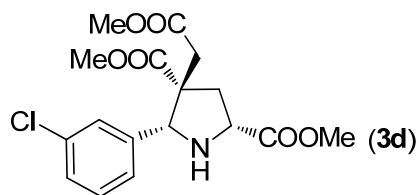


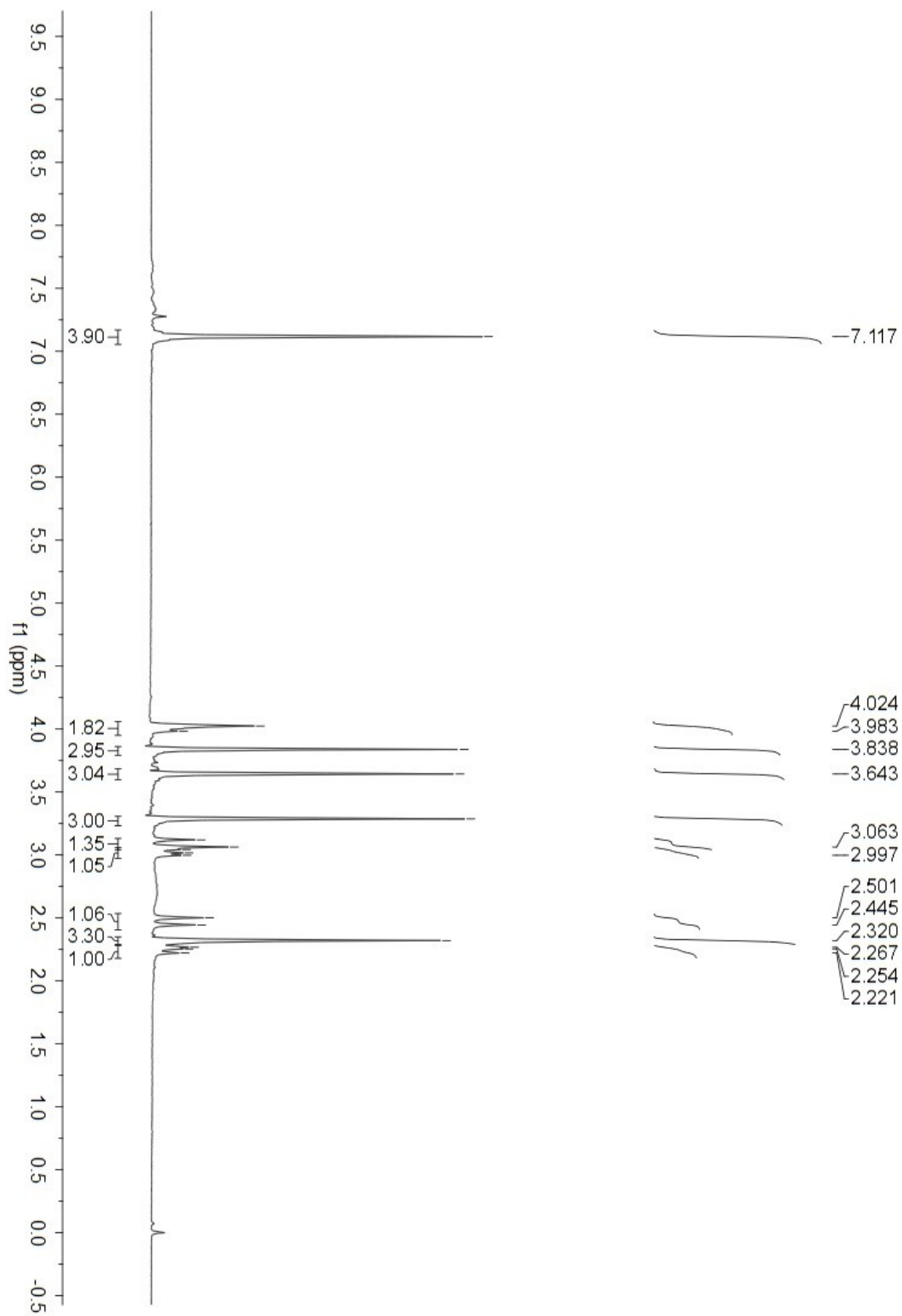
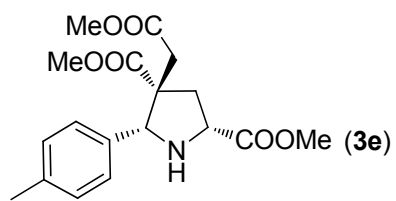


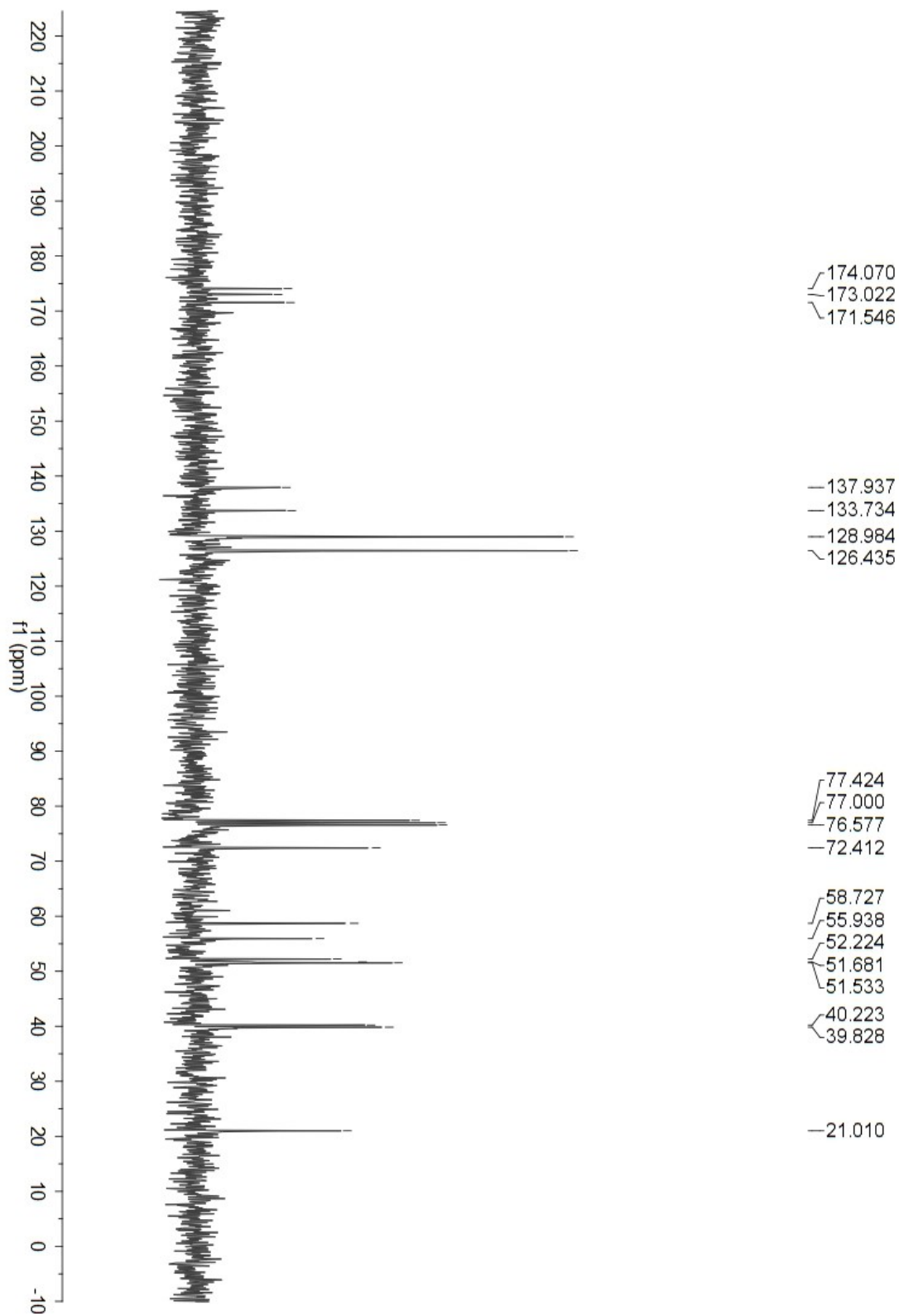
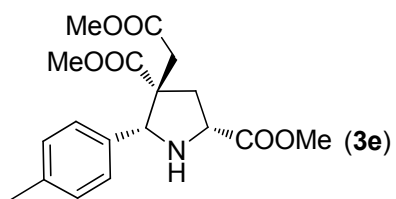


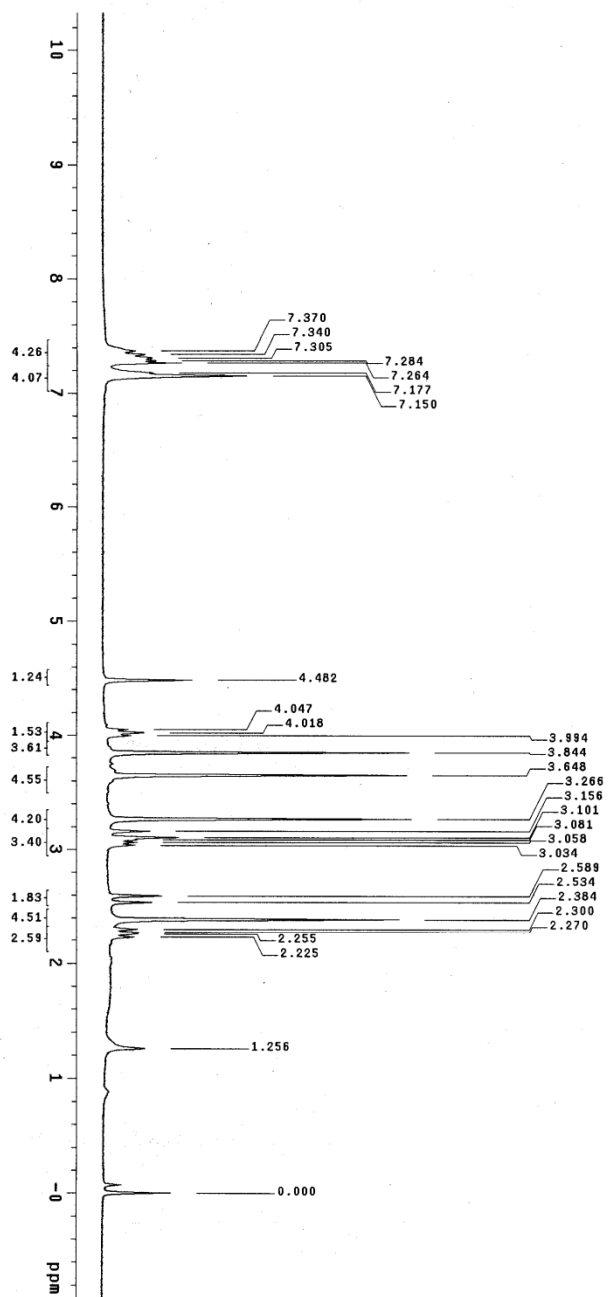
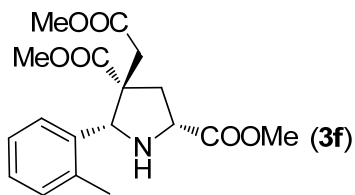
C13-HZ1-9-69C



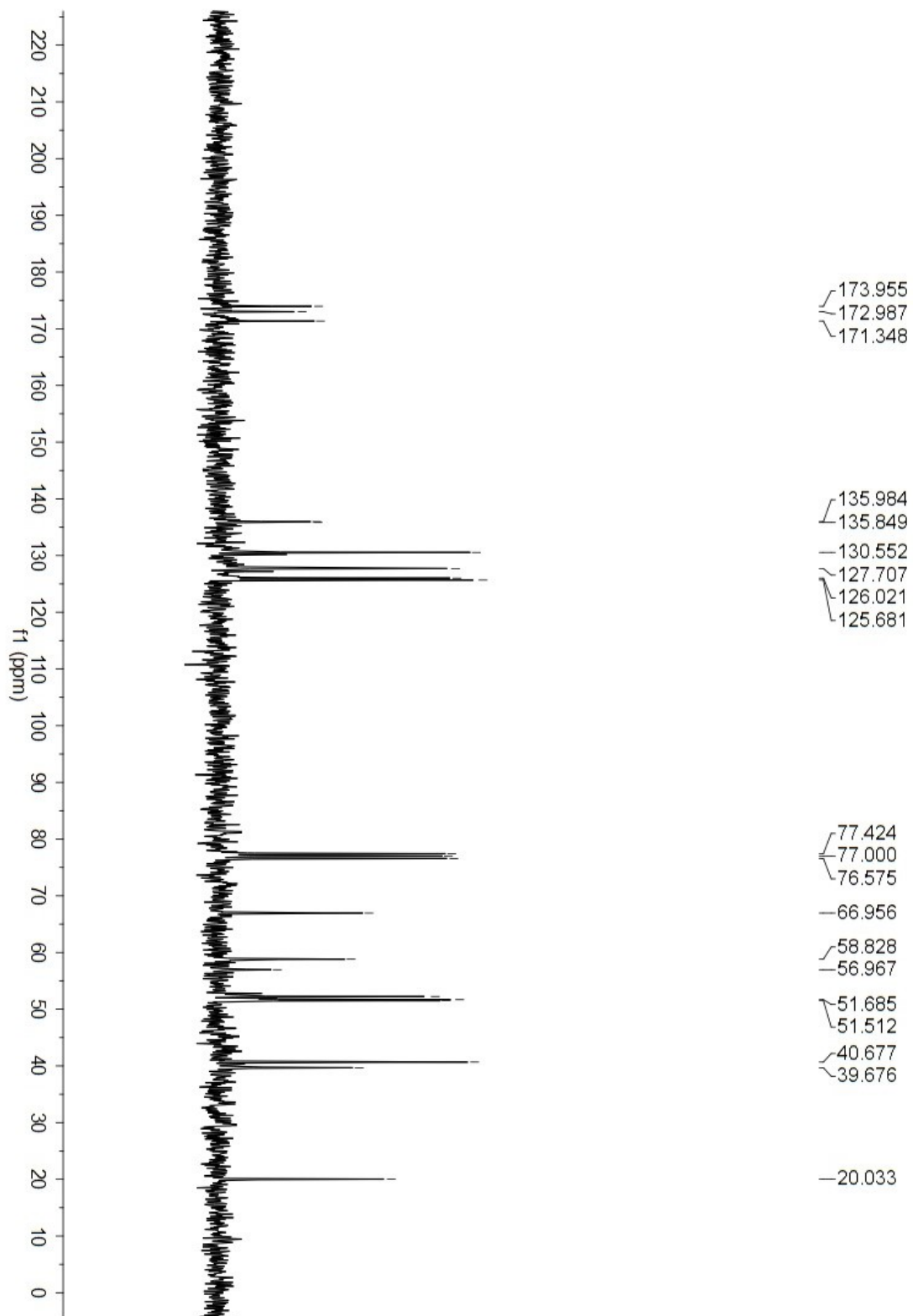
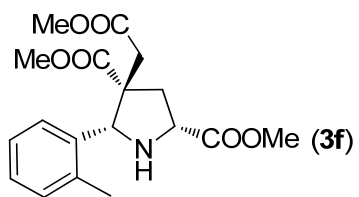


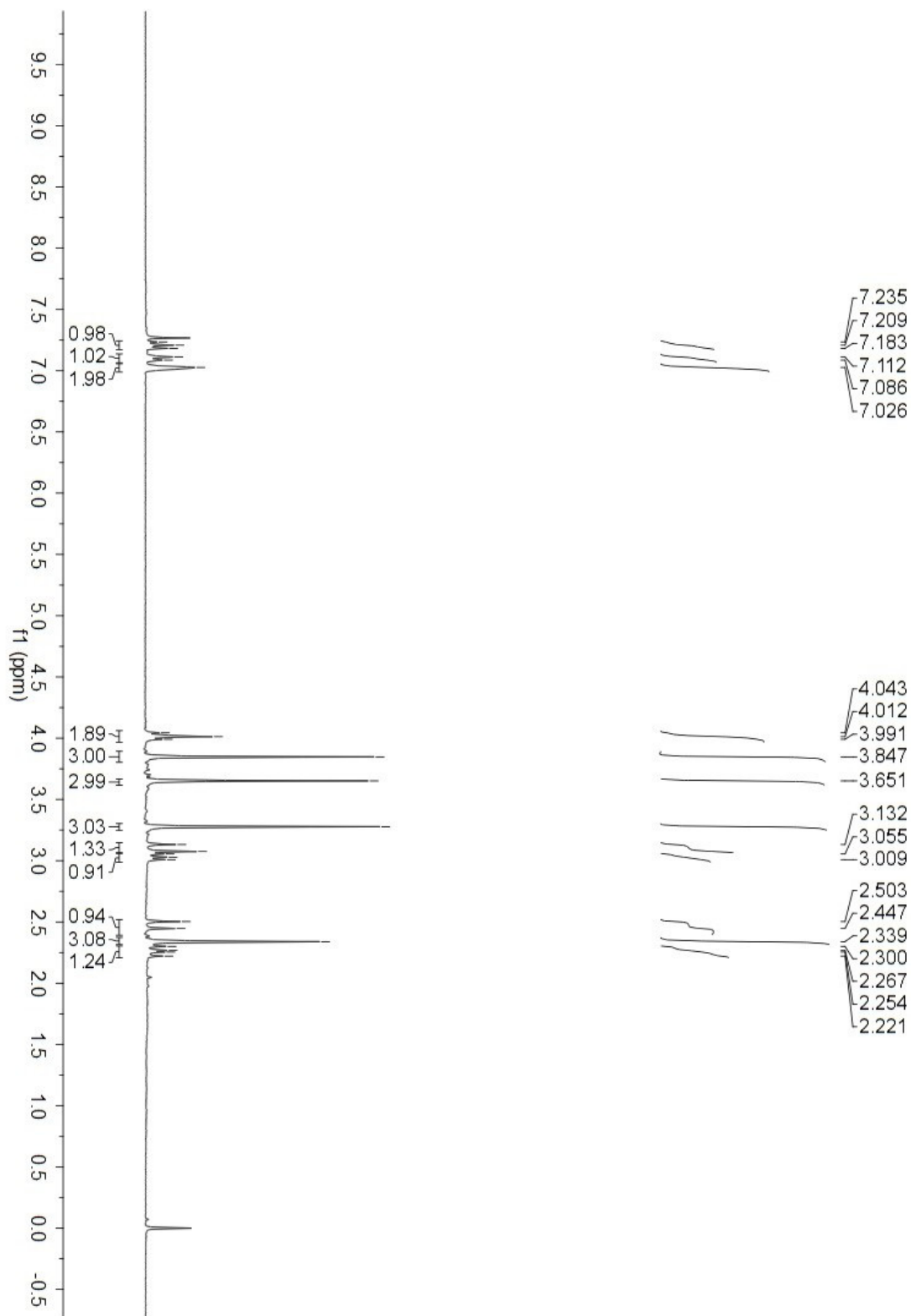
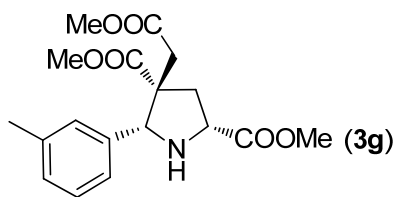


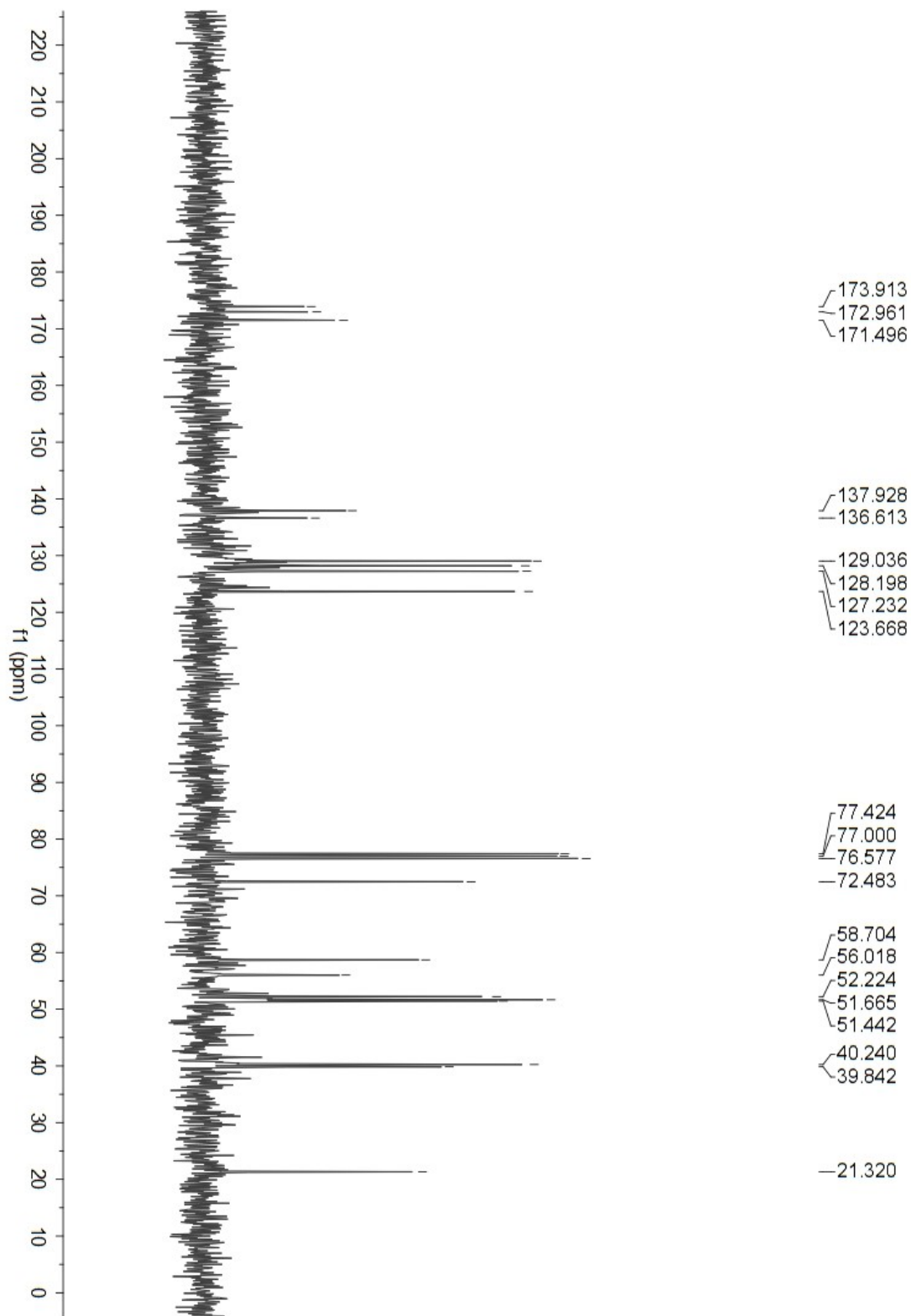
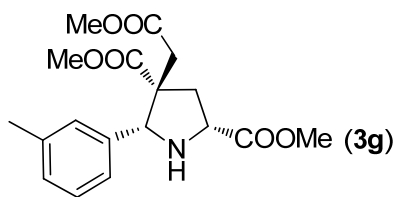


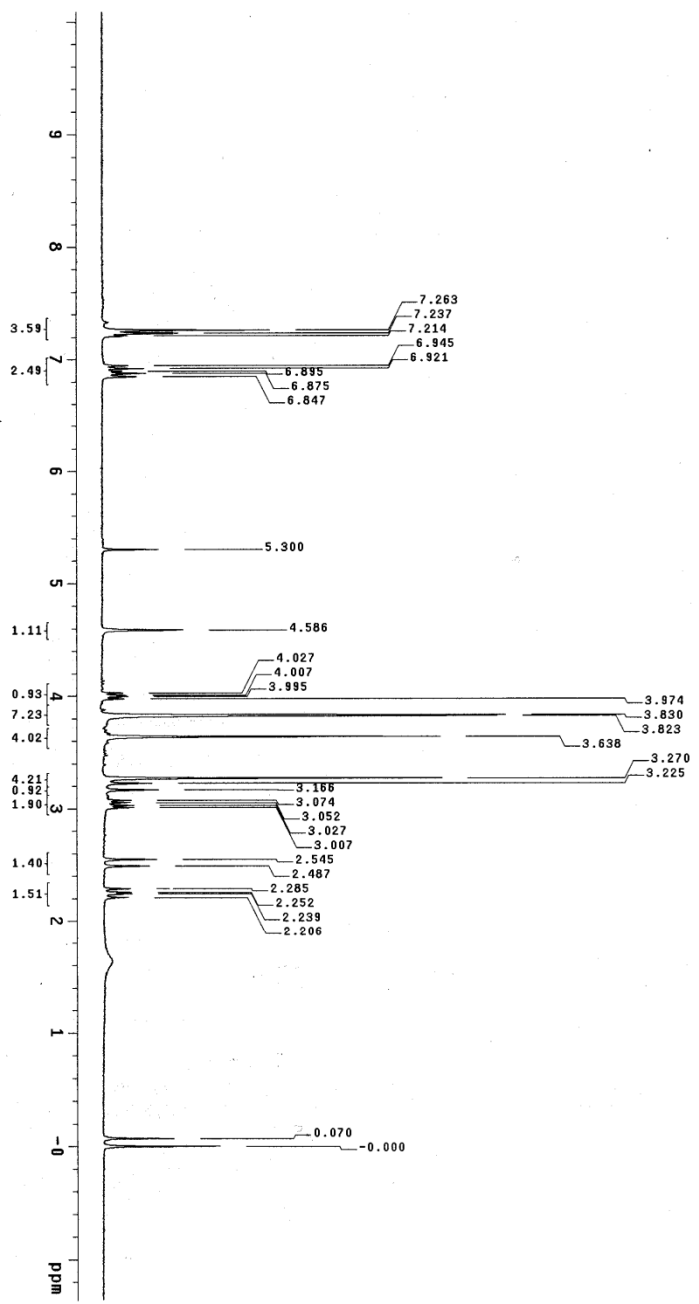
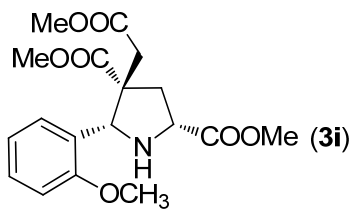


h21-9-63a

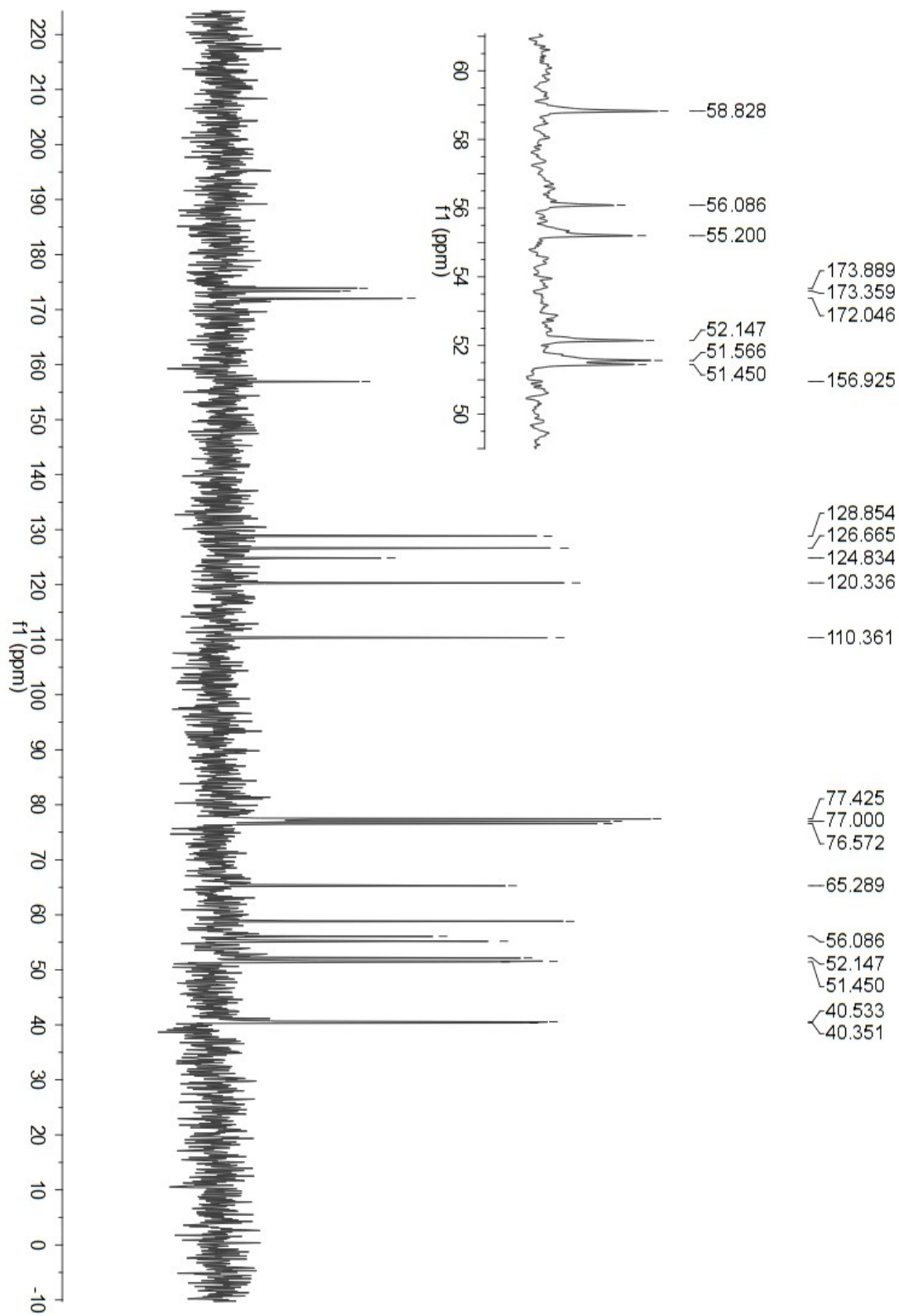
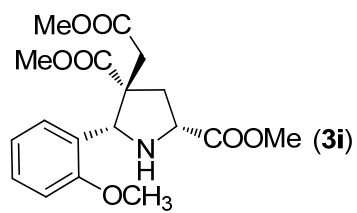


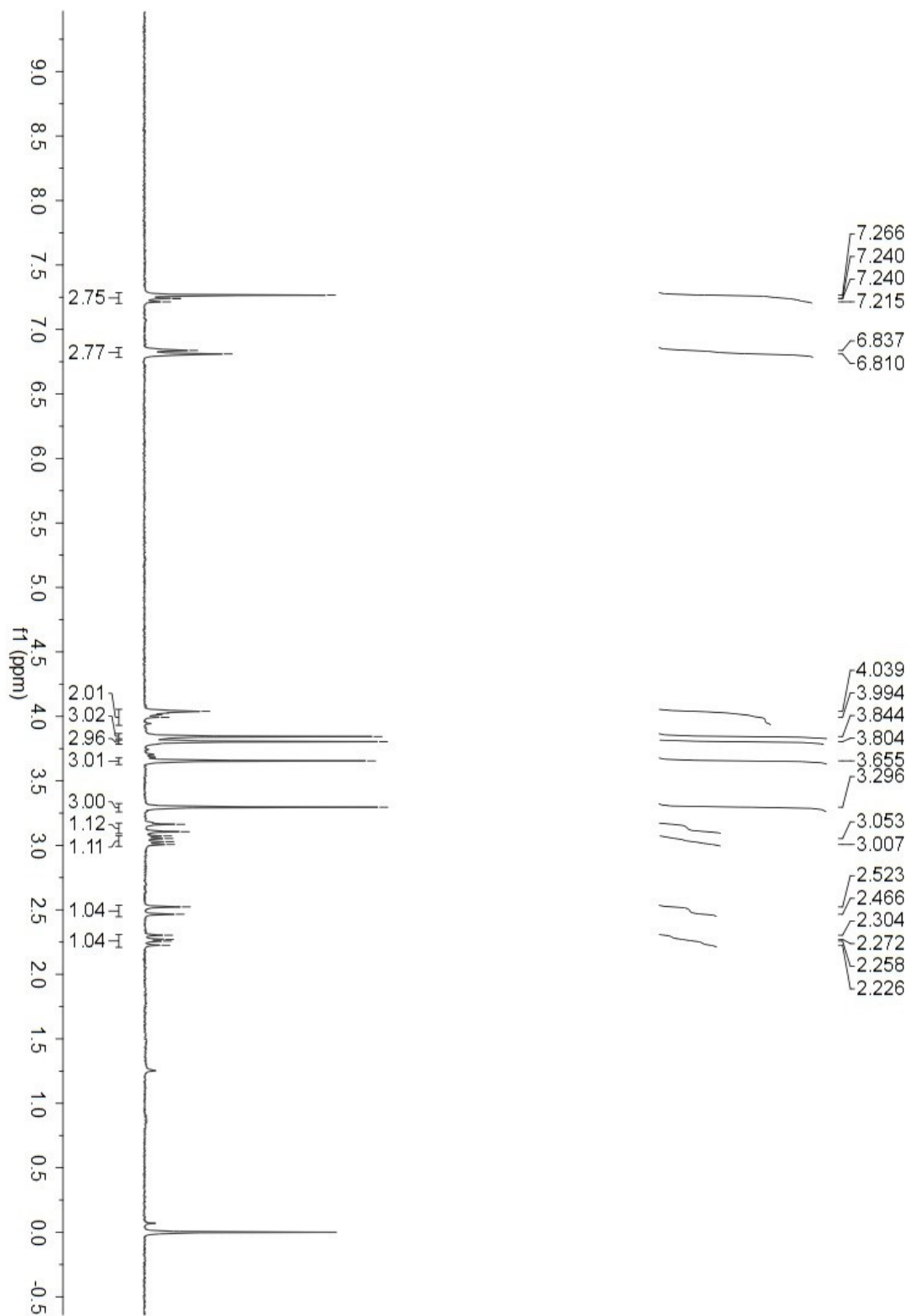
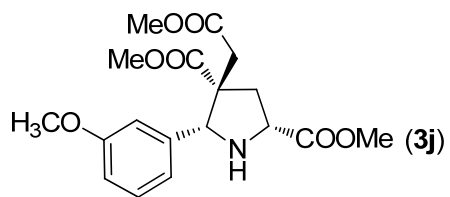


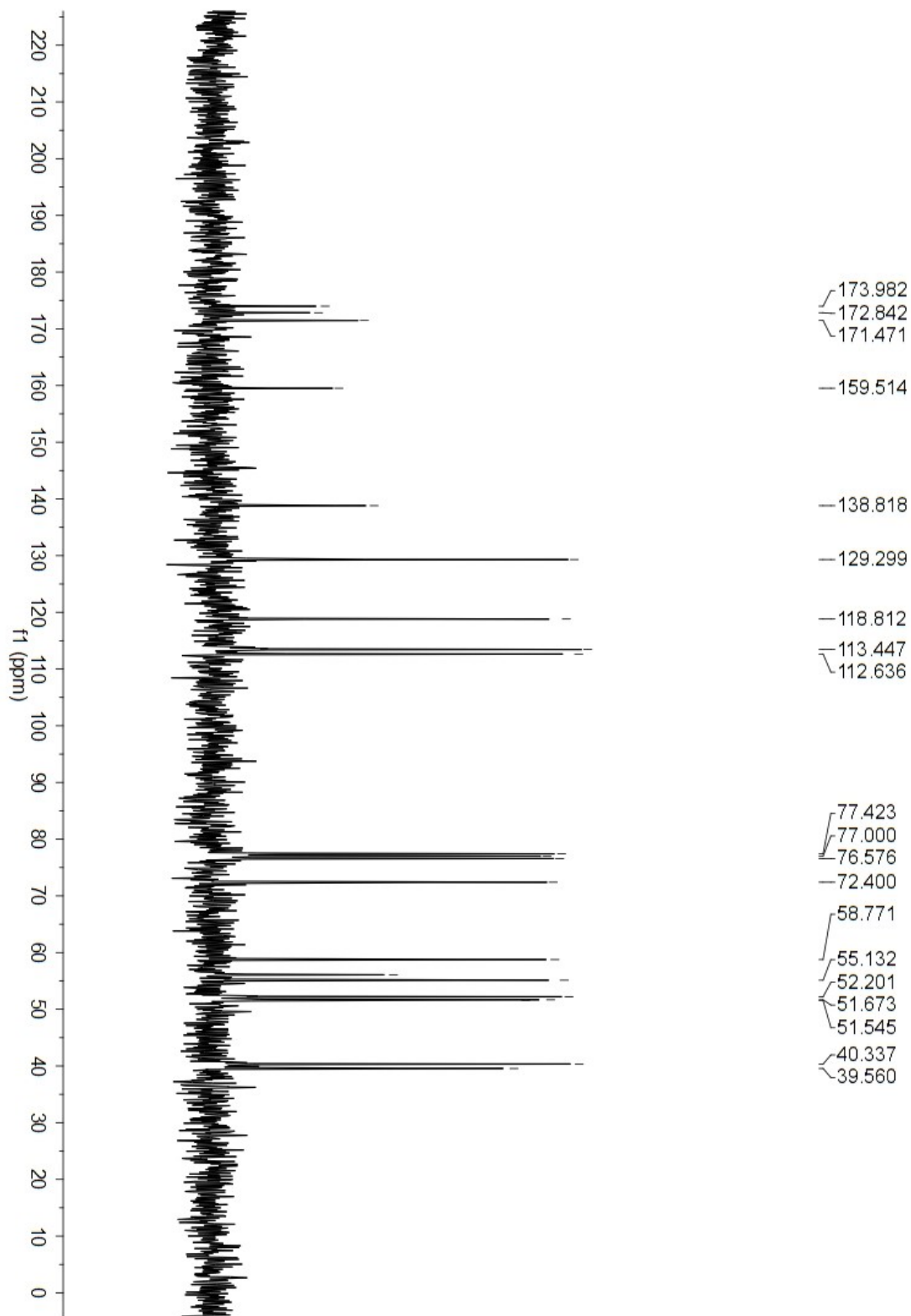
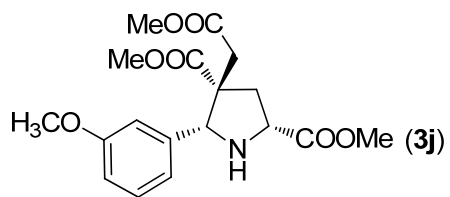


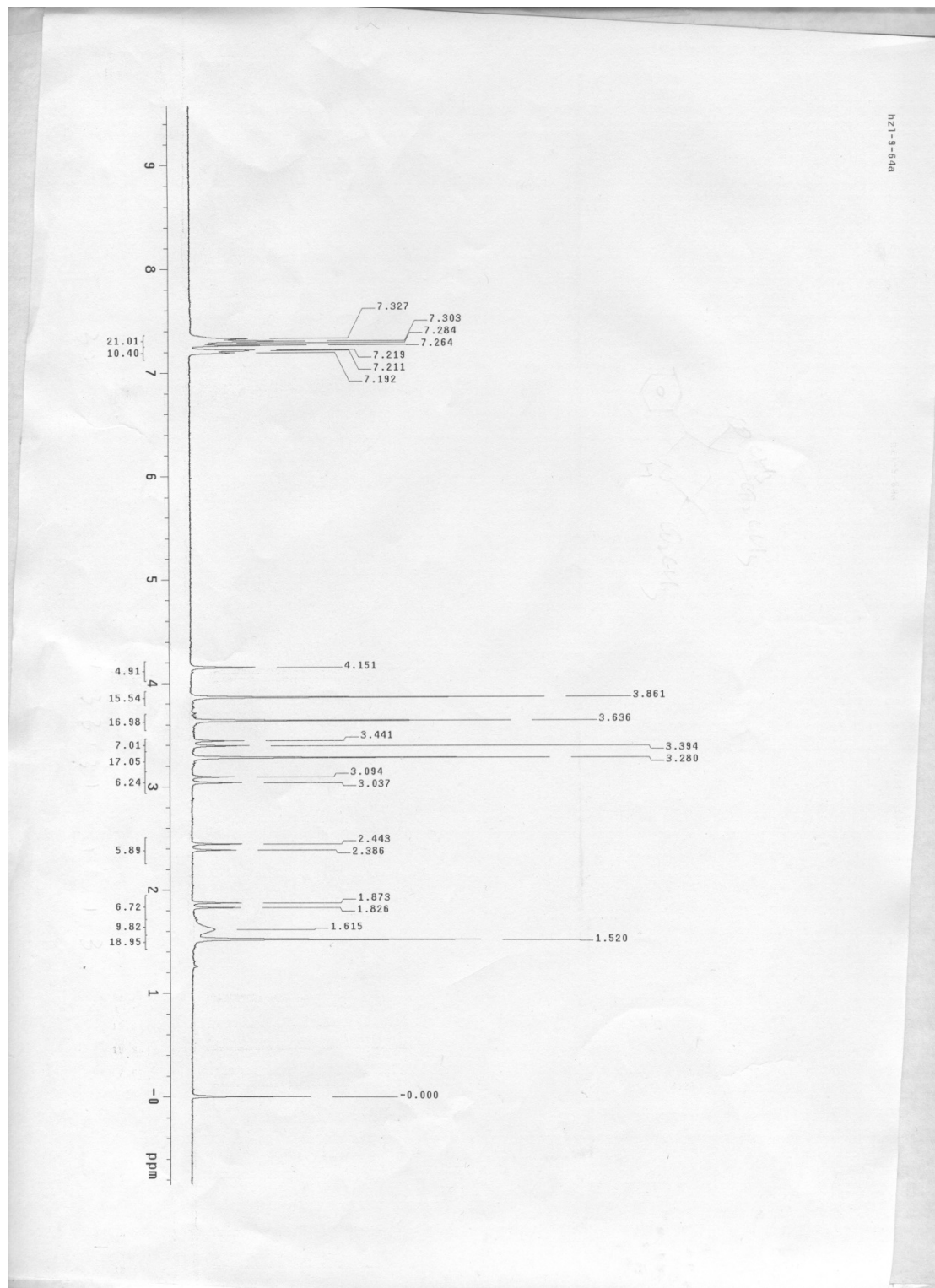
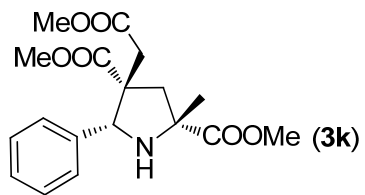


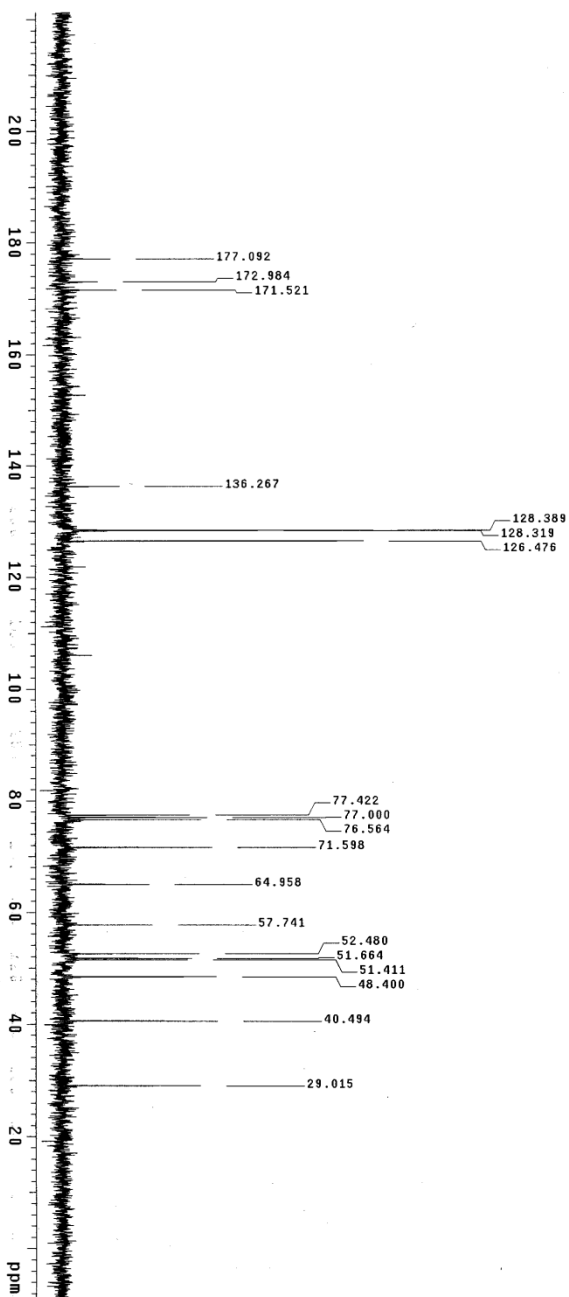
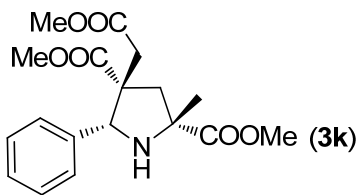
h21-9-63b



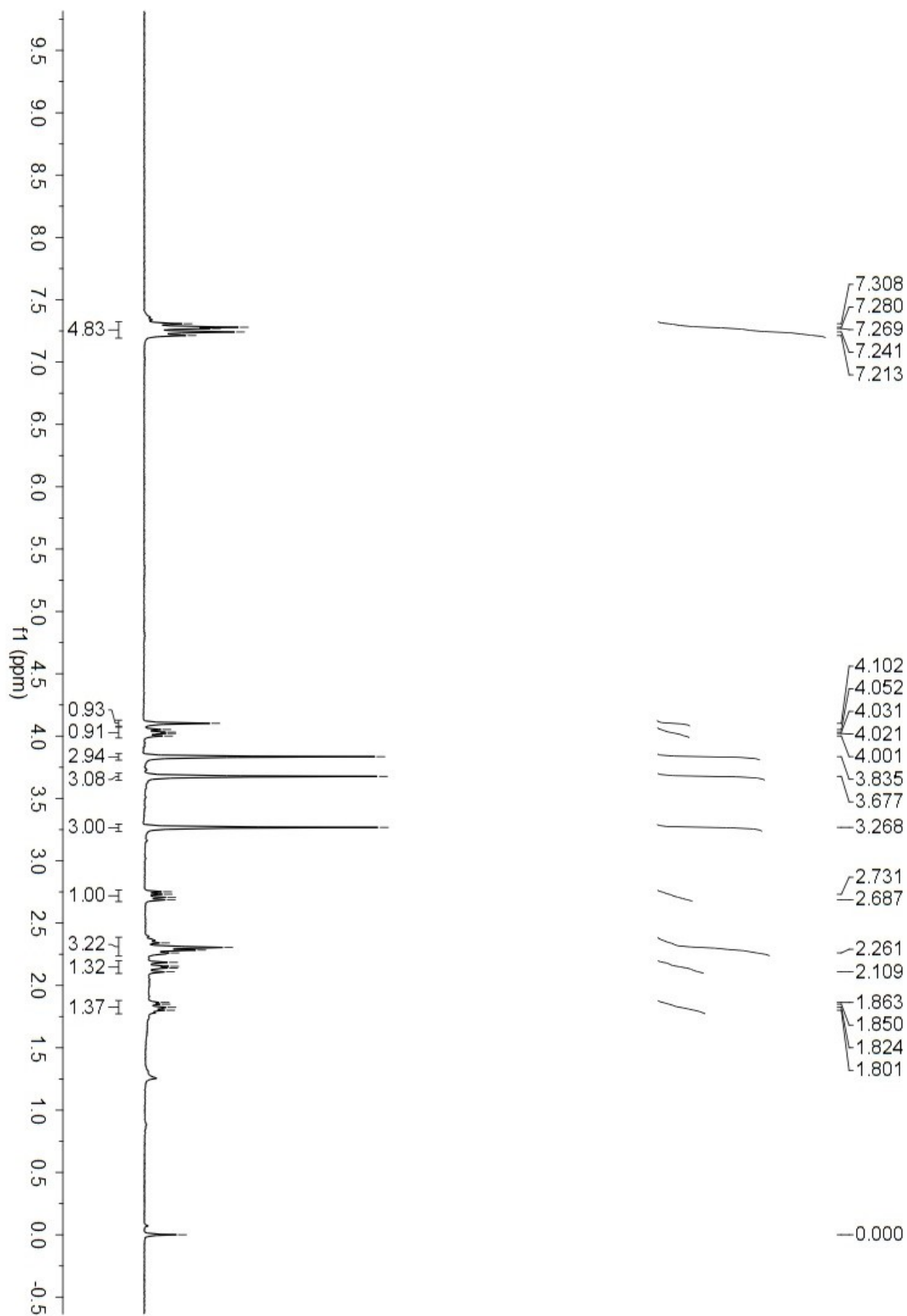
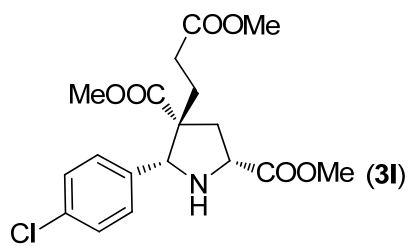


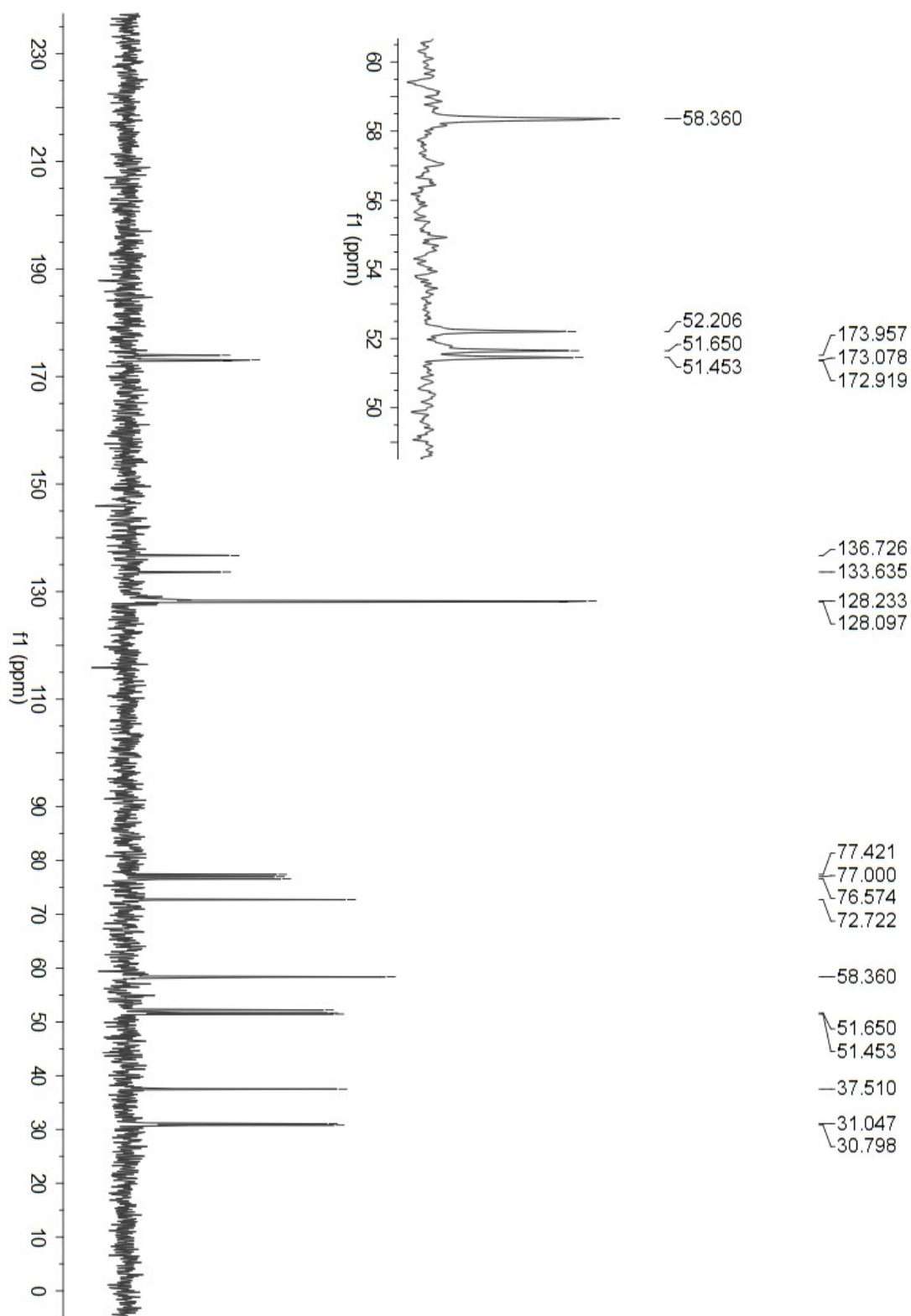
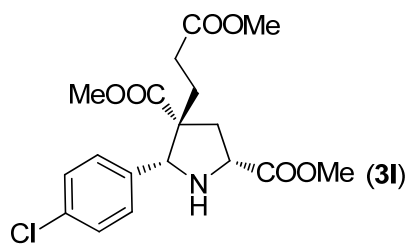


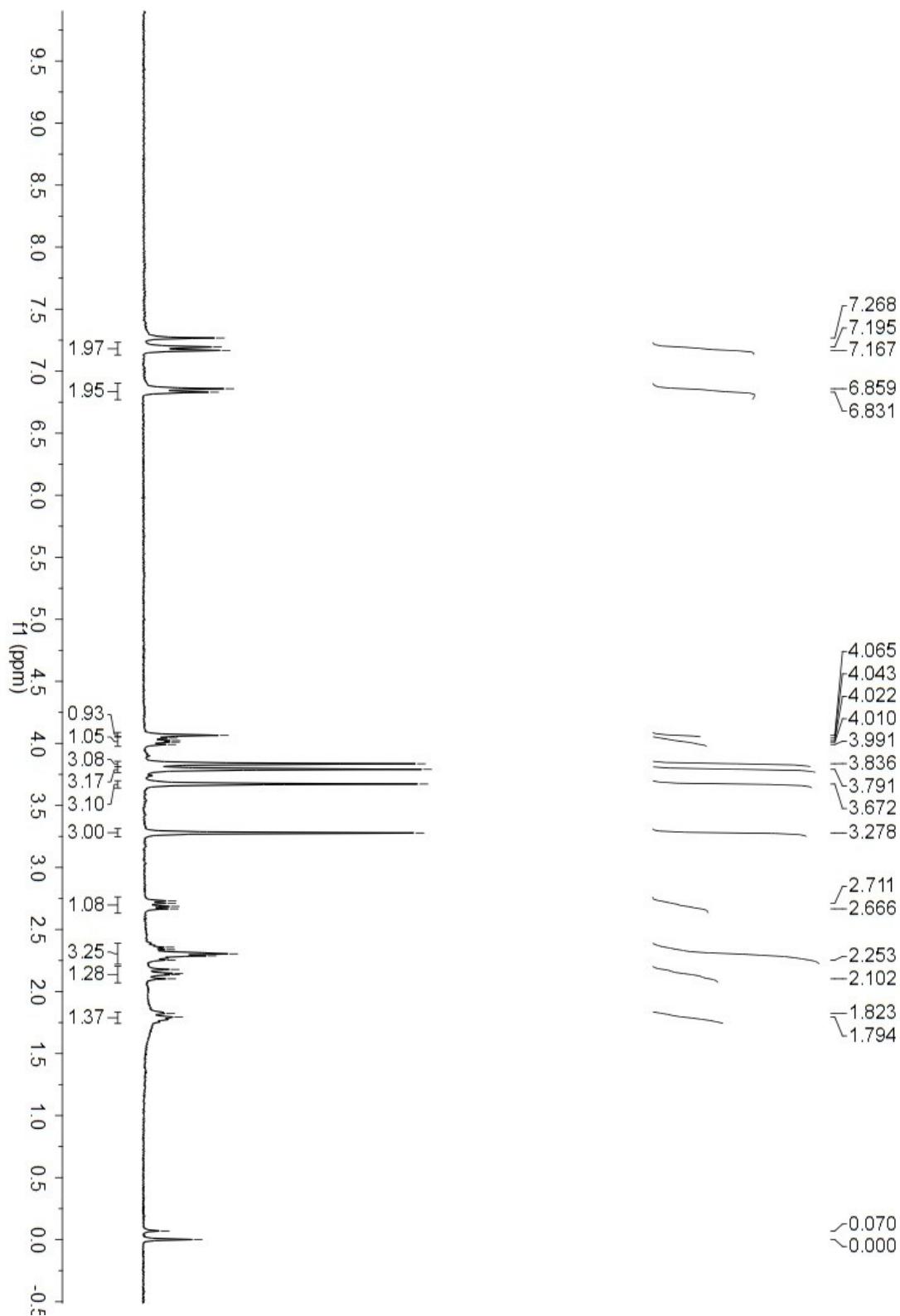
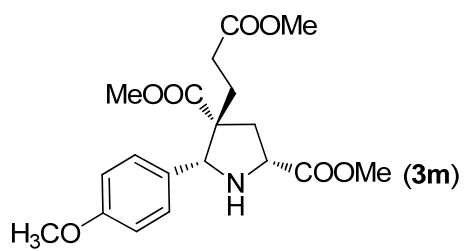


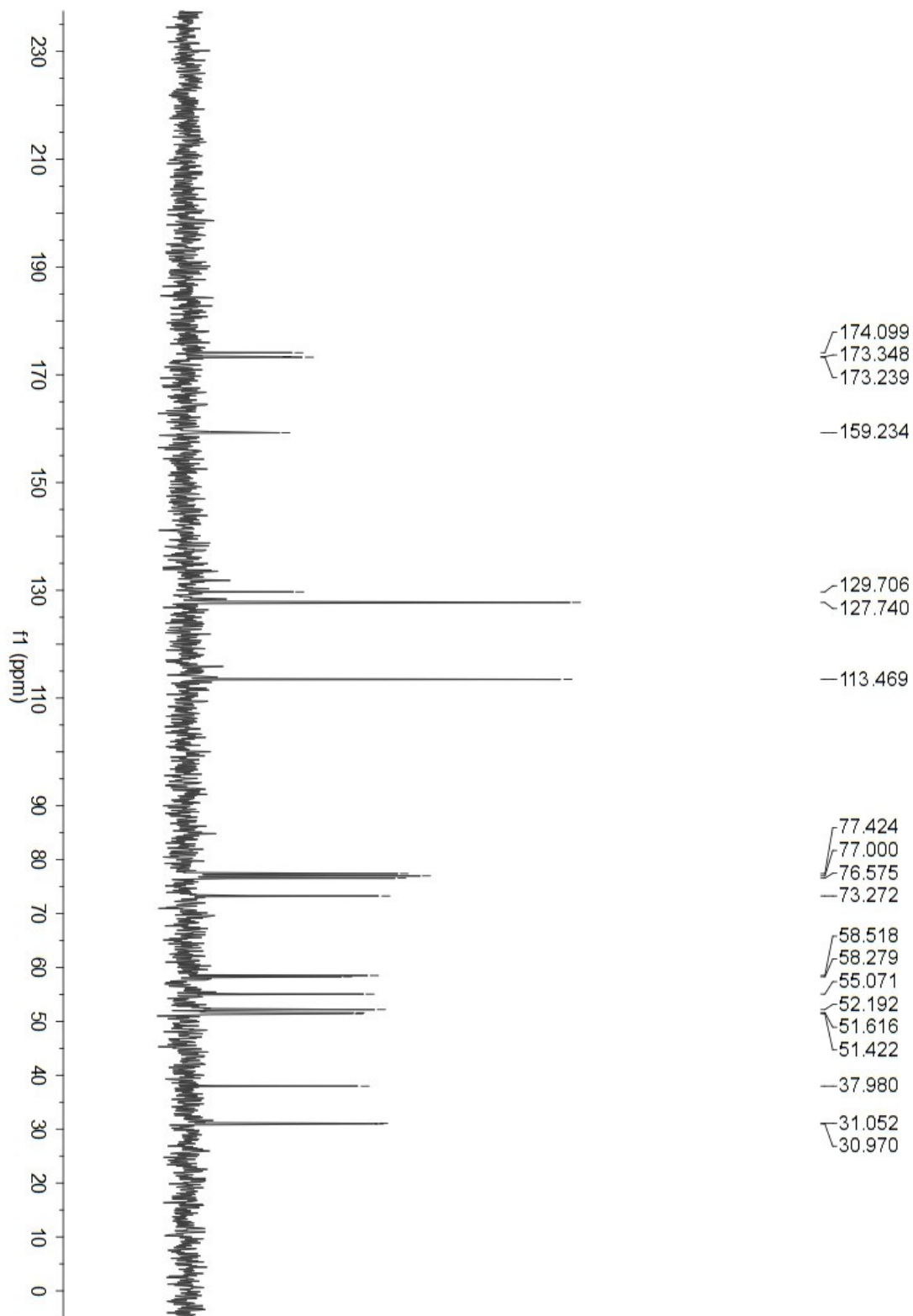
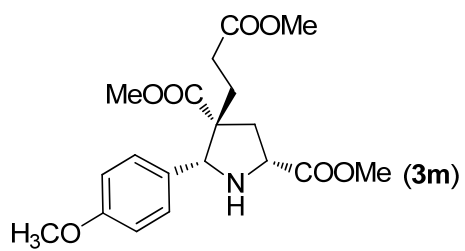


h21-9-64a
 Solvent: CDCl3
 Ambient temperature
 Mercury-30088 "mercury300"
 Relax delay 1.000 sec
 Pulse 28.0 deg/sec
 Acq 4.00 sec
 Width 17391.3 Hz
 144 repetitions
 OBSERVE C13 75.4552789 MHz
 PULSEPROG zgpg30
 Power 59 db
 continuously on
 WALTZ-16 modulated
 with 2000 Hz
 Line Broadening 2.0 Hz
 FT size 32758
 Total time 1 hr, 55 min, 40 sec

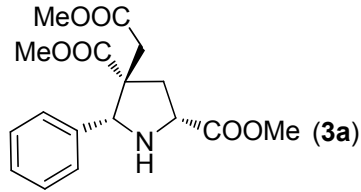








II. HPLC Chromatograms

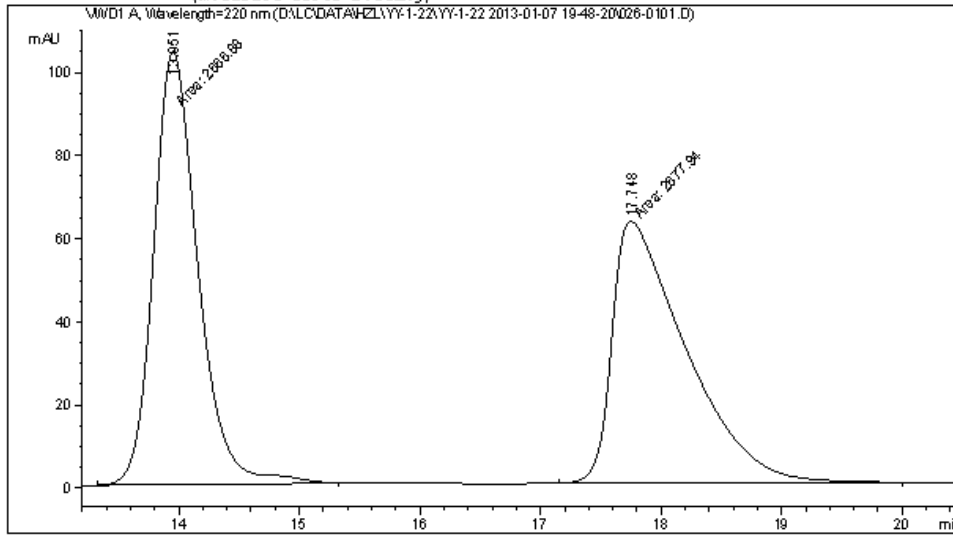


Data File D:\LC\DATA\HZL\YY-1-22\YY-1-22 2013-01-07 19-48-20\026-0101.D
Sample Name: YY-1-22

```

=====
Acq. Operator   : FX                               Seq. Line :    1
Acq. Instrument : Instrument 1                       Location  : Vial 26
Injection Date  : 1/7/2013 7:49:08 PM              Inj       :    1
                                                    Inj Volume: 5 µl

Acq. Method     : D:\LC\DATA\HZL\YY-1-22\YY-1-22 2013-01-07 19-48-20\IA-30-70-10ML-220NM.M
Last changed    : 1/3/2013 3:41:51 PM by FX
Analysis Method : D:\LC\DATA\HZL\YY-1-22\YY-1-22 2013-01-07 19-48-20\026-0101.D\DA.M (IA-30-
70-10ML-220NM.M)
Last changed    : 1/7/2013 8:33:41 PM by FX
                (modified after loading)
    
```



Area Percent Report

```

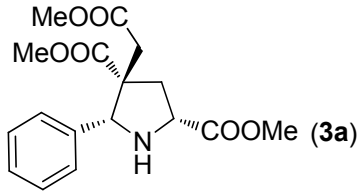
=====
Sorted By      : Signal
Multiplier     : 1.0000
Dilution      : 1.0000
Use Multiplier & Dilution Factor with ISTDs
    
```

Signal 1: VWD1 A, Wavelength=220 nm

| Peak # | RetTime [min] | Type | Width [min] | Area mAU | Area % | Height [mAU] |
|--------|---------------|------|-------------|------------|---------|--------------|
| 1 | 13.951 | MM | 0.4265 | 2666.88379 | 49.8966 | 104.22575 |
| 2 | 17.748 | MM | 0.7086 | 2677.93970 | 50.1034 | 62.98907 |

Totals : 5344.82349 167.21482

*** End of Report ***

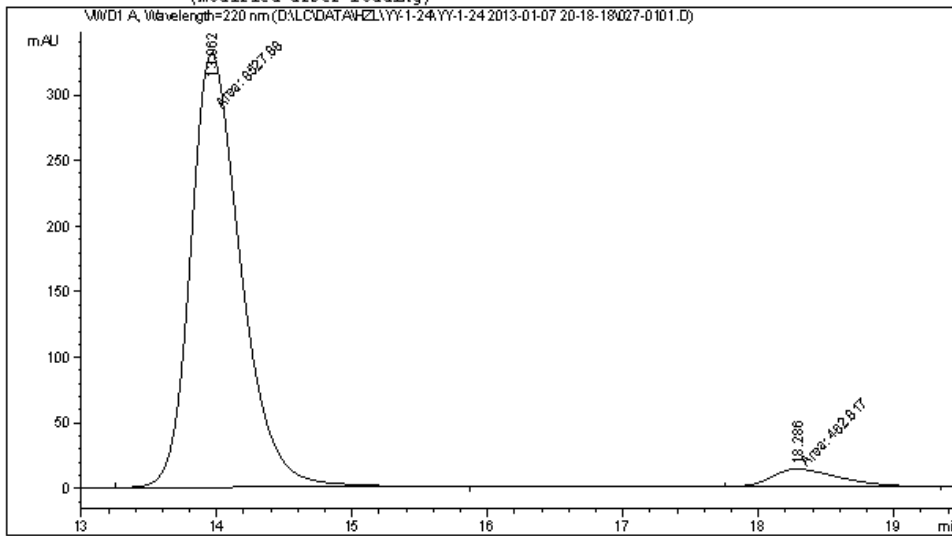


Data File D:\LC\DATA\HZL\YY-1-24\YY-1-24 2013-01-07 20-18-18\027-0101.D
 Sample Name: YY-1-24

```

=====
Acq. Operator   : FX                               Seq. Line :    1
Acq. Instrument : Instrument 1                     Location  : Vial 27
Injection Date  : 1/7/2013 8:19:15 PM             Inj       :    1
                                                    Inj Volume: 5 µl

Acq. Method     : D:\LC\DATA\HZL\YY-1-24\YY-1-24 2013-01-07 20-18-18\IA-30-70-10ML-220MM.M
Last changed    : 1/3/2013 3:41:51 PM by FX
Analysis Method : D:\LC\DATA\HZL\YY-1-24\YY-1-24 2013-01-07 20-18-18\027-0101.D\DA.M (IA-30-
70-10ML-220MM.M)
Last changed    : 1/7/2013 8:45:52 PM by FX
                 (modified after loading)
  
```



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

```

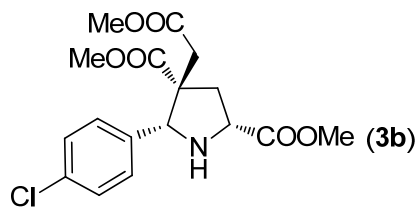
Sorted By       :      Signal
Multiplier      :      1.0000
Dilution        :      1.0000
Use Multiplier & Dilution Factor with ISTDs
  
```

Signal 1: VMD1 A, Wavelength=220 nm

| Peak # | RetTime [min] | Type | Width [min] | Area mAU | Area % | Height [mAU] |
|--------|---------------|------|-------------|------------|---------|--------------|
| 1 | 13.962 | MM | 0.4299 | 8527.87695 | 94.8523 | 330.57870 |
| 2 | 18.286 | MM | 0.5725 | 462.81689 | 5.1477 | 13.47314 |

Totals : 8990.69385 344.05185

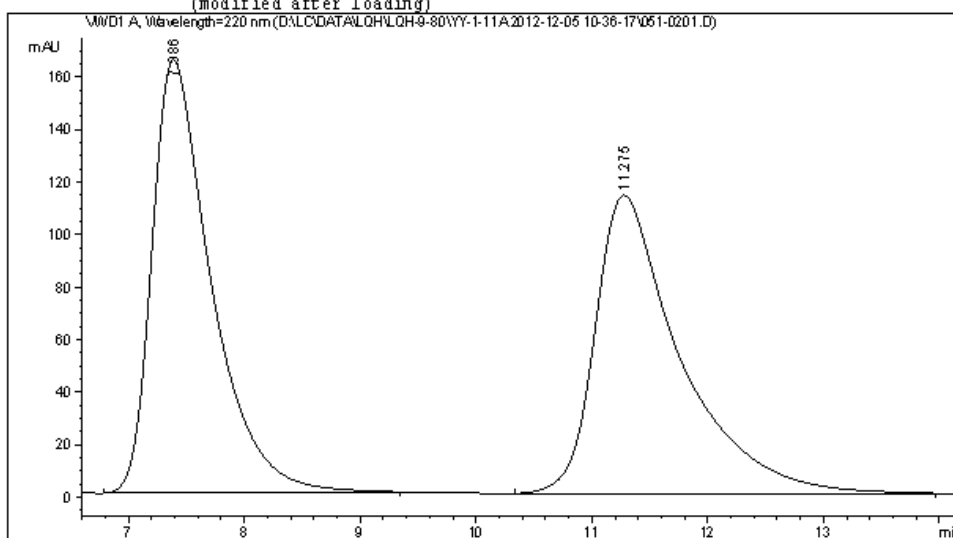
=====
 *** End of Report ***



Data File D:\LC\DATA\LQH\LQH-9-80\YY-1-11A 2012-12-05 10-36-17\051-0201.D
 Sample Name: YY-1-11A

```

=====
Acq. Operator   : FX                               Seq. Line :    2
Acq. Instrument : Instrument 1                       Location  : Vial 51
Injection Date  : 12/5/2012 10:48:41 AM           Inj       :    1
                                                    Inj Volume: 5 µl
Acq. Method     : D:\LC\DATA\LQH\LQH-9-80\YY-1-11A 2012-12-05 10-36-17\ASH-40-60-10ML-220MM.
M
Last changed    : 3/29/2012 7:36:14 PM by HZL
Analysis Method : D:\LC\DATA\LQH\LQH-9-80\YY-1-11A 2012-12-05 10-36-17\051-0201.D\DA.M (ASH-
40-60-10ML-220MM.M)
Last changed    : 12/17/2012 3:24:34 PM by THL
(modified after loading)
  
```



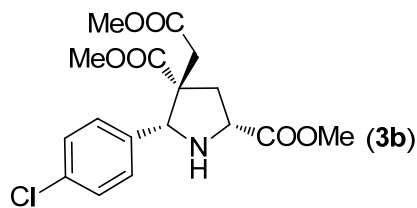
=====
 Area Percent Report
 =====

```

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

Signal 1: VMD1 A, Wavelength=220 nm

| Peak # | RetTime [min] | Type | Width [min] | Area mAU | Height [mAU] | Area % |
|----------|---------------|------|-------------|------------|--------------|---------|
| 1 | 7.386 | BB | 0.5276 | 5853.91504 | 164.94302 | 50.2682 |
| 2 | 11.275 | BB | 0.7332 | 5791.45557 | 113.58414 | 49.7318 |
| Totals : | | | | 1.16454e4 | 278.52716 | |

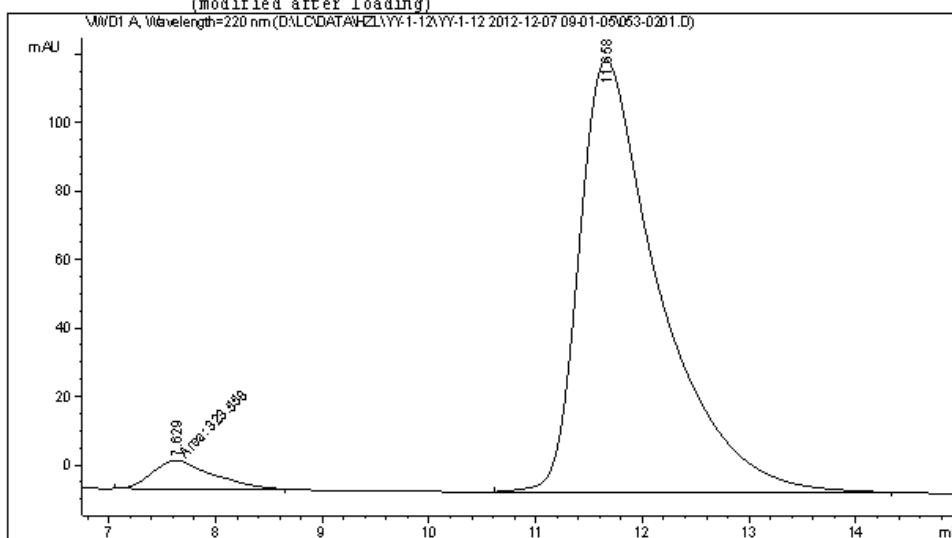


Data File D:\LC\DATA\H2L\YY-1-12\YY-1-12 2012-12-07 09-01-05\053-0201.D
Sample Name: YY-1-12

```

=====
Acq. Operator   : hzl                      Seq. Line :    2
Acq. Instrument : Instrument 1              Location  : Vial 53
Injection Date  : 12/7/2012 9:13:34 AM     Inj       :    1
                                           Inj Volume: 5 µl
Acq. Method     : D:\LC\DATA\H2L\YY-1-12\YY-1-12 2012-12-07 09-01-05\ASH-40-60-10ML-220NM-
                20MIN.M
Last changed    : 3/26/2012 3:50:21 PM by HZL
Analysis Method : D:\LC\DATA\H2L\YY-1-12\YY-1-12 2012-12-07 09-01-05\053-0201.D\DA.M (ASH-
                40-60-10ML-220NM-20MIN.M)
Last changed    : 1/7/2013 4:01:51 PM by FX
                (modified after loading)
=====

```



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

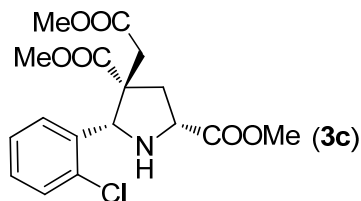
```

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

```

Signal 1: VMD1 A, Wavelength=220 nm

| Peak # | RetTime [min] | Type | Width [min] | Area mAU | Area % | Height [mAU] |
|----------|---------------|------|-------------|------------|---------|--------------|
| 1 | 7.629 | MM | 0.6536 | 323.55847 | 4.6752 | 8.25038 |
| 2 | 11.658 | BB | 0.7591 | 6597.13818 | 95.3248 | 126.35369 |
| Totals : | | | | 6920.69666 | | 134.60407 |

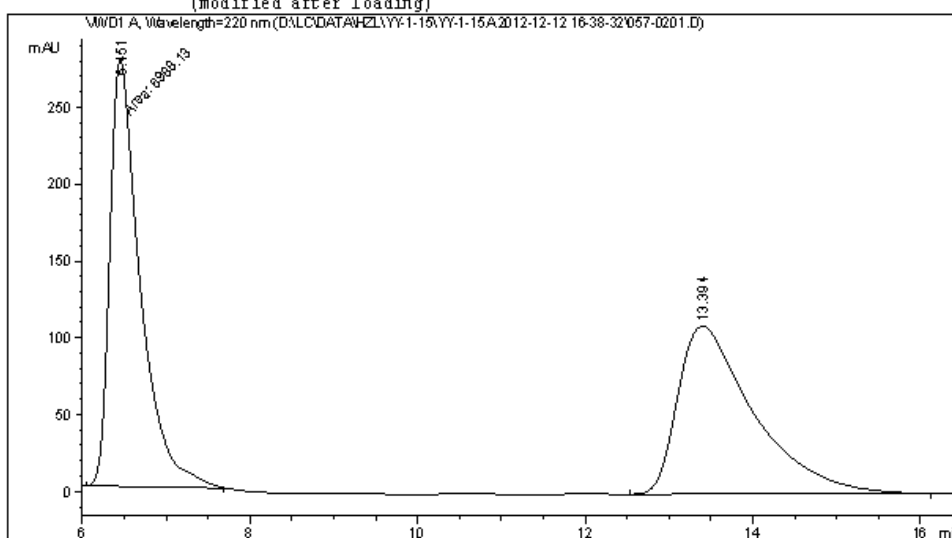


Data File D:\LC\DATA\H2L\YY-1-15\YY-1-15A 2012-12-12 16-38-32\057-0201.D
Sample Name: YY-1-15A

```

=====
Acq. Operator   : THL                      Seq. Line :    2
Acq. Instrument : Instrument 1              Location  : Vial 57
Injection Date  : 12/12/2012 4:51:18 PM   Inj       :    1
                                           Inj Volume: 5 µl
Acq. Method     : D:\LC\DATA\H2L\YY-1-15\YY-1-15A 2012-12-12 16-38-32\ASH-40-60-10ML-220NM.M
Last changed    : 3/29/2012 7:36:14 PM by HZL
Analysis Method : D:\LC\DATA\H2L\YY-1-15\YY-1-15A 2012-12-12 16-38-32\057-0201.D\DA.M (ASH-
40-60-10ML-220NM.M)
Last changed    : 1/7/2013 3:56:50 PM by FX
                 (modified after loading)
=====

```



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

```

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

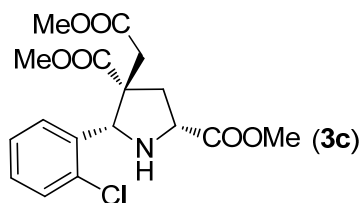
```

Signal 1: VMD1 A, Wavelength=220 nm

| Peak # | RetTime [min] | Type | Width [min] | Area mAU | Area % | Height [mAU] |
|--------|---------------|------|-------------|------------|---------|--------------|
| 1 | 6.451 | MM | 0.4202 | 6988.13379 | 50.4390 | 277.18835 |
| 2 | 13.394 | BB | 0.9194 | 6866.49561 | 49.5610 | 109.28332 |

Totals : 1.38546e4 386.47167

=====
*** End of Report ***

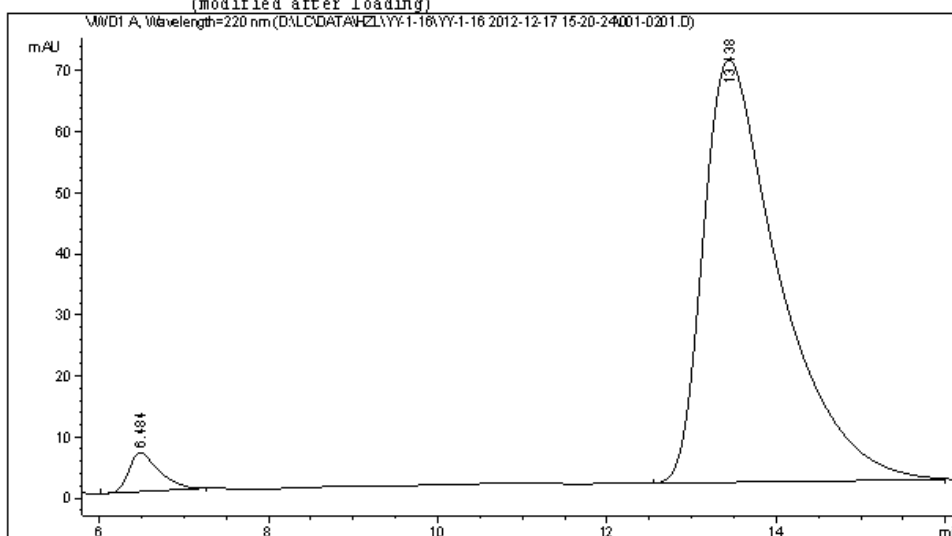


Data File D:\LC\DATA\H2L\YY-1-16\YY-1-16 2012-12-17 15-20-24\001-0201.D
Sample Name: YY-1-16A

```

=====
Acq. Operator   : FX                               Seq. Line :    2
Acq. Instrument : Instrument 1                     Location  : Vial 1
Injection Date  : 12/17/2012 3:32:49 PM          Inj       :    1
                                                    Inj Volume: 5 µl
Acq. Method     : D:\LC\DATA\H2L\YY-1-16\YY-1-16 2012-12-17 15-20-24\ASH-40-60-10ML-220NM-
                20MIN.M
Last changed    : 3/26/2012 3:50:21 PM by HZL
Analysis Method : D:\LC\DATA\H2L\YY-1-16\YY-1-16 2012-12-17 15-20-24\001-0201.D\DA.M (ASH-
                40-60-10ML-220NM-20MIN.M)
Last changed    : 1/7/2013 4:04:01 PM by FX
                (modified after loading)
=====

```



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

```

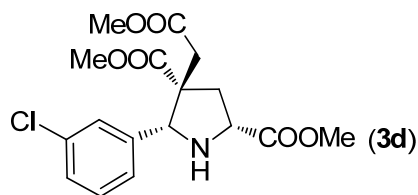
Sorted By      :      Signal
Multiplier     :      1.0000
Dilution       :      1.0000
Use Multiplier & Dilution Factor with ISTDs

```

Signal 1: VMD1 A, Wavelength=220 nm

| Peak # | RetTime [min] | Type | Width [min] | Area mAU *s | Height [mAU] | Area % |
|--------|---------------|------|-------------|-------------|--------------|---------|
| 1 | 6.484 | VB | 0.3684 | 158.73198 | 6.42220 | 3.5352 |
| 2 | 13.438 | BB | 0.9177 | 4331.29297 | 69.22897 | 96.4648 |

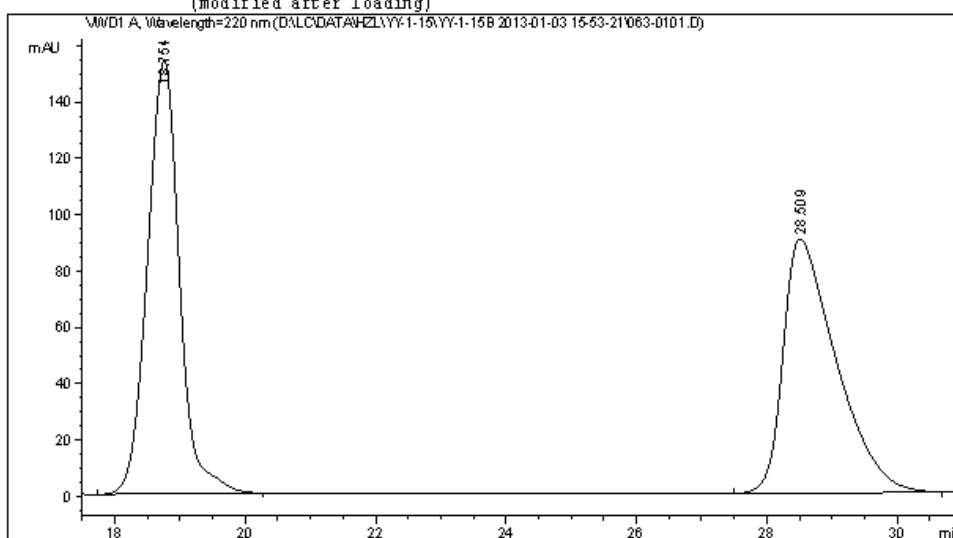
Totals : 4490.02495 75.65118



Data File D:\LC\DATA\HZL\YY-1-15\YY-1-15B 2013-01-03 15-53-21\063-0101.D
 Sample Name: YY-1-15B

```

=====
Acq. Operator   : FX                               Seq. Line :    1
Acq. Instrument : Instrument 1                       Location  : Vial 63
Injection Date  : 1/3/2013 3:54:13 PM              Inj       :    1
                                                    Inj Volume: 5 µl
Acq. Method     : D:\LC\DATA\HZL\YY-1-15\YY-1-15B 2013-01-03 15-53-21\IA-30-70-10ML-220NM.M
Last changed    : 1/3/2013 3:41:51 PM by FX
Analysis Method : D:\LC\DATA\HZL\YY-1-15\YY-1-15B 2013-01-03 15-53-21\063-0101.D\DA.M (IA-
30-70-10ML-220NM.M)
Last changed    : 1/7/2013 3:59:29 PM by FX
(modified after loading)
  
```



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

```

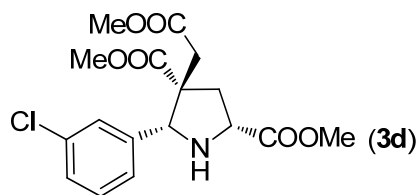
Sorted By      :      Signal
Multiplier     :      1.0000
Dilution       :      1.0000
Use Multiplier & Dilution Factor with ISTDs
  
```

Signal 1: VMD1 A, Wavelength=220 nm

| Peak # | RetTime [min] | Type | Width [min] | Area mAU | Area % | Height [mAU] |
|--------|---------------|------|-------------|------------|---------|--------------|
| 1 | 18.754 | VB | 0.5251 | 5257.20654 | 50.7251 | 153.93182 |
| 2 | 28.509 | BB | 0.8424 | 5106.90527 | 49.2749 | 90.21821 |

Totals : 1.03641e4 244.15003

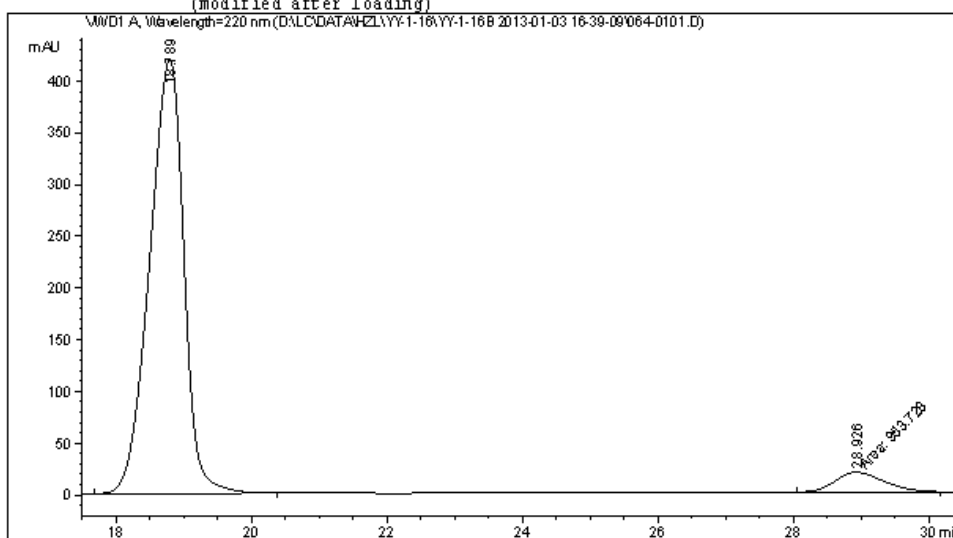
=====
 *** End of Report ***



Data File D:\LC\DATA\HZL\YY-1-16\YY-1-16B 2013-01-03 16-39-09\064-0101.D
 Sample Name: YY-1-16B

```

=====
Acq. Operator   : FX                      Seq. Line :    1
Acq. Instrument : Instrument 1             Location  : Vial 64
Injection Date  : 1/3/2013 4:39:51 PM    Inj       :    1
                                           Inj Volume: 5 µl
Acq. Method     : D:\LC\DATA\HZL\YY-1-16\YY-1-16B 2013-01-03 16-39-09\IA-30-70-10ML-220NM-
                                           35MIN.M
Last changed    : 1/3/2013 4:34:59 PM by FX
Analysis Method : D:\LC\DATA\HZL\YY-1-16\YY-1-16B 2013-01-03 16-39-09\064-0101.D\DA.M (IA-
                                           30-70-10ML-220NM-35MIN.M)
Last changed    : 1/7/2013 4:06:33 PM by FX
                                           (modified after loading)
=====
  
```



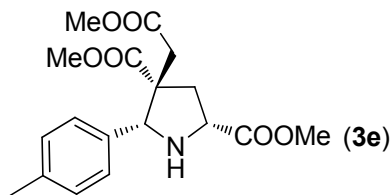
=====
 Area Percent Report
 =====

```

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

Signal 1: VMD1 A, Wavelength=220 nm

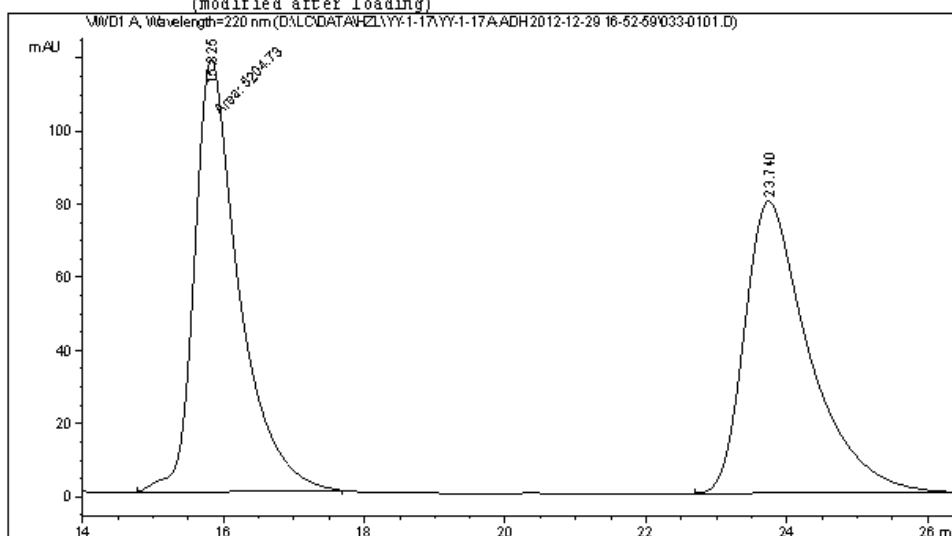
| Peak # | RetTime [min] | Type | Width [min] | Area mAU *s | Height [mAU] | Area % |
|----------|---------------|------|-------------|-------------|--------------|---------|
| 1 | 18.789 | BB | 0.5462 | 1.47052e4 | 419.15494 | 93.9094 |
| 2 | 28.926 | MM | 0.8312 | 953.72791 | 19.12265 | 6.0906 |
| Totals : | | | | 1.56590e4 | 438.27759 | |



Data File D:\LC\DATA\H2L\YY-1-17\YY-1-17A-ADH 2012-12-29 16-52-59\033-0101.D
 Sample Name: YY-1-17A

```

=====
Acq. Operator   : FX                               Seq. Line :    1
Acq. Instrument : Instrument 1                     Location  : Vial 33
Injection Date  : 12/29/2012 4:54:17 PM           Inj       :    1
                                                    Inj Volume: 5 µl
Acq. Method     : D:\LC\DATA\H2L\YY-1-17\YY-1-17A-ADH 2012-12-29 16-52-59\ADH-30-70-1ML-
                  220NM.M
Last changed    : 12/29/2012 4:43:24 PM by FX
Analysis Method : D:\LC\DATA\H2L\YY-1-17\YY-1-17A-ADH 2012-12-29 16-52-59\033-0101.D\DA.M (
                  ADH-30-70-1ML-220NM.M)
Last changed    : 1/7/2013 4:08:02 PM by FX
                  (modified after loading)
=====
  
```



Area Percent Report

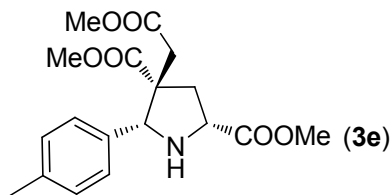
```

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

Signal 1: WVD1 A, Wavelength=220 nm

| Peak # | RetTime [min] | Type | Width [min] | Area mAU *s | Height [mAU] | Area % |
|--------|---------------|------|-------------|-------------|--------------|---------|
| 1 | 15.825 | MM | 0.7341 | 5204.73437 | 118.17170 | 50.5686 |
| 2 | 23.740 | BB | 0.9426 | 5087.69531 | 79.87216 | 49.4314 |

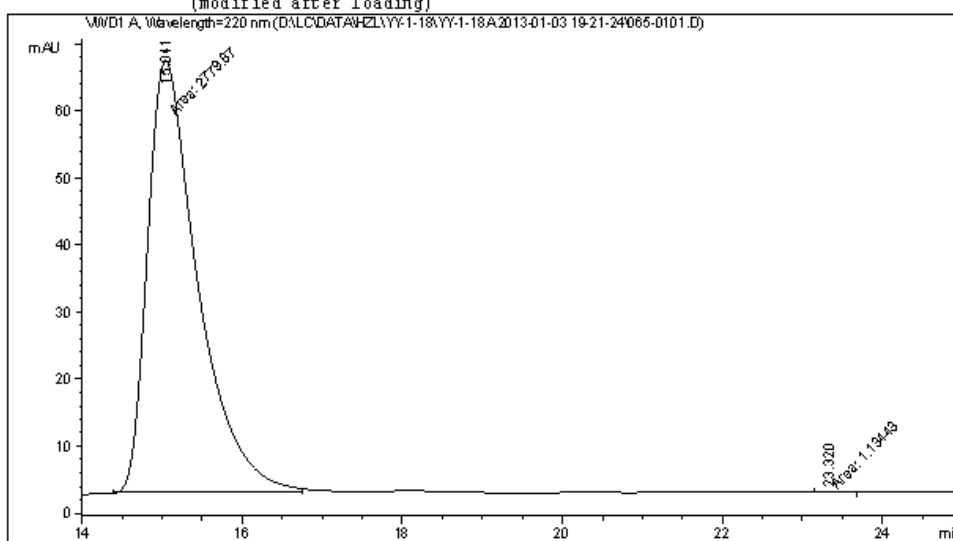
Totals : 1.02924e4 198.04386



Data File D:\LC\DATA\H2L\YY-1-18\YY-1-18A 2013-01-03 19-21-24\065-0101.D
 Sample Name: YY-1-18A

```

=====
Acq. Operator   : FX                               Seq. Line :    1
Acq. Instrument : Instrument 1                       Location  : Vial 65
Injection Date  : 1/3/2013 7:22:54 PM              Inj       :    1
                                                    Inj Volume: 5 µl
Acq. Method     : D:\LC\DATA\H2L\YY-1-18\YY-1-18A 2013-01-03 19-21-24\ADH-30-70-1ML-220NM.M
Last changed    : 12/29/2012 4:43:24 PM by FX
Analysis Method : D:\LC\DATA\H2L\YY-1-18\YY-1-18A 2013-01-03 19-21-24\065-0101.D\DA.M (ADH-
30-70-1ML-220NM.M)
Last changed    : 1/7/2013 4:17:57 PM by FX
                  (modified after loading)
  
```



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

```

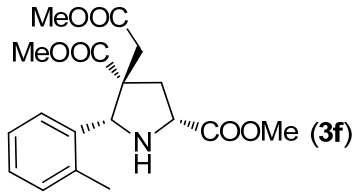
Sorted By      :      Signal
Multiplier     :      1.0000
Dilution       :      1.0000
Use Multiplier & Dilution Factor with ISTDs
  
```

Signal 1: VMD1 A, Wavelength=220 nm

| Peak # | RetTime [min] | Type | Width [min] | Area mAU | Area % | Height [mAU] |
|--------|---------------|------|-------------|------------|---------|--------------|
| 1 | 15.041 | MM | 0.7217 | 2779.86816 | 99.9592 | 64.19346 |
| 2 | 23.320 | MM | 0.3311 | 1.13443 | 0.0408 | 5.71045e-2 |

Totals : 2781.00259 64.25056

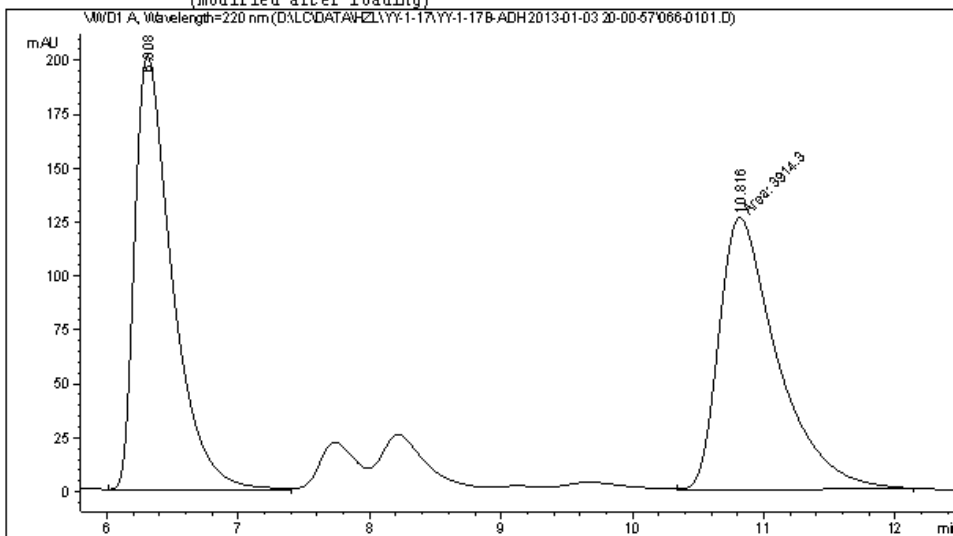
=====
 *** End of Report ***



Data File D:\LC\DATA\H2L\YY-1-17\YY-1-17B-ADH 2013-01-03 20-00-57\066-0101.D
 Sample Name: YY-1-17B

```

=====
Acq. Operator   : FX                      Seq. Line :    1
Acq. Instrument : Instrument 1             Location  : Vial 66
Injection Date  : 1/3/2013 8:02:34 PM    Inj       :    1
                                           Inj Volume: 5 µl
Acq. Method     : D:\LC\DATA\H2L\YY-1-17\YY-1-17B-ADH 2013-01-03 20-00-57\ADH-30-70-1ML-
                220NM.M
Last changed    : 12/29/2012 4:43:24 PM by FX
Analysis Method : D:\LC\DATA\H2L\YY-1-17\YY-1-17B-ADH 2013-01-03 20-00-57\066-0101.D\DA.M (
                ADH-30-70-1ML-220NM.M)
Last changed    : 1/7/2013 4:11:31 PM by FX
                (modified after loading)
=====
  
```



Area Percent Report

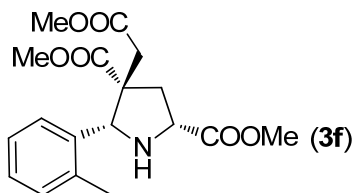
```

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

Signal 1: WVD1 A, Wavelength=220 nm

| Peak # | RetTime [min] | Type | Width [min] | Area mAU | Height [mAU] | Area % |
|--------|---------------|------|-------------|------------|--------------|---------|
| 1 | 6.308 | VB | 0.2982 | 4023.38062 | 201.76347 | 50.6871 |
| 2 | 10.816 | MM | 0.5163 | 3914.29907 | 126.36263 | 49.3129 |

Totals : 7937.67969 328.12611

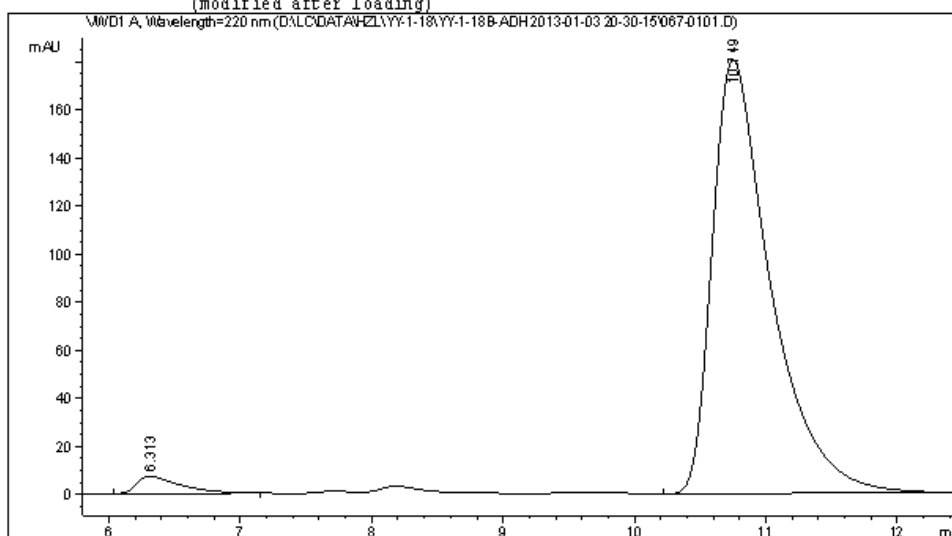


Data File D:\LC\DATA\H2L\YY-1-18\YY-1-18B-ADH 2013-01-03 20-30-15\067-0101.D
Sample Name: YY-1-18B

```

=====
Acq. Operator   : FX                               Seq. Line :    1
Acq. Instrument : Instrument 1                       Location  : Vial 67
Injection Date  : 1/3/2013 8:32:01 PM              Inj       :    1
                                                    Inj Volume: 5 µl
Acq. Method     : D:\LC\DATA\H2L\YY-1-18\YY-1-18B-ADH 2013-01-03 20-30-15\ADH-30-70-1ML-
                220NM.M
Last changed    : 12/29/2012 4:43:24 PM by FX
Analysis Method : D:\LC\DATA\H2L\YY-1-18\YY-1-18B-ADH 2013-01-03 20-30-15\067-0101.D\DA.M (
                ADH-30-70-1ML-220NM.M)
Last changed    : 1/7/2013 4:20:06 PM by FX
                (modified after loading)
=====

```



Area Percent Report

```

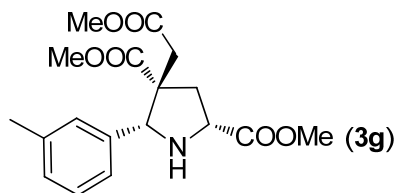
=====
Sorted By      :      Signal
Multiplier     :      1.0000
Dilution      :      1.0000
Use Multiplier & Dilution Factor with ISTDs
=====

```

Signal 1: WVD1 A, Wavelength=220 nm

| Peak # | RetTime [min] | Type | Width [min] | Area mAU | Area *s | Height [mAU] | Area % |
|--------|---------------|------|-------------|------------|-----------|--------------|--------|
| 1 | 6.313 | BB | 0.3341 | 166.21271 | 7.22071 | 2.8968 | |
| 2 | 10.749 | VB | 0.4577 | 5571.59863 | 180.51045 | 97.1032 | |

Totals : 5737.81134 187.73116

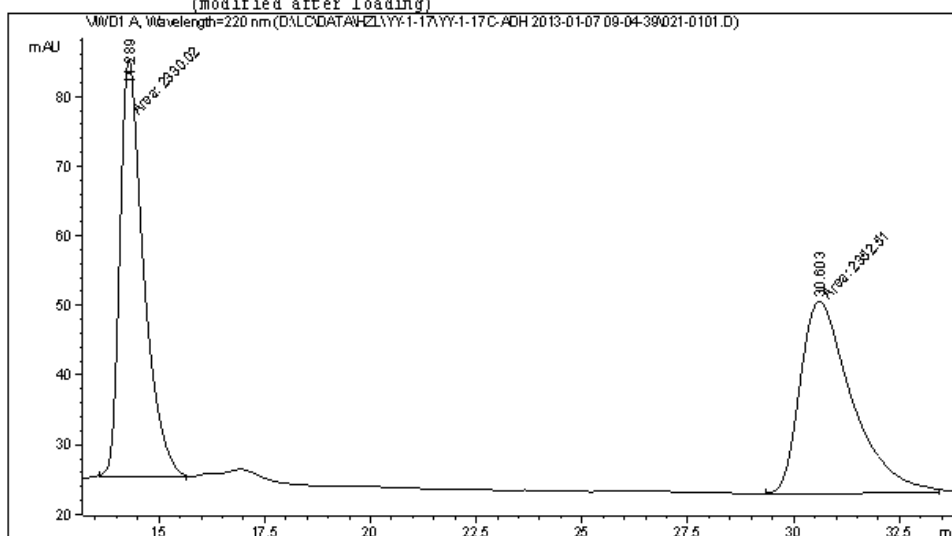


Data File D:\LC\DATA\H2L\YY-1-17\YY-1-17C-ADH 2013-01-07 09-04-39\021-0101.D
Sample Name: YY-1-17C

```

=====
Acq. Operator   : FX                               Seq. Line :    1
Acq. Instrument : Instrument 1                       Location  : Vial 21
Injection Date  : 1/7/2013 9:06:02 AM              Inj       :    1
                                                    Inj Volume: 5 µl
Acq. Method     : D:\LC\DATA\H2L\YY-1-17\YY-1-17C-ADH 2013-01-07 09-04-39\ADH-30-70-1ML-
                220NM.M
Last changed    : 12/29/2012 4:43:24 PM by FX
Analysis Method : D:\LC\DATA\H2L\YY-1-17\YY-1-17C-ADH 2013-01-07 09-04-39\021-0101.D\DA.M (
                ADH-30-70-1ML-220NM.M)
Last changed    : 1/7/2013 4:14:44 PM by FX
                (modified after loading)
=====

```



Area Percent Report

```

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

```

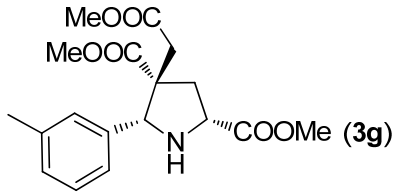
Signal 1: WVD1 A, Wavelength=220 nm

| Peak # | RetTime [min] | Type | Width [min] | Area mAU *s | Height [mAU] | Area % |
|--------|---------------|------|-------------|-------------|--------------|---------|
| 1 | 14.289 | MM | 0.6491 | 2330.02441 | 59.82674 | 49.7599 |
| 2 | 30.603 | MM | 1.4200 | 2352.51440 | 27.61145 | 50.2401 |

Totals : 4682.53882 87.43820

Instrument 1 1/7/2013 4:14:51 PM FX

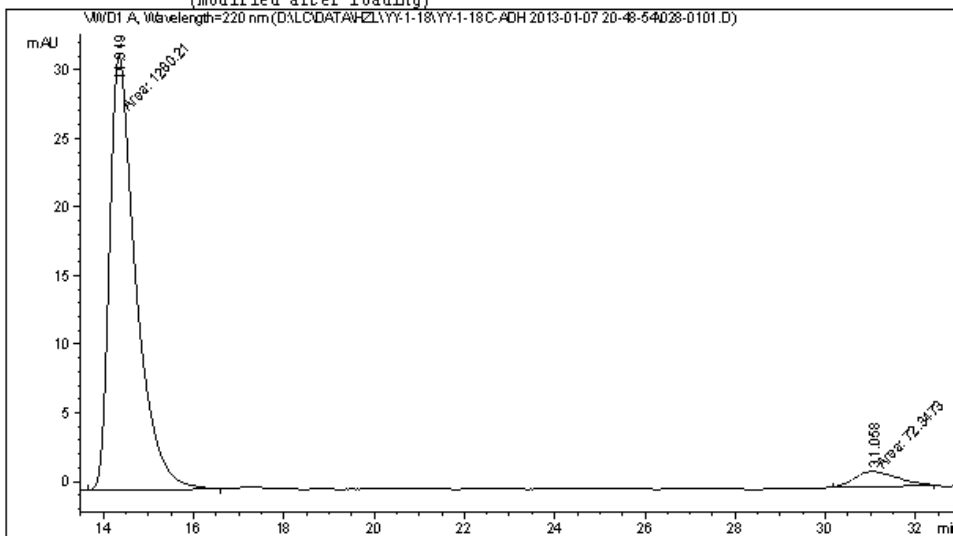
Page 1 of 1



Data File D:\LC\DATA\H2L\YY-1-18\YY-1-18C-ADH 2013-01-07 20-48-54\028-0101.D
 Sample Name: YY-1-18C

```

=====
Acq. Operator   : FX                               Seq. Line :    1
Acq. Instrument : Instrument 1                       Location  : Vial 28
Injection Date  : 1/ 7/2013 8:50:11 PM             Inj       :    1
                                                    Inj Volume: 5 µl
Acq. Method     : D:\LC\DATA\H2L\YY-1-18\YY-1-18C-ADH 2013-01-07 20-48-54\ADH-30-70-1ML-
                  220NM.M
Last changed    : 12/29/2012 4:43:24 PM by FX
Analysis Method : D:\LC\DATA\H2L\YY-1-18\YY-1-18C-ADH 2013-01-07 20-48-54\028-0101.D\DA.M (
                  ADH-30-70-1ML-220NM.M)
Last changed    : 5/ 8/2013 7:44:27 PM by TL
                  (modified after loading)
=====
  
```



Area Percent Report

```

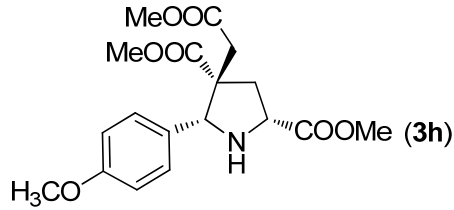
Sorted By      :      Signal
Multiplier     :      1.0000
Dilution       :      1.0000
Use Multiplier & Dilution Factor with ISTDs
  
```

Signal 1: VWD1 A, Wavelength=220 nm

| Peak # | RetTime [min] | Type | Width [min] | Area mAU *s | Height [mAU] | Area % |
|----------|---------------|------|-------------|-------------|--------------|---------|
| 1 | 14.349 | MM | 0.6748 | 1280.20642 | 31.61749 | 94.6511 |
| 2 | 31.058 | MM | 1.1017 | 72.34727 | 1.09451 | 5.3489 |
| Totals : | | | | 1352.55370 | 32.71200 | |

Instrument 1 5/8/2013 7:44:37 PM TL

Page 1 of 1

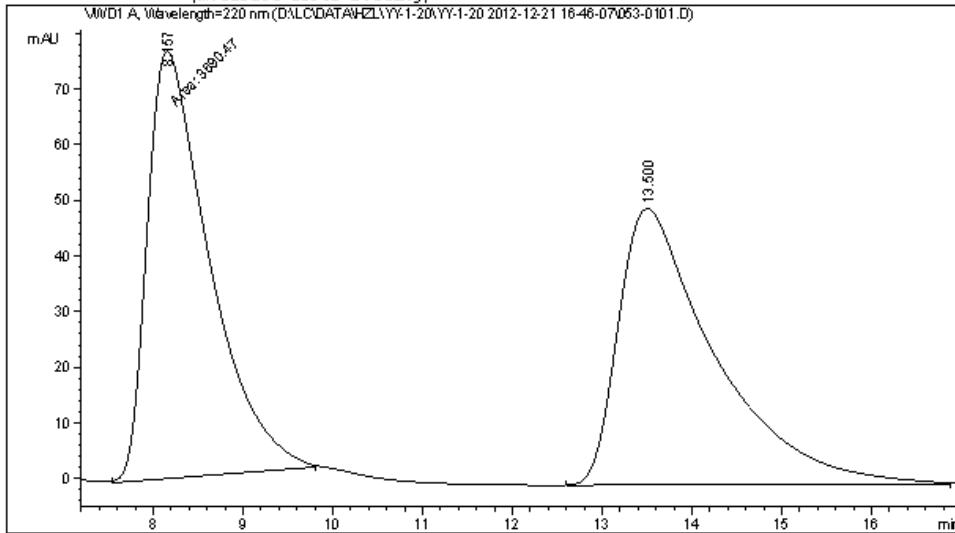


Data File D:\LC\DATA\H2L\YY-1-20\YY-1-20 2012-12-21 16-46-07\053-0101.D
 Sample Name: YY-1-20A

```

=====
Acq. Operator   : TMC                      Seq. Line :    1
Acq. Instrument : Instrument 1              Location  : Vial 53
Injection Date  : 12/21/2012 4:47:36 PM   Inj       :    1
                                           Inj Volume: 5 µl

Acq. Method     : D:\LC\DATA\H2L\YY-1-20\YY-1-20 2012-12-21 16-46-07\ASH-40-60-10ML-220NM.M
Last changed    : 3/29/2012 7:36:14 PM by HZL
Analysis Method : D:\LC\DATA\H2L\YY-1-20\YY-1-20 2012-12-21 16-46-07\053-0101.D\DA.M (ASH-
40-60-10ML-220NM.M)
Last changed    : 1/7/2013 4:22:26 PM by FX
                 (modified after loading)
  
```



Area Percent Report

```

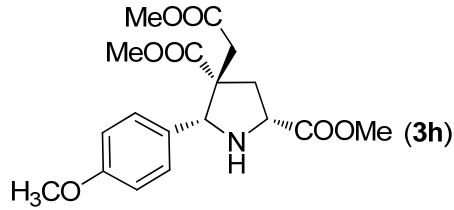
Sorted By      : Signal
Multiplier     : 1.0000
Dilution       : 1.0000
Use Multiplier & Dilution Factor with ISTDs
  
```

Signal 1: VWD1 A, Wavelength=220 nm

| Peak # | RetTime [min] | Type | Width [min] | Area mAU | Height [mAU] | Area % |
|--------|---------------|------|-------------|------------|--------------|---------|
| 1 | 8.157 | MM | 0.8008 | 3690.47437 | 76.80820 | 49.9183 |
| 2 | 13.500 | BE | 1.0601 | 3702.55688 | 49.68518 | 50.0817 |

Totals : 7393.03125 126.49338

*** End of Report ***

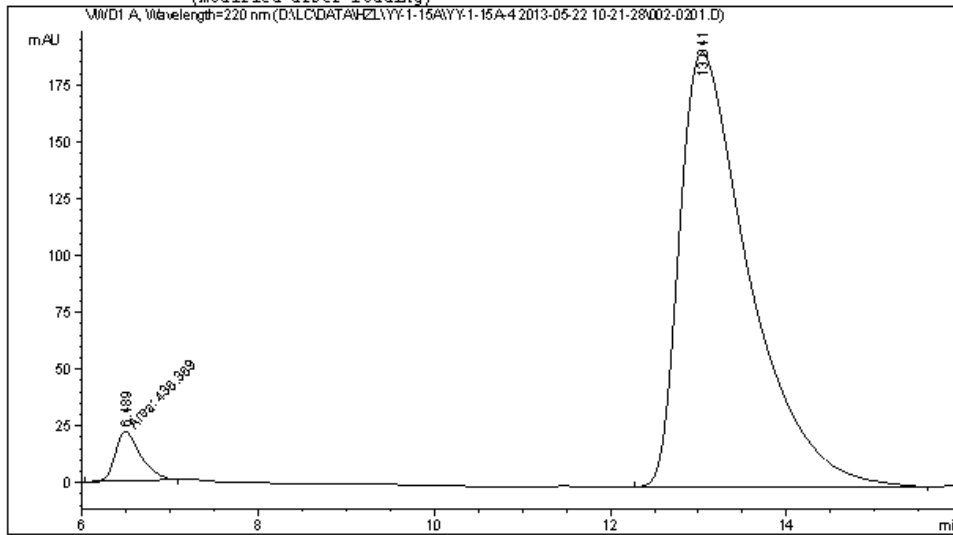


Data File D:\LC\DATA\HZZ\YY-1-15A\YY-1-15A-4 2013-05-22 10-21-28\002-0201.D
 Sample Name: YY-1-53

```

=====
Acq. Operator   : TL                               Seq. Line :    2
Acq. Instrument : Instrument 1                     Location  : Vial 2
Injection Date  : 5/22/2013 10:41:21 AM          Inj       :    1
                                                    Inj Volume: 5 µl

Acq. Method     : D:\LC\DATA\HZZ\YY-1-15A\YY-1-15A-4 2013-05-22 10-21-28\ASH-40-60-10ML-
                220NM-20MIN.M
Last changed    : 3/26/2012 3:50:21 PM by HZL
Analysis Method : D:\LC\DATA\HZZ\YY-1-15A\YY-1-15A-4 2013-05-22 10-21-28\002-0201.D\DA.M (
                ASH-40-60-10ML-220NM-20MIN.M)
Last changed    : 5/23/2013 11:07:03 AM by TL
                (modified after loading)
=====
  
```



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

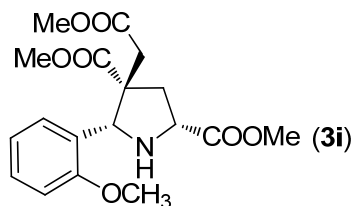
```

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

Signal 1: VMD1 A, Wavelength=220 nm

| Peak # | RetTime [min] | Type | Width [min] | Area mAU | Area % | Height [mAU] |
|--------|---------------|------|-------------|-----------|---------|--------------|
| 1 | 6.489 | MM | 0.3338 | 436.36874 | 3.9914 | 21.78748 |
| 2 | 13.041 | BB | 0.8202 | 1.04964e4 | 96.0086 | 191.00128 |

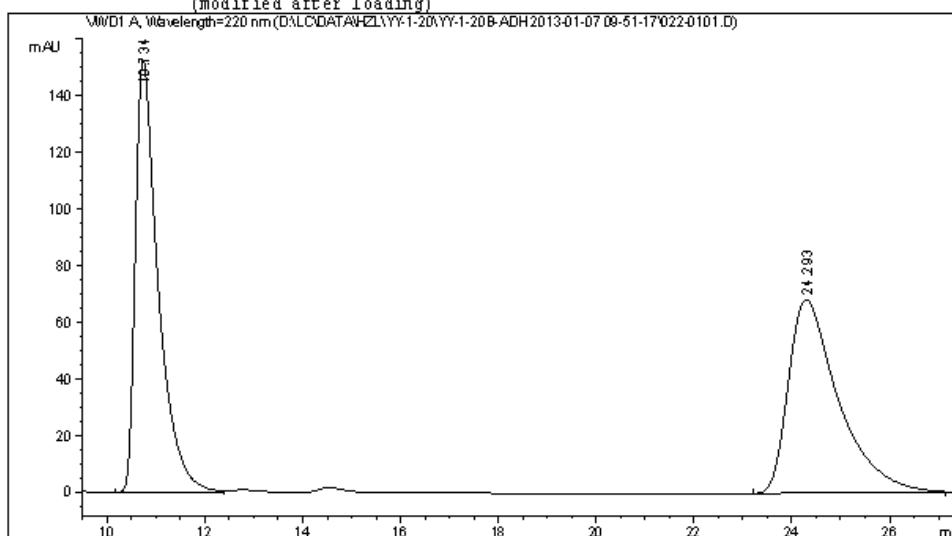
Totals : 1.09328e4 212.78876



Data File D:\LC\DATA\H2L\YY-1-20\YY-1-20B-ADH 2013-01-07 09-51-17\022-0101.D
 Sample Name: YY-1-20B

```

=====
Acq. Operator   : FX                      Seq. Line :    1
Acq. Instrument : Instrument 1             Location  : Vial 22
Injection Date  : 1/7/2013 9:53:00 AM     Inj       :    1
                                           Inj Volume: 5 µl
Acq. Method     : D:\LC\DATA\H2L\YY-1-20\YY-1-20B-ADH 2013-01-07 09-51-17\ADH-30-70-1ML-
                  220NM.M
Last changed    : 12/29/2012 4:43:24 PM by FX
Analysis Method : D:\LC\DATA\H2L\YY-1-20\YY-1-20B-ADH 2013-01-07 09-51-17\022-0101.D\DA.M (
                  ADH-30-70-1ML-220NM.M)
Last changed    : 1/7/2013 4:25:05 PM by FX
                  (modified after loading)
=====
  
```



Area Percent Report

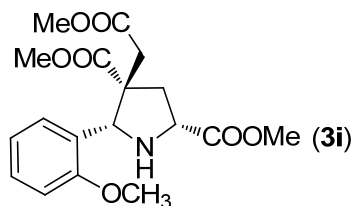
```

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

Signal 1: WVD1 A, Wavelength=220 nm

| Peak # | RetTime [min] | Type | Width [min] | Area mAU | Area % | Height [mAU] |
|--------|---------------|------|-------------|------------|---------|--------------|
| 1 | 10.734 | BB | 0.4791 | 4963.49072 | 50.5202 | 152.92928 |
| 2 | 24.293 | BB | 1.0392 | 4861.26416 | 49.4798 | 68.49332 |

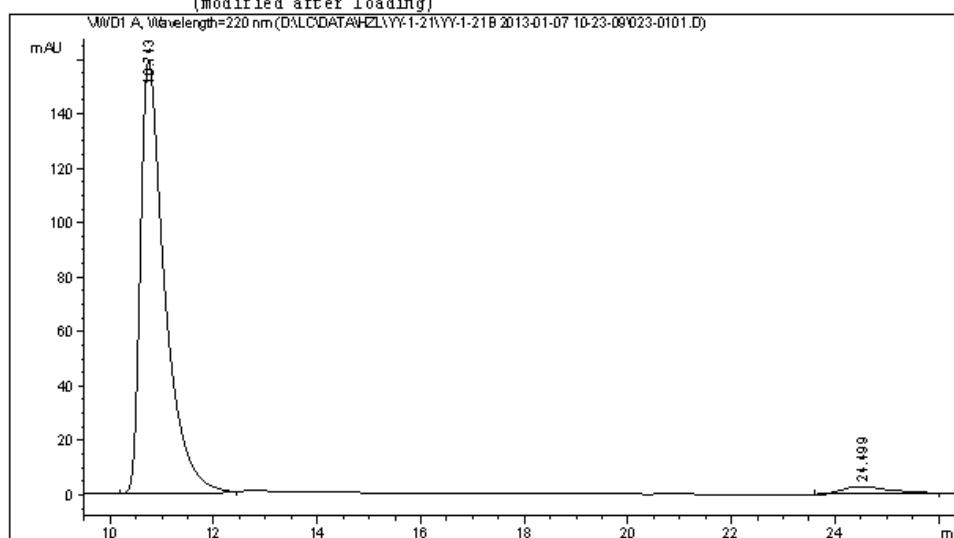
Totals : 9824.75488 221.42259



Data File D:\LC\DATA\H2L\YY-1-21\YY-1-21B 2013-01-07 10-23-09\023-0101.D
Sample Name: YY-1-21B

```
=====
Acq. Operator   : FX                               Seq. Line :    1
Acq. Instrument : Instrument 1                     Location  : Vial 23
Injection Date  : 1/7/2013 10:25:03 AM             Inj       :    1
                                                    Inj Volume: 5 µl

Acq. Method     : D:\LC\DATA\H2L\YY-1-21\YY-1-21B 2013-01-07 10-23-09\ADH-30-70-1ML-220NM.M
Last changed    : 12/29/2012 4:43:24 PM by FX
Analysis Method : D:\LC\DATA\H2L\YY-1-21\YY-1-21B 2013-01-07 10-23-09\023-0101.D\DA.M (ADH-
30-70-1ML-220NM.M)
Last changed    : 1/7/2013 4:27:55 PM by FX
                (modified after loading)
=====
```



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

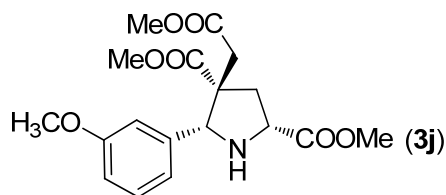
```
Sorted By      :      Signal
Multiplier     :      1.0000
Dilution       :      1.0000
Use Multiplier & Dilution Factor with ISTDs
```

Signal 1: VMD1 A, Wavelength=220 nm

| Peak # | RetTime [min] | Type | Width [min] | Area mAU | Area % | Height [mAU] |
|--------|---------------|------|-------------|------------|---------|--------------|
| 1 | 10.743 | BB | 0.4759 | 5157.98340 | 96.7852 | 159.06123 |
| 2 | 24.499 | BB | 0.7785 | 171.32874 | 3.2148 | 2.67758 |

Totals : 5329.31213 161.73881

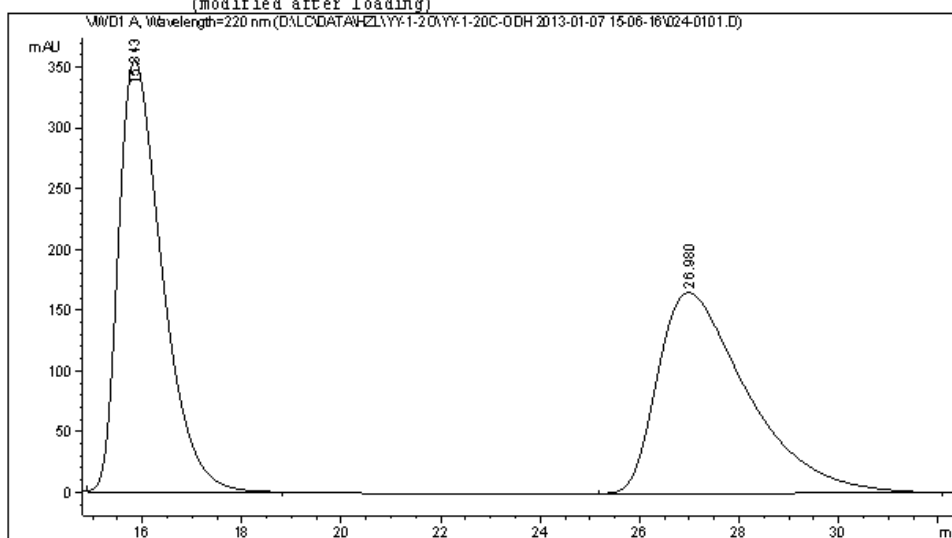
=====
*** End of Report ***



Data File D:\LC\DATA\H2L\YY-1-20\YY-1-20C-ODH 2013-01-07 15-06-16\024-0101.D
 Sample Name: YY-1-20C

```

=====
Acq. Operator   : FX                               Seq. Line :    1
Acq. Instrument : Instrument 1                     Location  : Vial 24
Injection Date  : 1/7/2013 3:07:33 PM             Inj       :    1
                                                    Inj Volume: 5 µl
Acq. Method     : D:\LC\DATA\H2L\YY-1-20\YY-1-20C-ODH 2013-01-07 15-06-16\ODH-30-70-1ML-
                  220NM.M
Last changed    : 2/24/2012 7:20:25 PM by HH
Analysis Method : D:\LC\DATA\H2L\YY-1-20\YY-1-20C-ODH 2013-01-07 15-06-16\024-0101.D\DA.M (
                  ODH-30-70-1ML-220NM.M)
Last changed    : 1/7/2013 4:26:53 PM by FX
                  (modified after loading)
=====
  
```



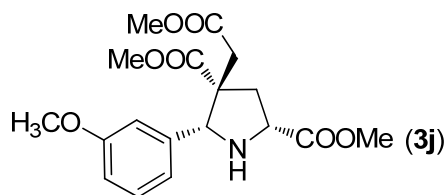
=====
 Area Percent Report
 =====

```

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

Signal 1: WVD1 A, Wavelength=220 nm

| Peak # | RetTime [min] | Type | Width [min] | Area mAU | Area % | Height [mAU] |
|----------|---------------|------|-------------|-----------|-----------|--------------|
| 1 | 15.843 | VB | 0.9323 | 2.16656e4 | 51.0213 | 356.24222 |
| 2 | 26.980 | BB | 1.8920 | 2.07983e4 | 48.9787 | 165.41560 |
| Totals : | | | | 4.24639e4 | 521.65782 | |

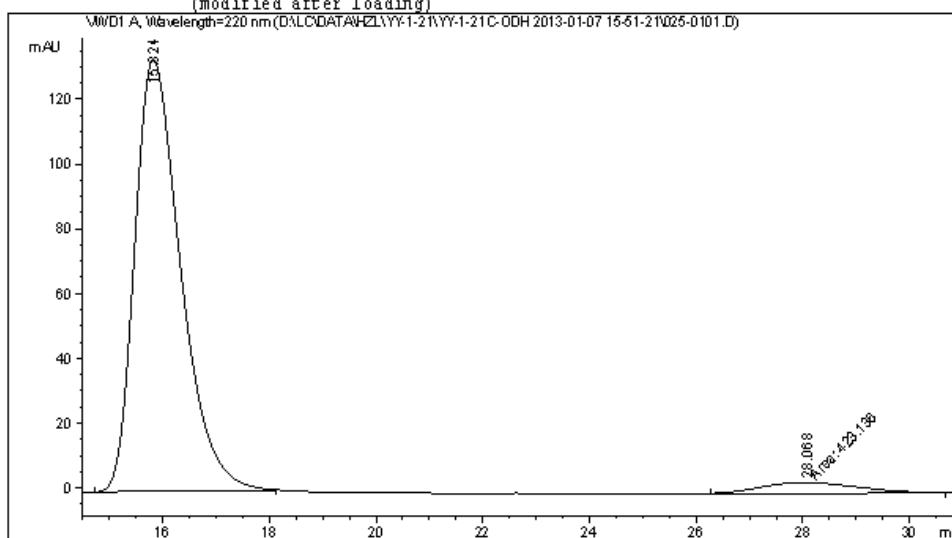


Data File D:\LC\DATA\H2L\YY-1-21\YY-1-21C-ODH 2013-01-07 15-51-21\025-0101.D
Sample Name: YY-1-21C

```

=====
Acq. Operator   : FX                               Seq. Line :    1
Acq. Instrument : Instrument 1                       Location  : Vial 25
Injection Date  : 1/7/2013 3:52:47 PM              Inj       :    1
                                                    Inj Volume: 5 µl
Acq. Method     : D:\LC\DATA\H2L\YY-1-21\YY-1-21C-ODH 2013-01-07 15-51-21\ODH-30-70-1ML-
                  220NM.M
Last changed    : 2/24/2012 7:20:25 PM by HH
Analysis Method : D:\LC\DATA\H2L\YY-1-21\YY-1-21C-ODH 2013-01-07 15-51-21\025-0101.D\DA.M (
                  ODH-30-70-1ML-220NM.M)
Last changed    : 1/7/2013 4:30:55 PM by FX
                  (modified after loading)
=====

```



Area Percent Report

```

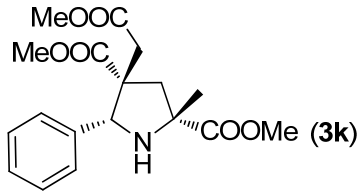
=====
Sorted By      :      Signal
Multiplier     :      1.0000
Dilution       :      1.0000
Use Multiplier & Dilution Factor with ISTDs
=====

```

Signal 1: WVD1 A, Wavelength=220 nm

| Peak # | RetTime [min] | Type | Width [min] | Area mAU *s | Height [mAU] | Area % |
|--------|---------------|------|-------------|-------------|--------------|---------|
| 1 | 15.824 | BB | 0.9138 | 7958.47607 | 133.24004 | 94.9516 |
| 2 | 28.068 | MM | 2.1058 | 423.13553 | 3.34897 | 5.0484 |

Totals : 8381.61160 136.58900

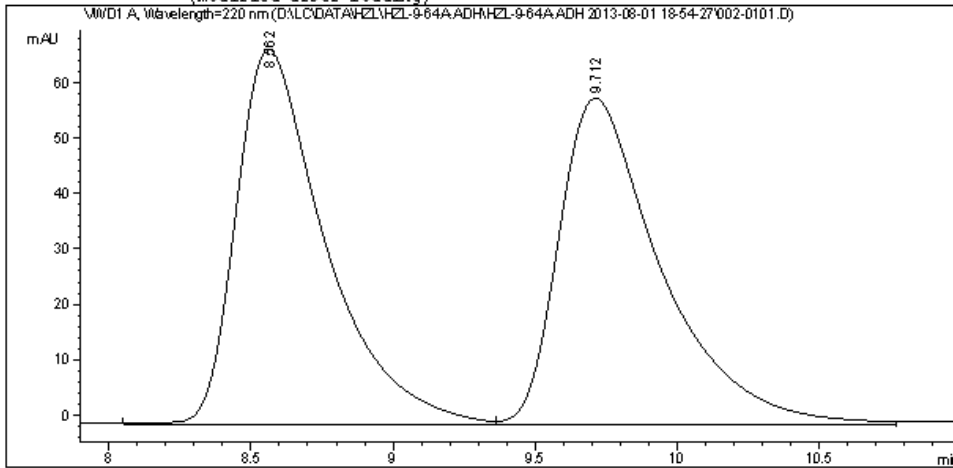


Data File D:\LC\DATA\H2L\H2L-9-64A-ADH\H2L-9-64A-ADH 2013-08-01 18-54-27\002-0101.D
Sample Name: H2L-9-64A

```

=====
Acq. Operator   : TMC                      Seq. Line :    1
Acq. Instrument : Instrument 1              Location  : Vial 2
Injection Date  : 8/1/2013 6:55:43 PM      Inj       :    1
                                           Inj Volume: 5 µl
Acq. Method     : D:\LC\DATA\H2L\H2L-9-64A-ADH\H2L-9-64A-ADH 2013-08-01 18-54-27\ADH-20-80-
                    IML-220MM.M
Last changed    : 8/1/2013 7:07:44 PM by TMC
                    (modified after loading)
Analysis Method : D:\LC\DATA\H2L\H2L-9-64A-ADH\H2L-9-64A-ADH 2013-08-01 18-54-27\002-0101.D\
                    DA.M (ADH-20-80-IML-220MM.M)
Last changed    : 8/1/2013 8:24:30 PM by TMC
                    (modified after loading)
=====

```



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

```

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

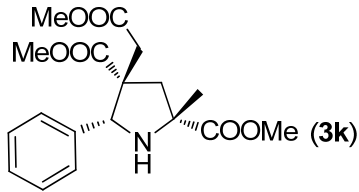
```

Signal 1: VWD1 A, Wavelength=220 nm

| Peak # | RetTime [min] | Type | Width [min] | Area mAU | Area % | Height [mAU] | Area % |
|--------|---------------|------|-------------|------------|---------|--------------|---------|
| 1 | 8.562 | WV | 0.3232 | 1480.70801 | 50.1724 | 67.80770 | 50.1724 |
| 2 | 9.712 | VB | 0.3697 | 1470.53174 | 49.8276 | 58.93689 | 49.8276 |

Totals : 2951.23975 126.74459

=====
*** End of Report ***

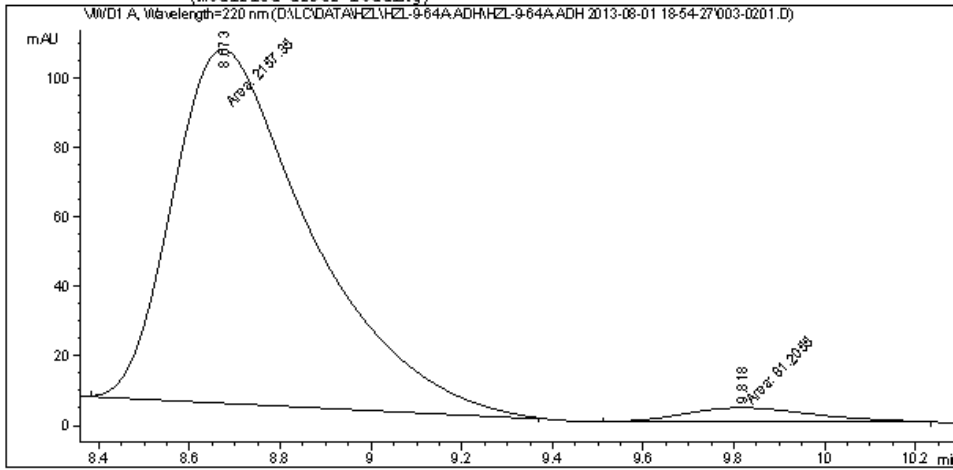


Data File D:\LC\DATA\HZL\HZL-9-64A-ADH\HZL-9-64A-ADH 2013-08-01 18-54-27\003-0201.D
Sample Name: HZL-9-70A

```

=====
Acq. Operator   : TMC                      Seq. Line :    2
Acq. Instrument : Instrument 1              Location  : Vial 3
Injection Date  : 8/1/2013 7:10:19 PM      Inj       :    1
                                           Inj Volume: 5 µl
Acq. Method     : D:\LC\DATA\HZL\HZL-9-64A-ADH\HZL-9-64A-ADH 2013-08-01 18-54-27\ADH-20-80-
                    IML-220MM.M
Last changed    : 8/1/2013 7:08:32 PM by TMC
                    (modified after loading)
Analysis Method : D:\LC\DATA\HZL\HZL-9-64A-ADH\HZL-9-64A-ADH 2013-08-01 18-54-27\003-0201.D\
                    DA.M (ADH-20-80-IML-220MM.M)
Last changed    : 8/1/2013 8:23:28 PM by TMC
                    (modified after loading)
=====

```



Area Percent Report

```

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

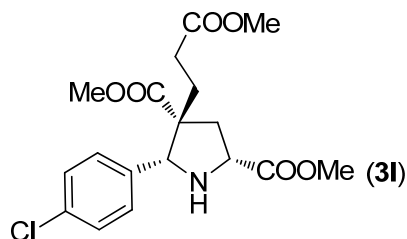
```

Signal 1: VWD1 A, Wavelength=220 nm

| Peak # | RetTime [min] | Type | Width [min] | Area mAU | Area % | Height [mAU] | Area % |
|--------|---------------|------|-------------|------------|---------|--------------|---------|
| 1 | 8.673 | MM | 0.3524 | 2157.34937 | 96.3724 | 102.03802 | 96.3724 |
| 2 | 9.818 | MM | 0.3332 | 81.20545 | 3.6276 | 4.06176 | 3.6276 |

Totals : 2238.55482 106.09978

*** End of Report ***

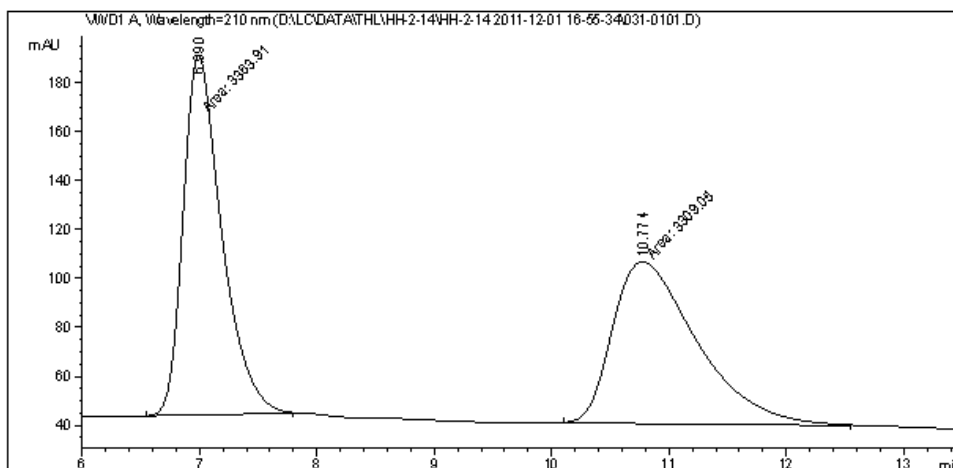


Data File D:\LC\DATA\THL\HH-2-14\HH-2-14 2011-12-01 16-55-34\031-0101.D
 Sample Name: HH-2-14

```

=====
Acq. Operator   : THL                      Seq. Line :    1
Acq. Instrument : Instrument 1              Location  : Vial 31
Injection Date  : 12/1/2011 4:57:40 PM    Inj       :    1
                                           Inj Volume: 5 µl

Acq. Method     : D:\LC\201111\thl\HH-2-14\HH-2-14 2011-12-01 16-55-34\ASH-60-40-1ML-210NM.M
Last changed    : 12/1/2011 4:54:56 PM by THL
Analysis Method : D:\LC\DATA\THL\HH-2-14\HH-2-14 2011-12-01 16-55-34\031-0101.D\DA.M (ASH-
60-40-1ML-210NM.M)
Last changed    : 5/7/2013 8:55:04 PM by TL
                 (modified after loading)
Method Info     : ASH-50-50-1ML-254NM-50MIN
  
```



Area Percent Report

```

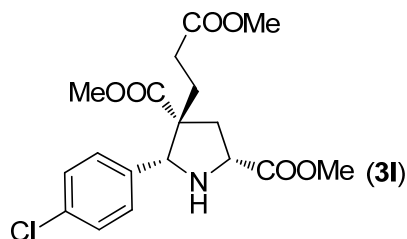
Sorted By      : Signal
Multiplier     : 1.0000
Dilution       : 1.0000
Use Multiplier & Dilution Factor with ISTDs
  
```

Signal 1: VMD1 A, Wavelength=210 nm

| Peak # | RetTime [min] | Type | Width [min] | Area mAU | Area *s | Height [mAU] | Area % |
|--------|---------------|------|-------------|------------|-----------|--------------|--------|
| 1 | 6.990 | MM | 0.3811 | 3363.91431 | 147.11465 | 50.4111 | |
| 2 | 10.774 | MM | 0.8328 | 3309.04517 | 66.21954 | 49.5889 | |

Totals : 6672.95947 213.33419

*** End of Report ***

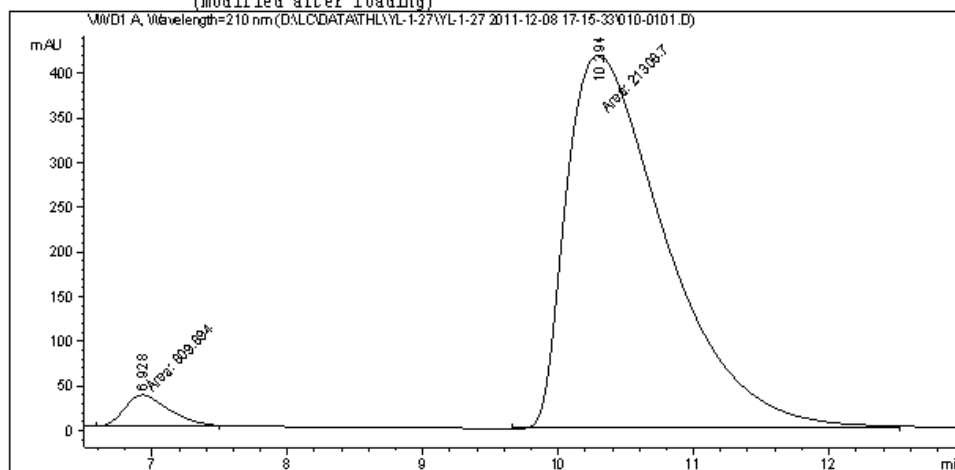


Data File D:\LC\DATA\THL\YL-1-27\YL-1-27 2011-12-08 17-15-33\010-0101.D
 Sample Name: YL-1-27

```

=====
Acq. Operator   : YL                      Seq. Line :    1
Acq. Instrument : Instrument 1             Location  : Vial 10
Injection Date  : 12/8/2011 5:17:25 PM    Inj       :    1
                                           Inj Volume: 5 µl

Acq. Method     : D:\LC\201112\YL\YL-1-27\YL-1-27 2011-12-08 17-15-33\ASH-60-40-1ML-210NM-
                  20MIN.M
Last changed    : 12/8/2011 5:14:13 PM by THL
Analysis Method : D:\LC\DATA\THL\YL-1-27\YL-1-27 2011-12-08 17-15-33\010-0101.D\DA.M (ASH-
                  60-40-1ML-210NM-20MIN.M)
Last changed    : 5/7/2013 8:56:42 PM by TL
                  (modified after loading)
=====
  
```



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

```

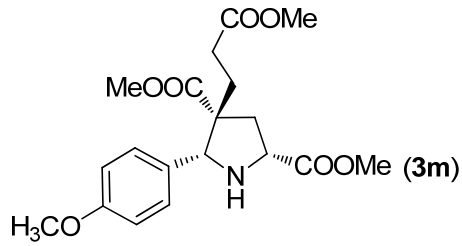
Sorted By       : Signal
Multiplier      : 1.0000
Dilution        : 1.0000
Use Multiplier & Dilution Factor with ISTDs
  
```

Signal 1: VMD1 A, Wavelength=210 nm

| Peak # | RetTime [min] | Type | Width [min] | Area mAU | Height [mAU] | Area % |
|--------|---------------|------|-------------|-----------|--------------|---------|
| 1 | 6.928 | MM | 0.3836 | 809.89410 | 35.18781 | 3.6616 |
| 2 | 10.294 | MM | 0.8495 | 2.13087e4 | 418.05701 | 96.3384 |

Totals : 2.21186e4 453.24481

=====
 *** End of Report ***

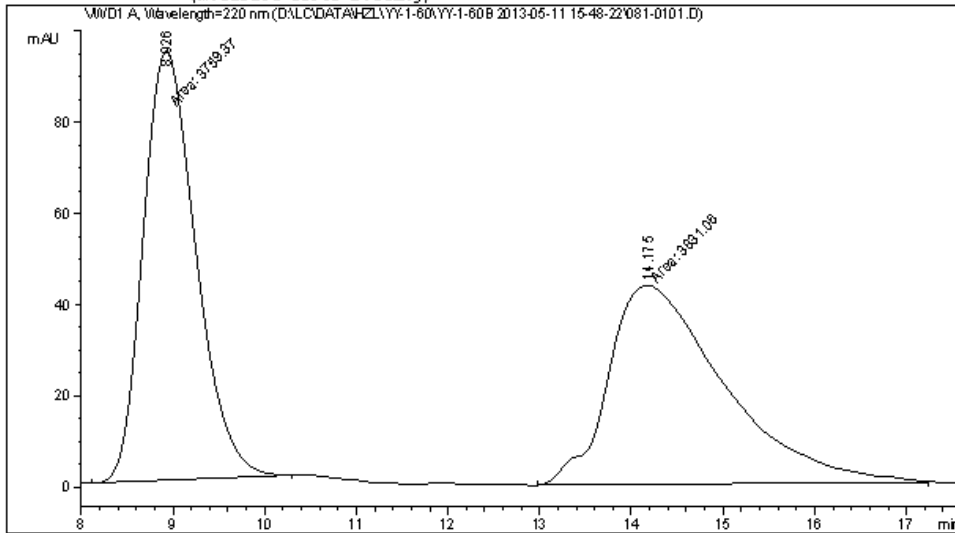


Data File D:\LC\DATA\H2L\YY-1-60\YY-1-60B 2013-05-11 15-48-22\081-0101.D
 Sample Name: YY-1-60B

```

=====
Acq. Operator   : TL                      Seq. Line :    1
Acq. Instrument : Instrument 1             Location  : Vial 81
Injection Date  : 5/11/2013 3:49:46 PM    Inj       :    1
                                           Inj Volume: 5 µl

Acq. Method    : D:\LC\DATA\H2L\YY-1-60\YY-1-60B 2013-05-11 15-48-22\ASH-40-60-10ML-220NM.M
Last changed   : 3/29/2012 7:36:14 PM by HZL
Analysis Method : D:\LC\DATA\H2L\YY-1-60\YY-1-60B 2013-05-11 15-48-22\081-0101.D\DA.M (ASH-
40-60-10ML-220NM.M)
Last changed   : 5/20/2013 10:09:41 AM by CX
                (modified after loading)
  
```



Area Percent Report

```

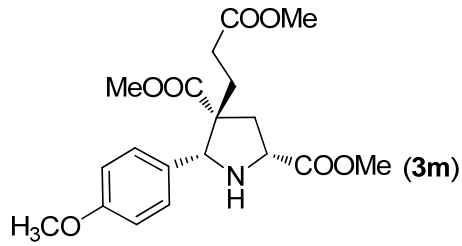
Sorted By      : Signal
Multiplier     : 1.0000
Dilution       : 1.0000
Use Multiplier & Dilution Factor with ISTDs
  
```

Signal 1: VMD1 A, Wavelength=220 nm

| Peak # | RetTime [min] | Type | Width [min] | Area mAU | Height [mAU] | Area % |
|--------|---------------|------|-------------|------------|--------------|---------|
| 1 | 8.926 | MM | 0.6654 | 3759.36841 | 94.16240 | 49.5278 |
| 2 | 14.175 | MM | 1.4615 | 3831.05737 | 43.68966 | 50.4722 |

Totals : 7590.42578 137.85206

*** End of Report ***

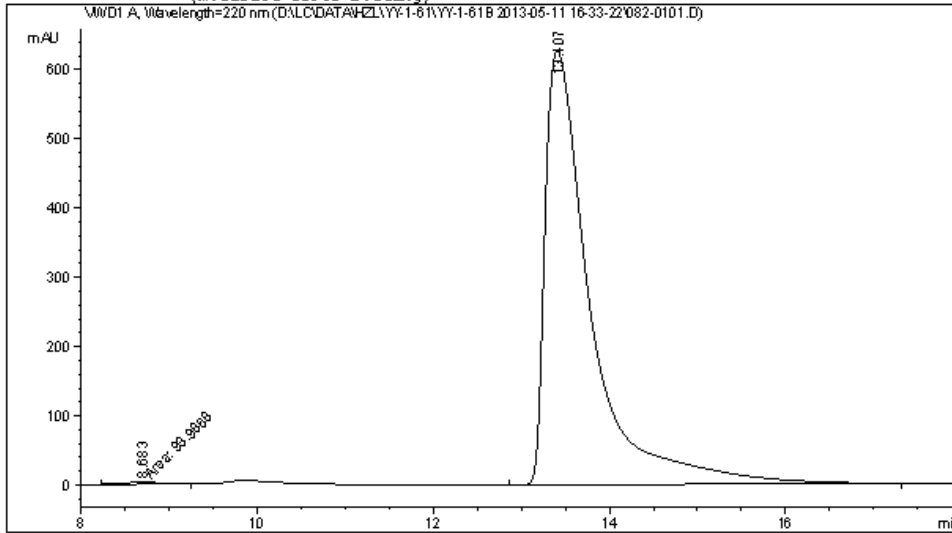


Data File D:\LC\DATA\HZL\YY-1-61\YY-1-61B 2013-05-11 16-33-22\082-0101.D
 Sample Name: YY-1-61B

```

=====
Acq. Operator   : TL                               Seq. Line :    1
Acq. Instrument : Instrument 1                       Location  : Vial 82
Injection Date  : 5/11/2013 4:34:47 PM             Inj       :    1
                                                    Inj Volume: 5 µl

Acq. Method     : D:\LC\DATA\HZL\YY-1-61\YY-1-61B 2013-05-11 16-33-22\ASH-40-60-10ML-220NM-
30MIN.M
Last changed    : 12/28/2012 10:12:11 PM by FX
Analysis Method : D:\LC\DATA\HZL\YY-1-61\YY-1-61B 2013-05-11 16-33-22\082-0101.D\DA.M (ASH-
40-60-10ML-220NM-30MIN.M)
Last changed    : 5/20/2013 9:52:50 AM by CX
(modified after loading)
  
```



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

```

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

Signal 1: VMD1 A, Wavelength=220 nm

| Peak # | RetTime [min] | Type | Width [min] | Area mAU | Area % | Height [mAU] | Area % |
|--------|---------------|------|-------------|-----------|---------|--------------|---------|
| 1 | 8.683 | MM | 0.4266 | 93.98680 | 0.4158 | 2.63090 | 0.4158 |
| 2 | 13.407 | VB | 0.5324 | 2.25125e4 | 99.5842 | 627.02307 | 99.5842 |

Totals : 2.26065e4 629.65398