Supporting Information

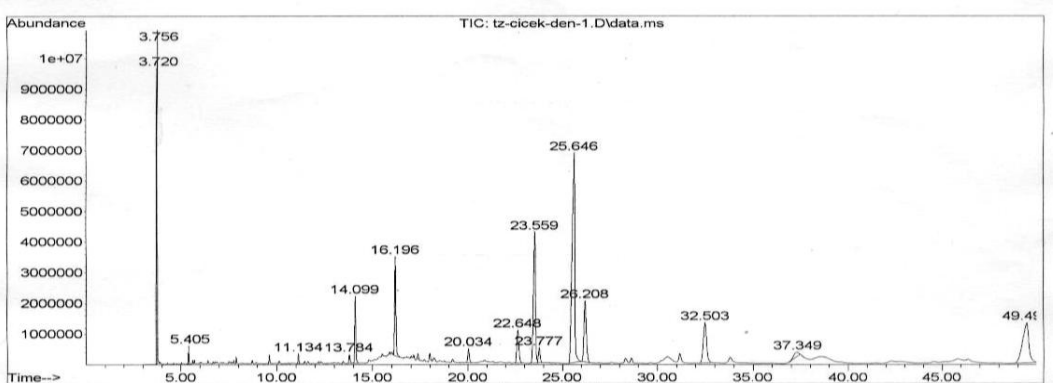
***Rec. Nat. Prod*. 11:4 (2017) 401-405**

Fatty Acid Composition and Biological Activities of *Tanacetum zahlbruckneri* (Náb.) Grierson Growing in Turkey

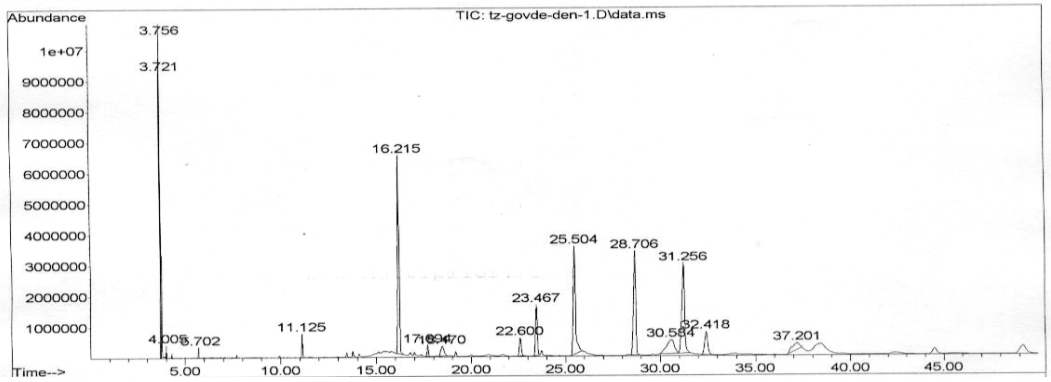
Pinar Caglar-Eyol[1], Nazli Boke Sarikahya[2], Omer C. Karakoc[3], Ayhan Gokce[4], Fatih Demirci[5], Suheyla Kirmizigul[2] and Nezhun Goren[1]

[1] Department of Molecular Biology and Genetic, Faculty of Arts & Science, Yildiz Technical University, 34210, Istanbul, Türkiye
[2] Department of Chemistry, Faculty of Science, Ege University, 35100, Bornova-Izmir, Turkey
[3] Department of Biology, Faculty of Science & Arts, Karatekin University, 18100, Cankiri, Türkiye
[4] Department of Plant Protection, Faculty of Agriculture, Gaziosmanpasa University, 60150, Tokat, Türkiye
[5] Faculty of Health Sciences Anadolu University, Eskişehir, Türkiye

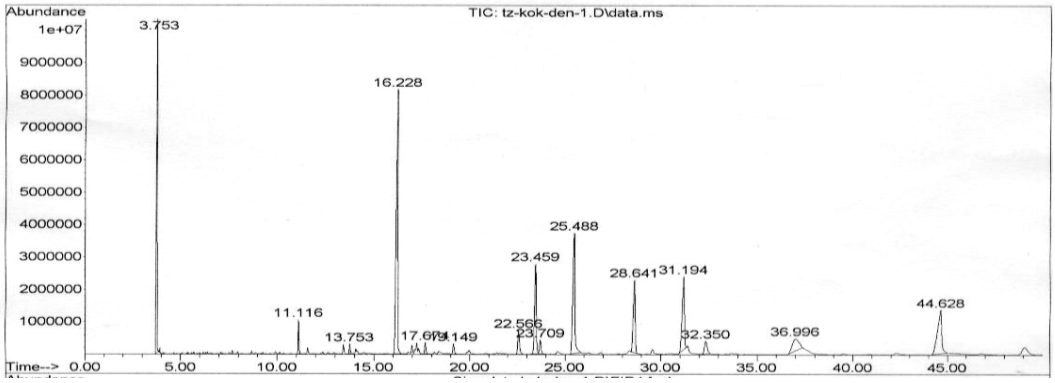
Table of Contents **Page**



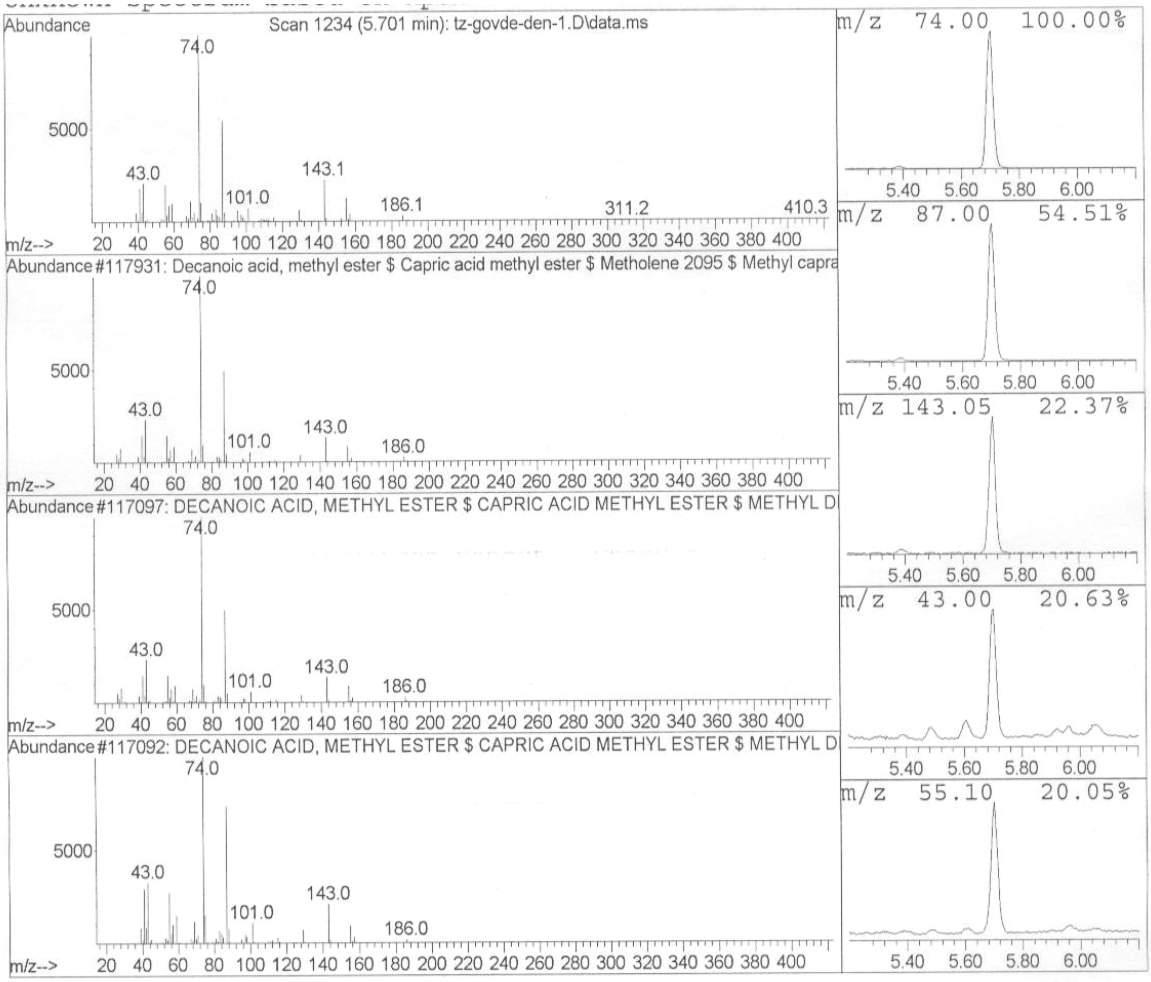
S1: GC-MS Chromatogram of *n*-hexane extract of Flowers



S2: GC-MS Chromatogram of *n*-hexane extract of Stem



S3: GC-MS Chromatogram of *n*-hexane extract of Root



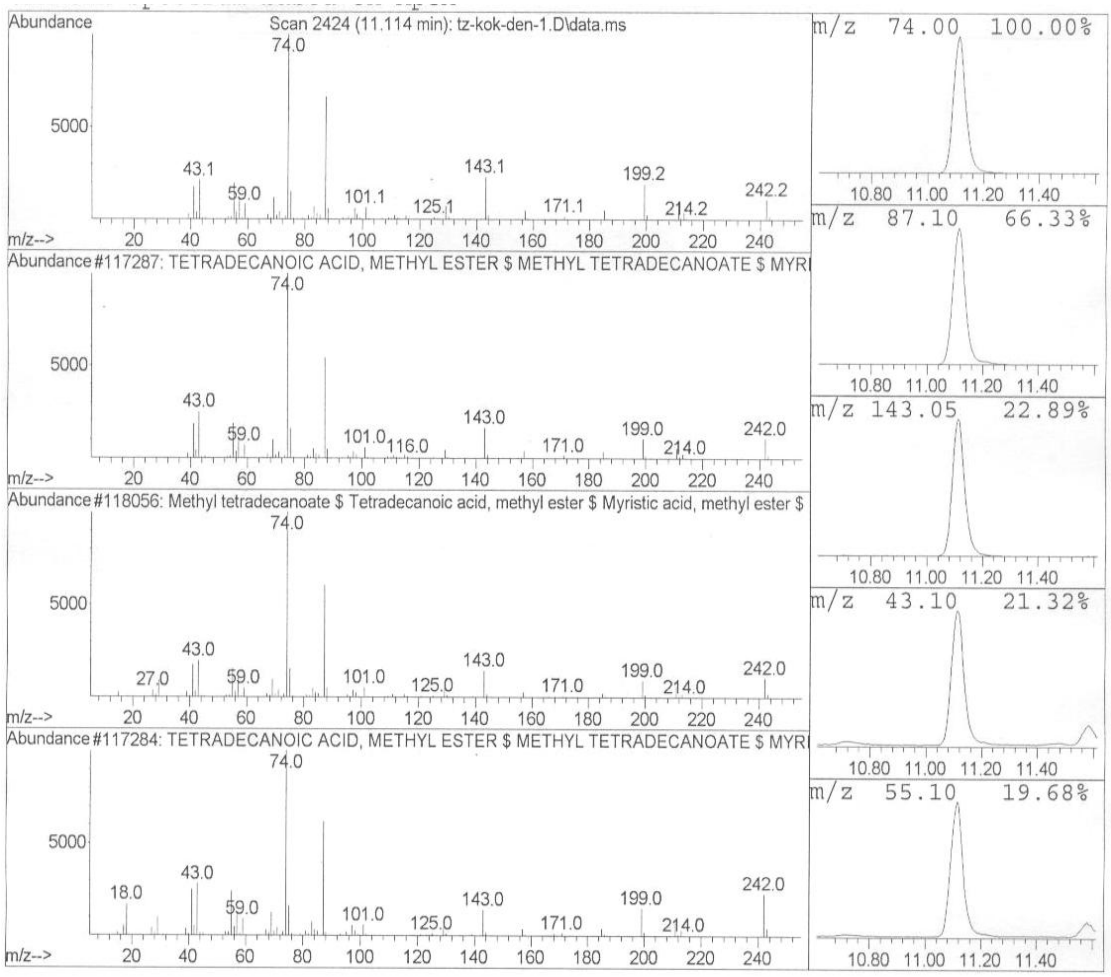

```
Data File: C:\msdchem\1\5975\tz-govde-den-1.D
Sample   : tz govde

Peak Number:  4     at      5.701 min  Area:   5744292  Area % 0.28

 The 3 best hits from each library.          Ref\#    CAS\#       Qual
-------------------------------------------------------------------------
    C:\Database\Wiley8NST.L
     1 Decanoic acid, methyl ester $ Ca...     117931 000110-42-9   96
     2 DECANOIC ACID, METHYL ESTER $ CA...     117097 000110-42-9   96
     3 DECANOIC ACID, METHYL ESTER $ CA...     117092 000110-42-9   95
```

S4: Mass Spectrum of Decanoic Acid ME

m/z : 186 ($C_{11}H_{22}O_2$) $[M]^+$, 143 $[M\text{-}C_3H_7]^+$, 101 $[143\text{-}C_3H_6]^+$, 74 $[CH_3O\text{-}C(OH)=CH_2]^{+\cdot}$ (Mc Lafferty Rearrangement).



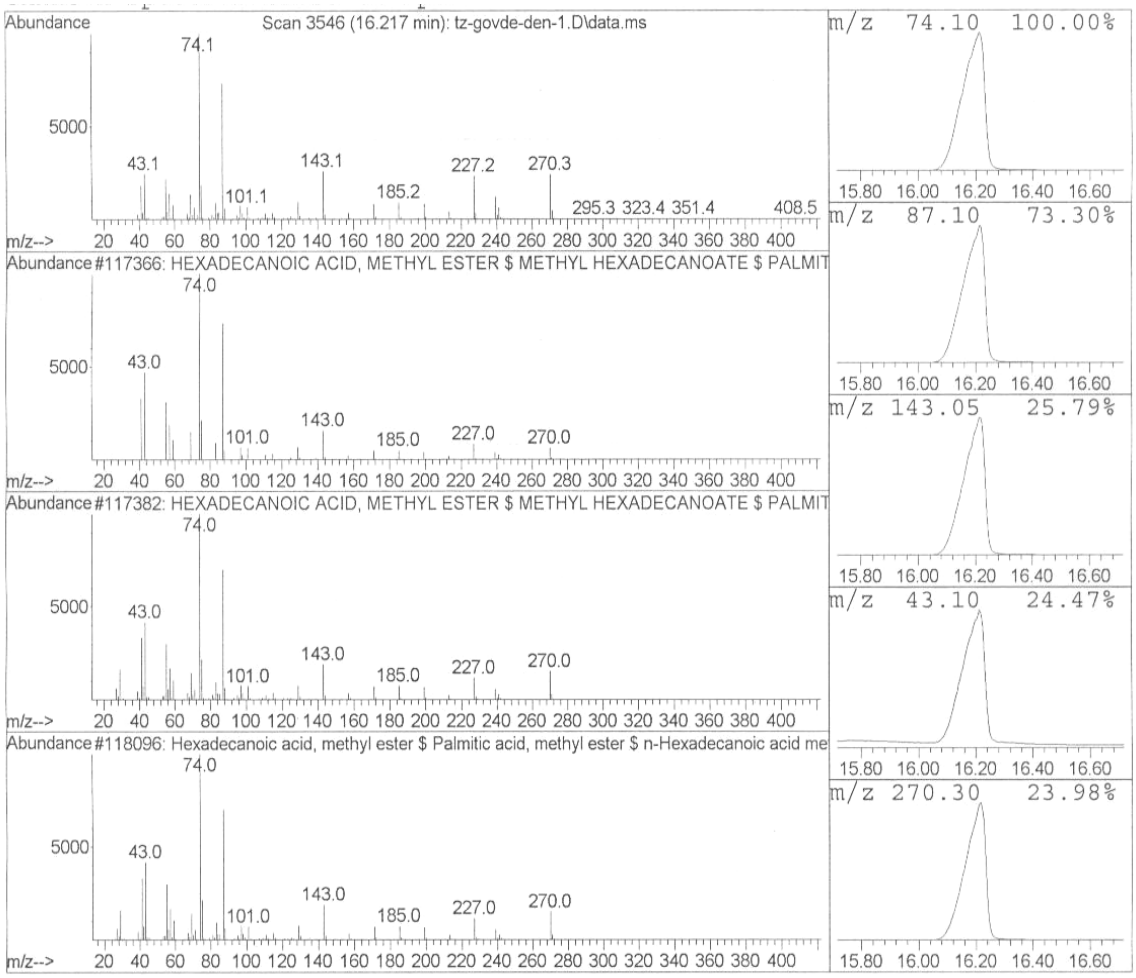

```
Data File: C:\msdchem\1\5975\tz-kok-den-1.D
Sample   : tz kok

Peak Number:  2     at     11.114 min  Area:  32636333  Area % 1.57

 The 3 best hits from each library.          Ref\#    CAS\#       Qual
-------------------------------------------------------------------------
    C:\Database\Wiley8NST.L
     1 TETRADECANOIC ACID, METHYL ESTER...     117287 000124-10-7   98
     2 Methyl tetradecanoate $ Tetradec...     118056 000124-10-7   98
     3 TETRADECANOIC ACID, METHYL ESTER...     117284 000124-10-7   98
```

S5: Mass Spectrum of Tetradecanoic Acid ME

m/z : 242 ($C_{15}H_{30}O_2$) $[M]^+$, 199 $[M\text{-}C_3H_7]^+$, 171 $[199\text{-}C_2H_4]^+$, 143 $[171\text{-}C_2H_4]^+$, 125 $[143\text{-}C_2H_4]^+$, 74 $[CH_3O\text{-}C(OH)=CH_2]^{+\cdot}$ (Mc Lafferty Rearrangement).



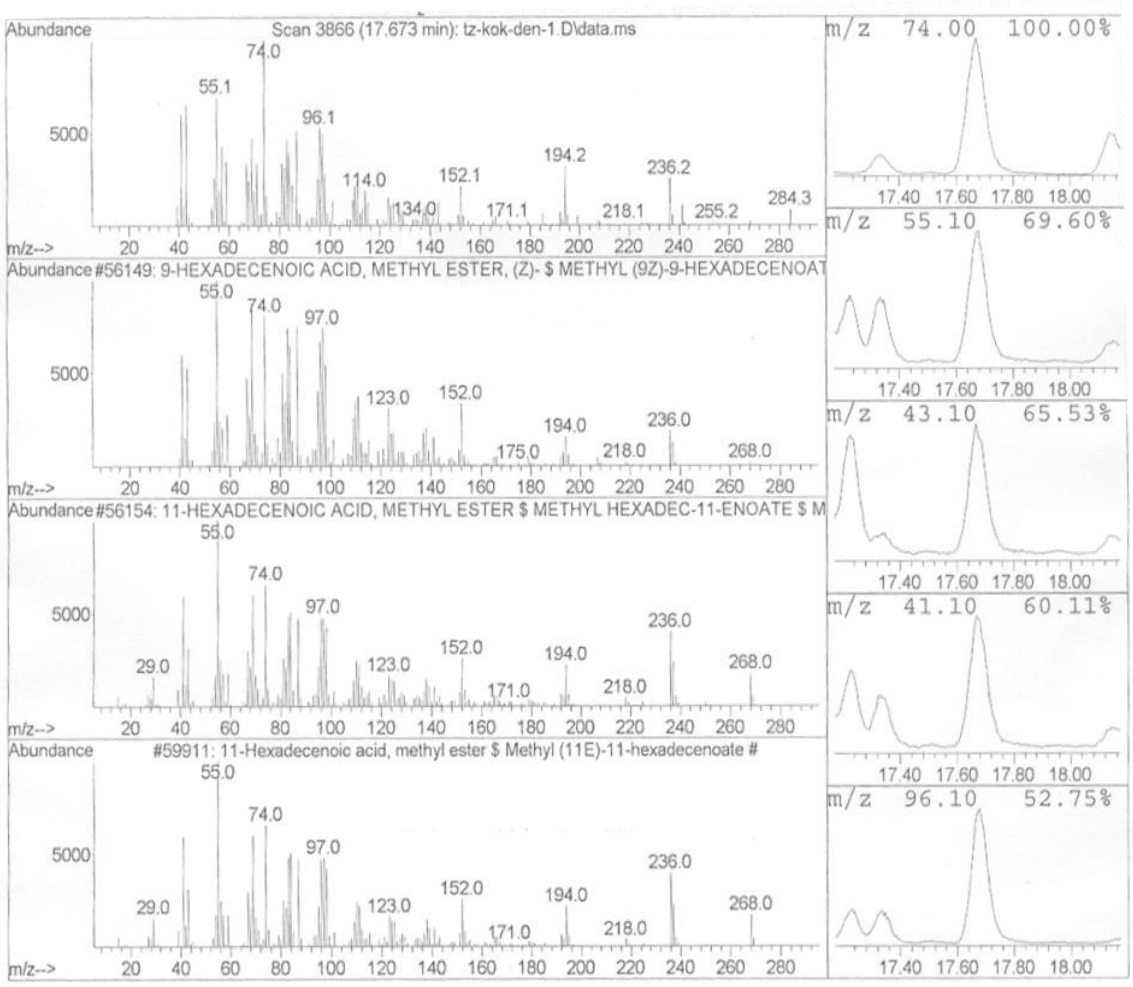

```
Data File: C:\msdchem\1\5975\tz-govde-den-1.D
Sample   : tz govde

Peak Number:  6     at     16.217 min  Area: 339340746  Area % 16.76

 The 3 best hits from each library.          Ref\#    CAS\#      Qual
-------------------------------------------------------------------------
    C:\Database\Wiley8NST.L
     1 HEXADECANOIC ACID, METHYL ESTER ...     117366 000112-39-0   99
     2 HEXADECANOIC ACID, METHYL ESTER ...     117382 000112-39-0   98
     3 Hexadecanoic acid, methyl ester ...     118096 000112-39-0   98
```

S6: Mass Spectrum of Hexadecanoic Acid ME

m/z : 270 ($C_{17}H_{34}O_2$) $[M]^+$, 227 $[M\text{-}C_3H_7]^+$, 185 $[M\text{-}C_6H_{13}]^+$,143 $[185\text{-}C_3H_6]^+$,101 $[143\text{-}C_3H_6]^+$, 74 $[CH_3O\text{-}C(OH)=CH_2]^{+\cdot}$ (Mc Lafferty Rearrangement), 43 $[C_3H_7]^+$.



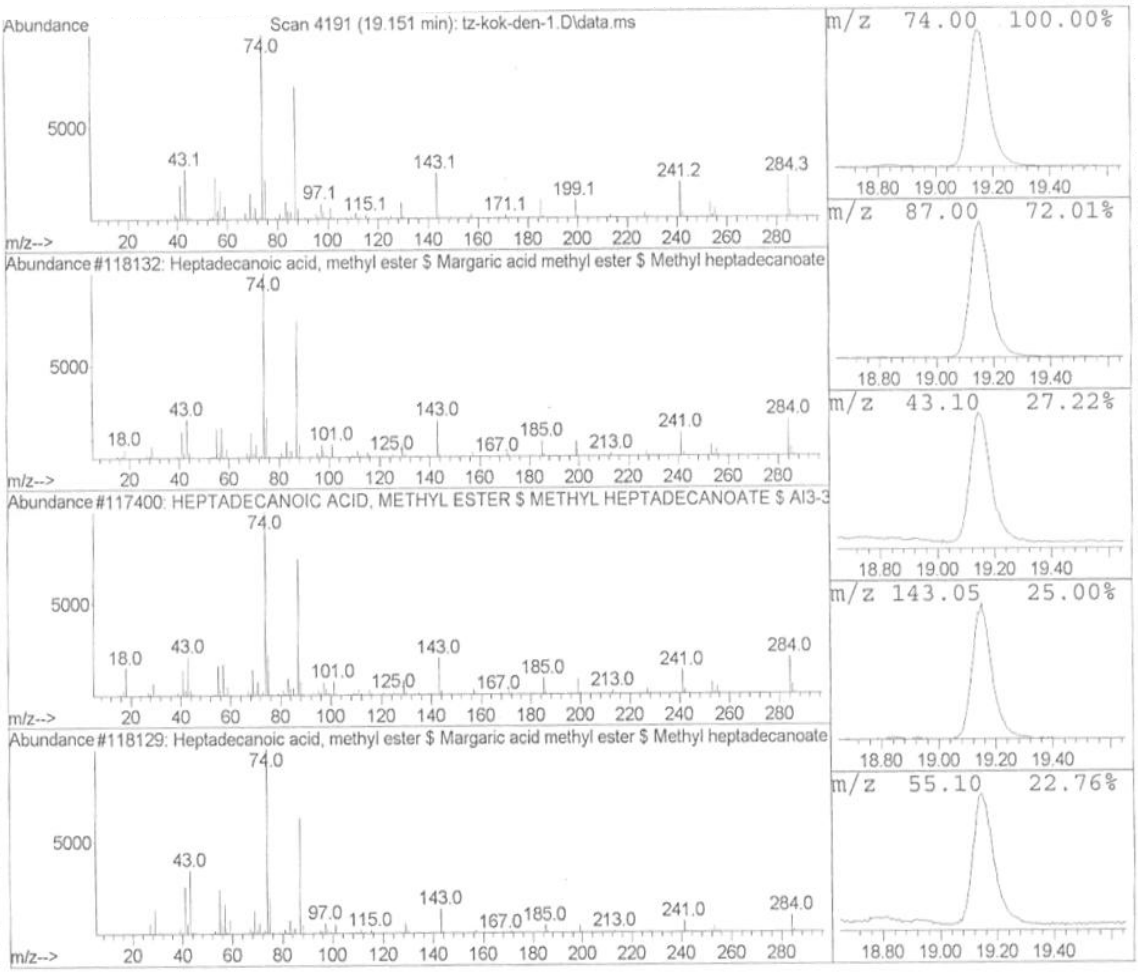

```
Data File: C:\msdchem\1\5975\tz-kok-den-1.D
Sample   : tz kok

Peak Number:  5     at     17.673 min  Area:  15345932  Area % 0.74

 The 3 best hits from each library.          Ref\#    CAS\#       Qual
-------------------------------------------------------------------
    C:\Database\Wiley8NST.L
     1 9-HEXADECENOIC ACID, METHYL ESTE...      56149 001120-25-8   93
     2 11-HEXADECENOIC ACID, METHYL EST...      56154 055000-42-5   90
     3 11-Hexadecenoic acid, methyl est...      59911 055000-42-5   90
```

S7: Mass Spectrum of 9-Hexadecenoic Acid ME

m/z : 268($C_{17}H_{32}O_2$) $[M]^+$, 236 $[M\text{-}CH_3OH]^+$, 194 $[M\text{-}74]^+$, 152 $[194\text{-}(CH_2)_3]^+$, 97 $[194\text{-}C_7H_{13}]^+$, 74 $[CH_3O\text{-}C(OH)=CH_2]^{+\cdot}$ (Mc Lafferty Rearrangement), 55 $[97\text{-}(CH_2)_3]^+$.



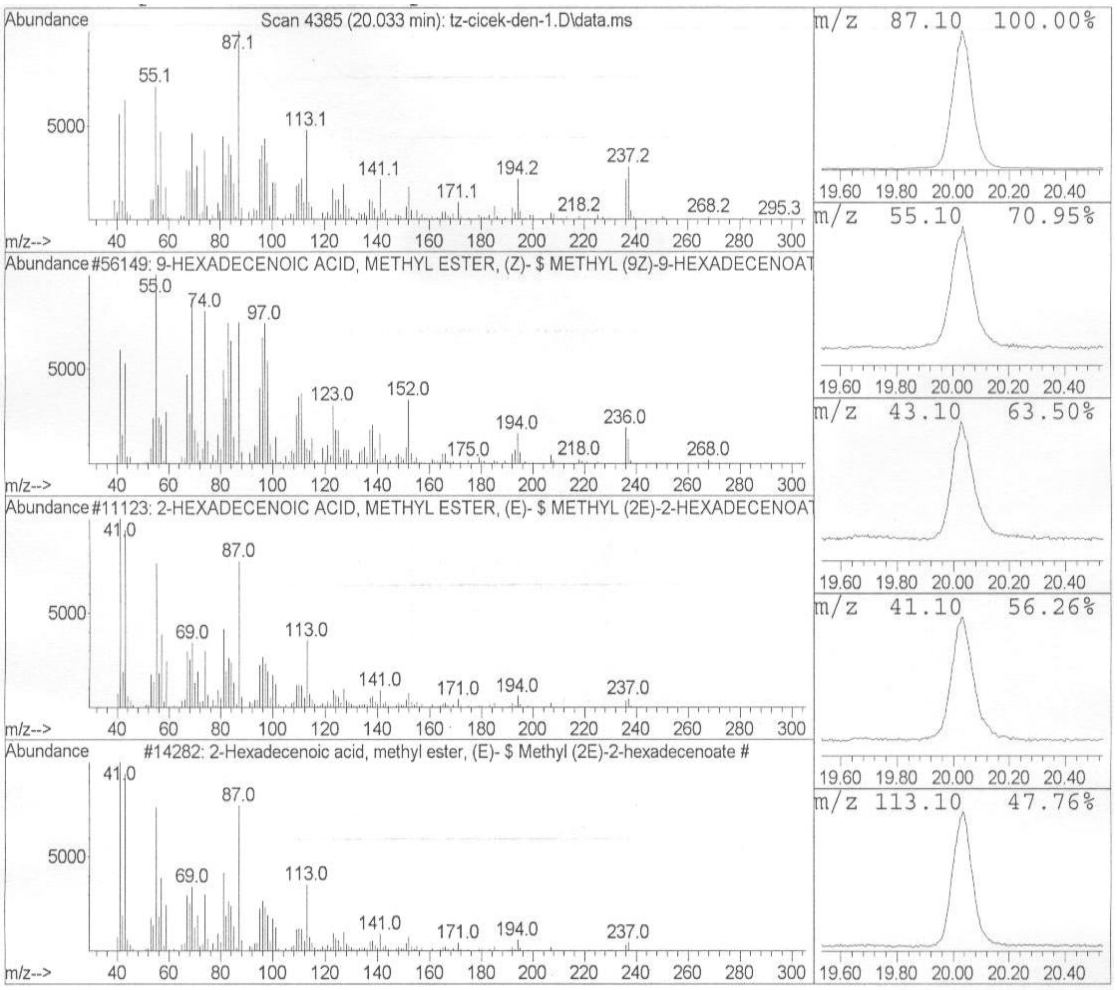

```
Data File: C:\msdchem\1\5975\tz-kok-den-1.D
Sample   : tz kok

Peak Number:  6     at     19.151 min  Area:  15439802  Area % 0.74

 The 3 best hits from each library.          Ref\#    CAS\#       Qual
-------------------------------------------------------------------
    C:\Database\Wiley8NST.L
     1 Heptadecanoic acid, methyl ester...     118132 001731-92-6   99
     2 HEPTADECANOIC ACID, METHYL ESTER...     117400 001731-92-6   99
     3 Heptadecanoic acid, methyl ester...     118129 001731-92-6   98
```

S8: Mass Spectrum of Heptadecanoic Acid ME

m/z : 284 ($C_{18}H_{36}O_2$) $[M]^+$, 241 $[M\text{-}C_3H_7]^+$, 199 $[M\text{-}C_3H_7]^+$, 171 $[199\text{-}C_2H_4]^+$, 143 $[171\text{-}C_2H_4]^+$, 115 $[143\text{-}C_2H_4]^+$, 74 $[CH_3O\text{-}C(OH)=CH_2]^{+\cdot}$ (Mc Lafferty rearrangement), 43 $[C_3H_7]^+$.



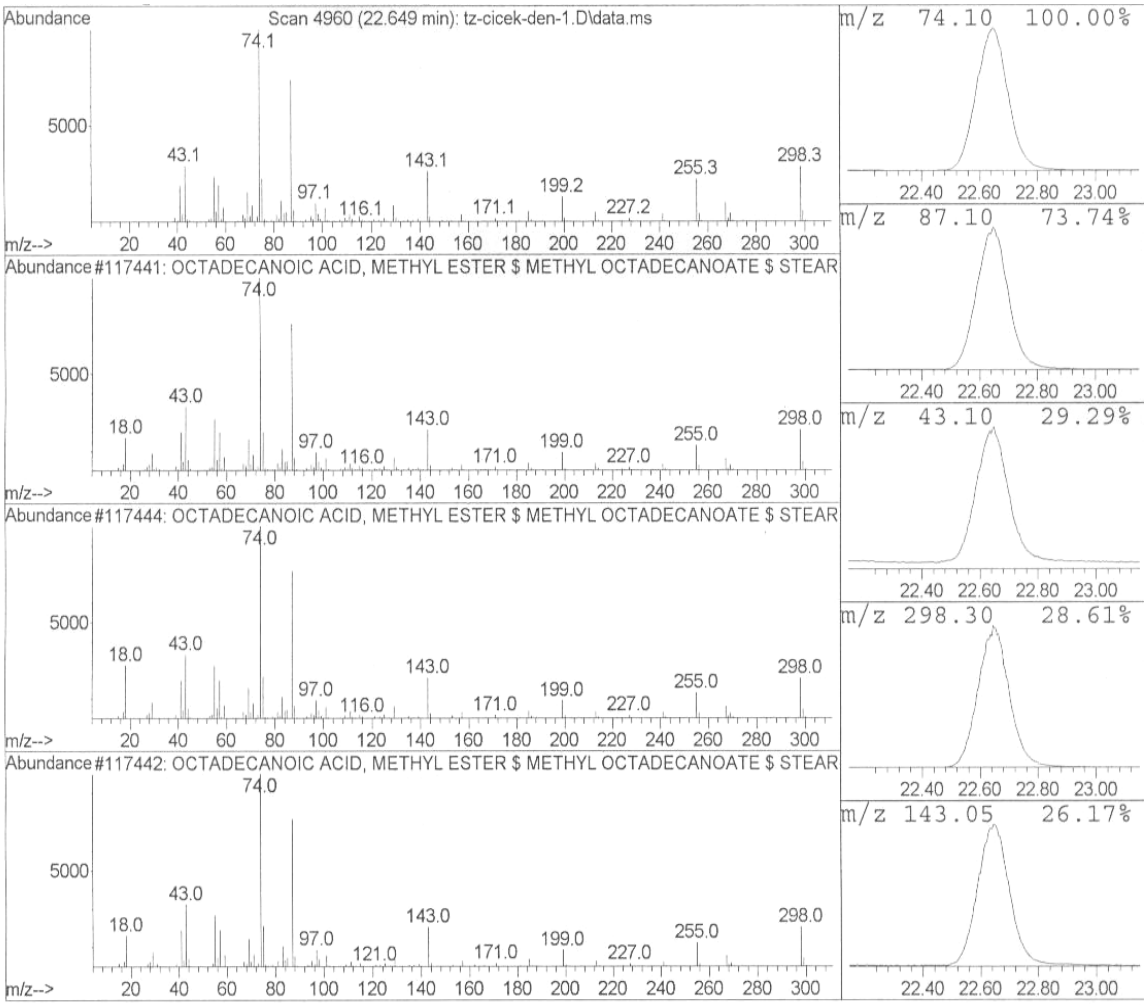
Data File: C:\msdchem\1\5975\tz-cicek-den-1.D
Sample : tz cicek

Peak Number: 8 at 20.033 min Area: 24898576 Area % 1.05

The 3 best hits from each library.	Ref\#	CAS\#	Qual
C:\Database\Wiley8NST.L			
1 9-HEXADECENOIC ACID, METHYL ESTE...	56149	001120-25-8	93
2 2-HEXADECENOIC ACID, METHYL ESTE...	11123	002825-81-2	87
3 2-Hexadecenoic acid, methyl este...	14282	002825-81-2	87

S9: Mass Spectrum of 2-Hexadecenoic Acid ME

m/z: 268 ($C_{17}H_{32}O_2$) $[M]^+$, 237 $[M\text{-}OCH_3]^+$, 194 $[C_3H_7]^+$, 87$[CH_3OCOCH_2CH_2]^+$, 55 $[87\text{-}CH_3OH]^+$.



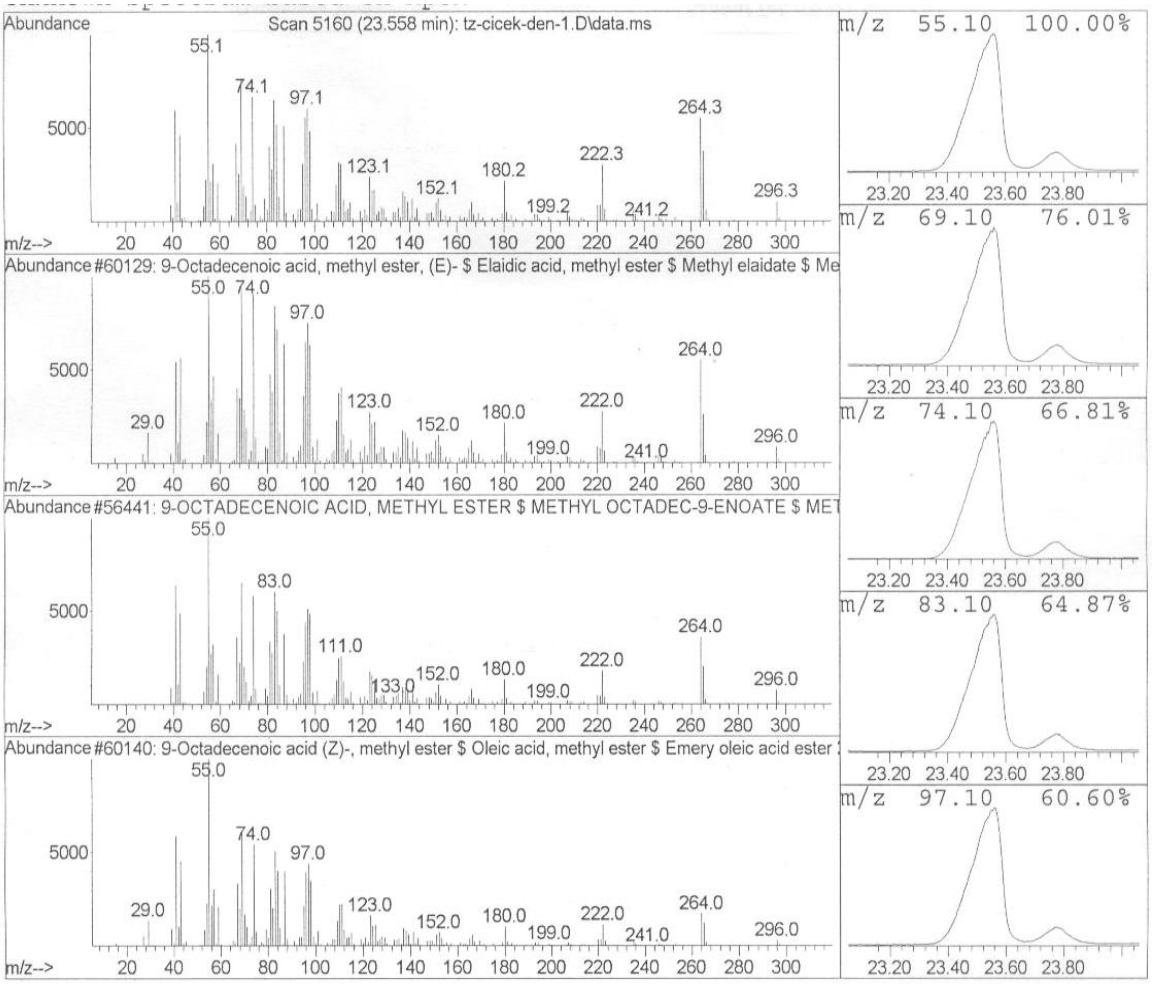

```
Data File: C:\msdchem\1\5975\tz-cicek-den-1.D
Sample   : tz cicek

Peak Number:  9     at     22.649 min  Area:  81790109  Area % 3.46

 The 3 best hits from each library.          Ref\#    CAS\#      Qual
-------------------------------------------------------------------
    C:\Database\Wiley8NST.L
     1 OCTADECANOIC ACID, METHYL ESTER ...     117441 000112-61-8   99
     2 OCTADECANOIC ACID, METHYL ESTER ...     117444 000112-61-8   99
     3 OCTADECANOIC ACID, METHYL ESTER ...     117442 000112-61-8   99
```

S10: Mass Spectrum of Octadecanoic Acid ME

m/z : 296 ($C_{19}H_{38}O_2$) $[M]^+$, 255$[M-C_3H_7]^+$, $[M-C_3H_7]^+$, 171 $[199-C_2H_4]^+$, 143 $[171-C_2H_4]^+$, 74 $[CH_3O\text{-}C(OH)=CH_2]^{+\cdot}$ (Mc Lafferty Rearrengement), 43 $[C_3H_7]^+$.



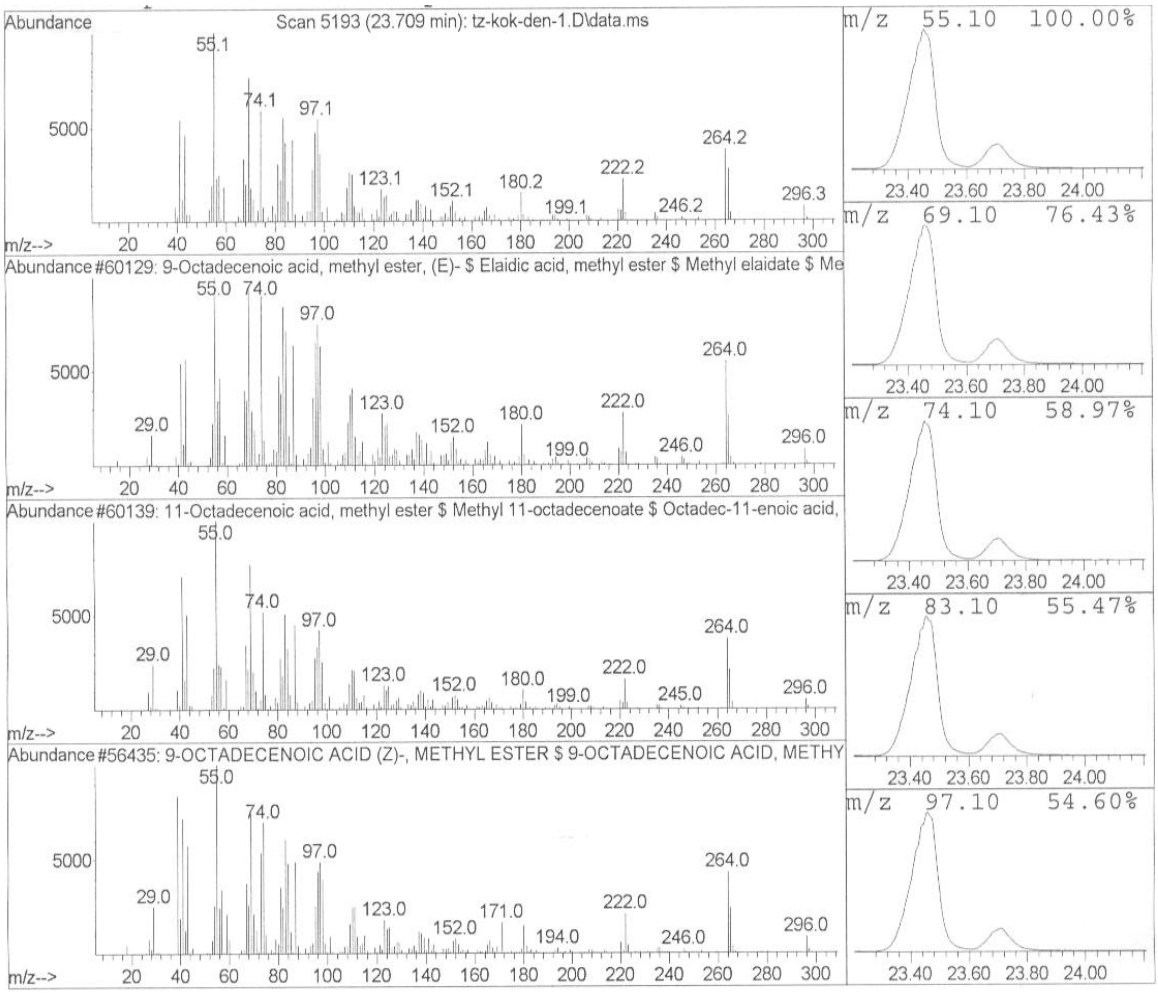

```
Data File: C:\msdchem\1\5975\tz-cicek-den-1.D
Sample   : tz cicek

Peak Number:  10    at     23.558 min  Area: 313960780  Area % 13.28

 The 3 best hits from each library.          Ref\#    CAS\#       Qual
-------------------------------------------------------------------------
    C:\Database\Wiley8NST.L
     1 9-Octadecenoic acid, methyl este...      60129 001937-62-8    99
     2 9-OCTADECENOIC ACID, METHYL ESTE...      56441 002462-84-2    99
     3 9-Octadecenoic acid (Z)-, methyl...      60140 000112-62-9    99
```

S11: Mass Spectrum of 9-Octadecenoic Acid ME

m/z 296 ($C_{19}H_{38}O_2$) $[M]^+$, 264 $[M\text{-}CH_3OH]^+$, 222 $[M\text{-}74]^+$, 180 $[222\text{-}C_3H_6]^+$, 152 $[180\text{-}C_2H_4]^+$, 74 $[CH_3O\text{-}C(OH)=CH_2]^{+\cdot}$ (Mc Lafferty Rearrangement).



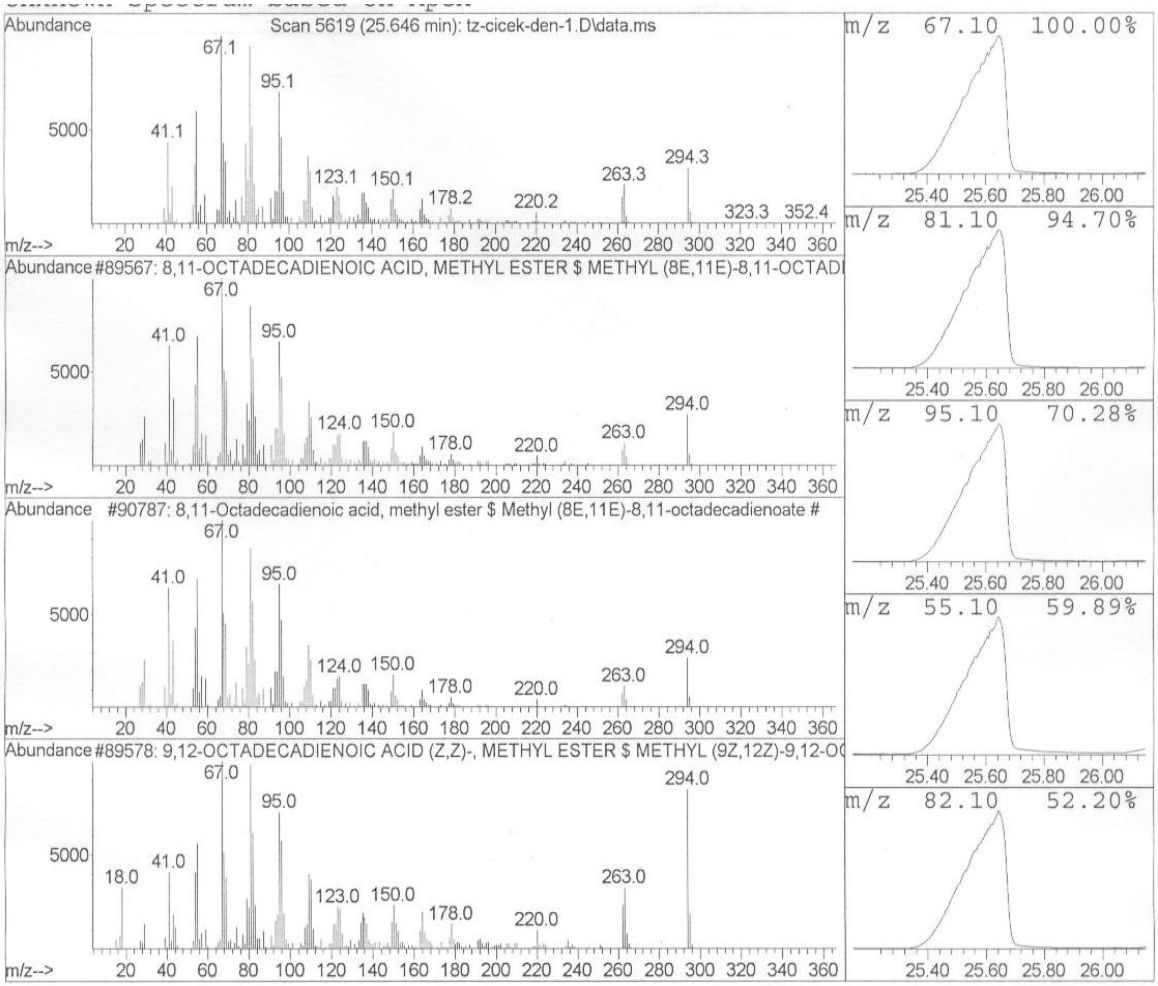

```
Data File: C:\msdchem\1\5975\tz-kok-den-1.D
Sample   : tz kok

Peak Number:  9     at     23.709 min  Area:  23881124  Area % 1.15

 The 3 best hits from each library.          Ref\#    CAS\#       Qual
-------------------------------------------------------------------------
    C:\Database\Wiley8NST.L
     1 9-Octadecenoic acid, methyl este...      60129 001937-62-8   99
     2 11-Octadecenoic acid, methyl est...      60139 052380-33-3   99
     3 9-OCTADECENOIC ACID (Z)-, METHYL...      56435 000112-62-9   99
```

S12: Mass Spectrum of 11-Octadecenoic Acid ME

m/z 296 ($C_{19}H_{38}O_2$) $[M]^+$, 264 $[M\text{-}CH_3OH]^+$, 222 $[M\text{-}74]^+$, 180 $[222\text{-}C_3H_6]^+$, 152 $[180\text{-}C_2H_4]^+$, 74 $[CH_3O\text{-}C(OH)=CH_2]^{+\cdot}$ (Mc Lafferty rearrangement).



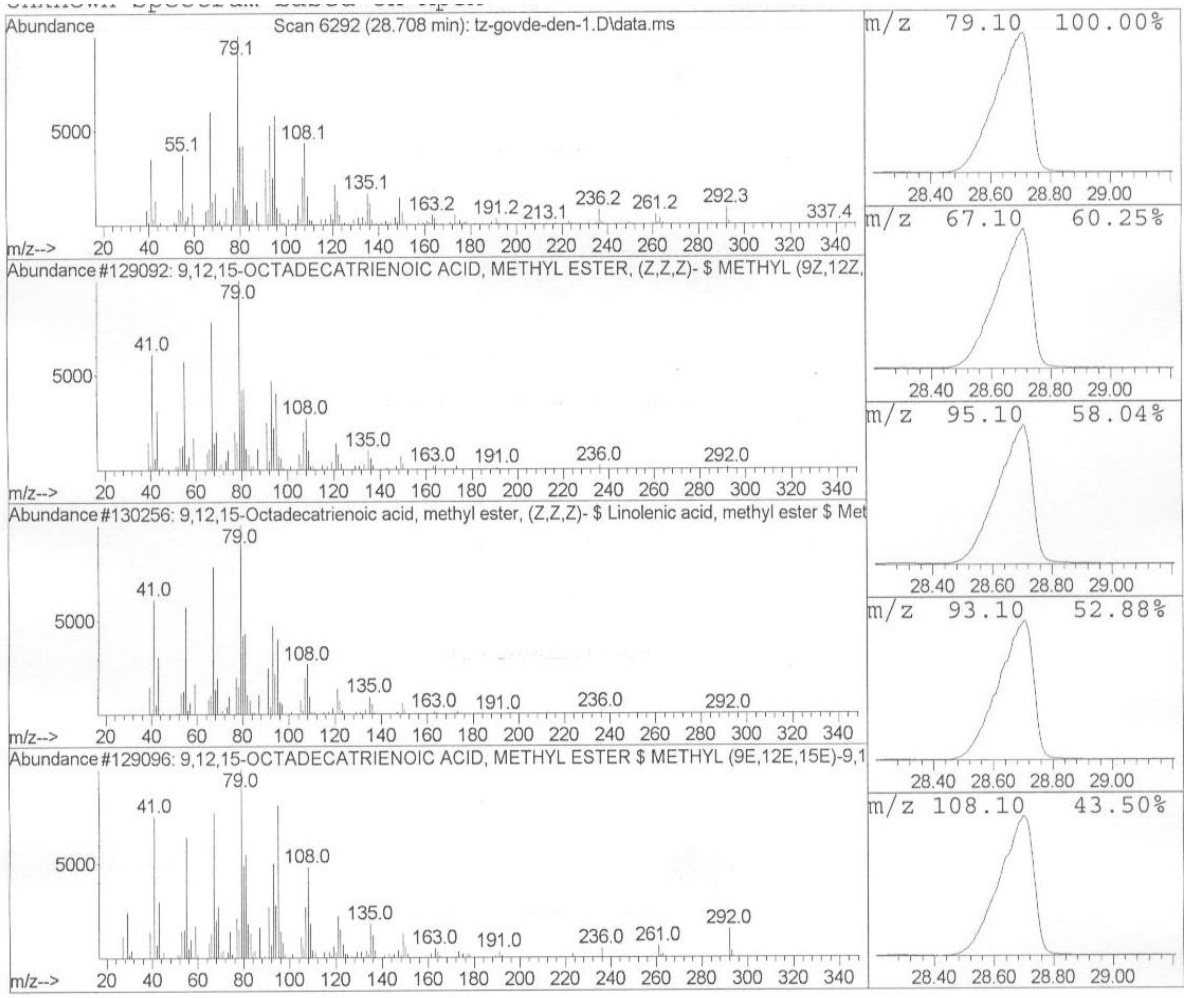

```
Data File: C:\msdchem\1\5975\tz-cicek-den-1.D
Sample   : tz cicek

Peak Number:  12    at     25.646 min  Area: 657115223  Area % 27.79

 The 3 best hits from each library.          Ref\#    CAS\#       Qual
-------------------------------------------------------------------------
    C:\Database\Wiley8NST.L
     1 8,11-OCTADECADIENOIC ACID, METHY...      89567 056599-58-7   99
     2 8,11-Octadecadienoic acid, methy...      90787 056599-58-7   99
     3 9,12-OCTADECADIENOIC ACID (Z,Z)-...      89578 000112-63-0   99
```

S13: Mass Spectrum of 9,12-Octadecadienoic Acid ME

m/z: 294 ($C_{19}H_{34}O_2$) $[M]^+$, 263 $[M\text{-}OCH_3]^+$, 220 $[M\text{-}74]^+$, 178 $[220 - (CH_2)_3]^+$, 150 $[178\text{-}CH_2]^+$, 95 $[C_7H_{11}]^+$(C_{10} β-rearrangement), 67 $[96\text{-}C_2H_5]^+$.



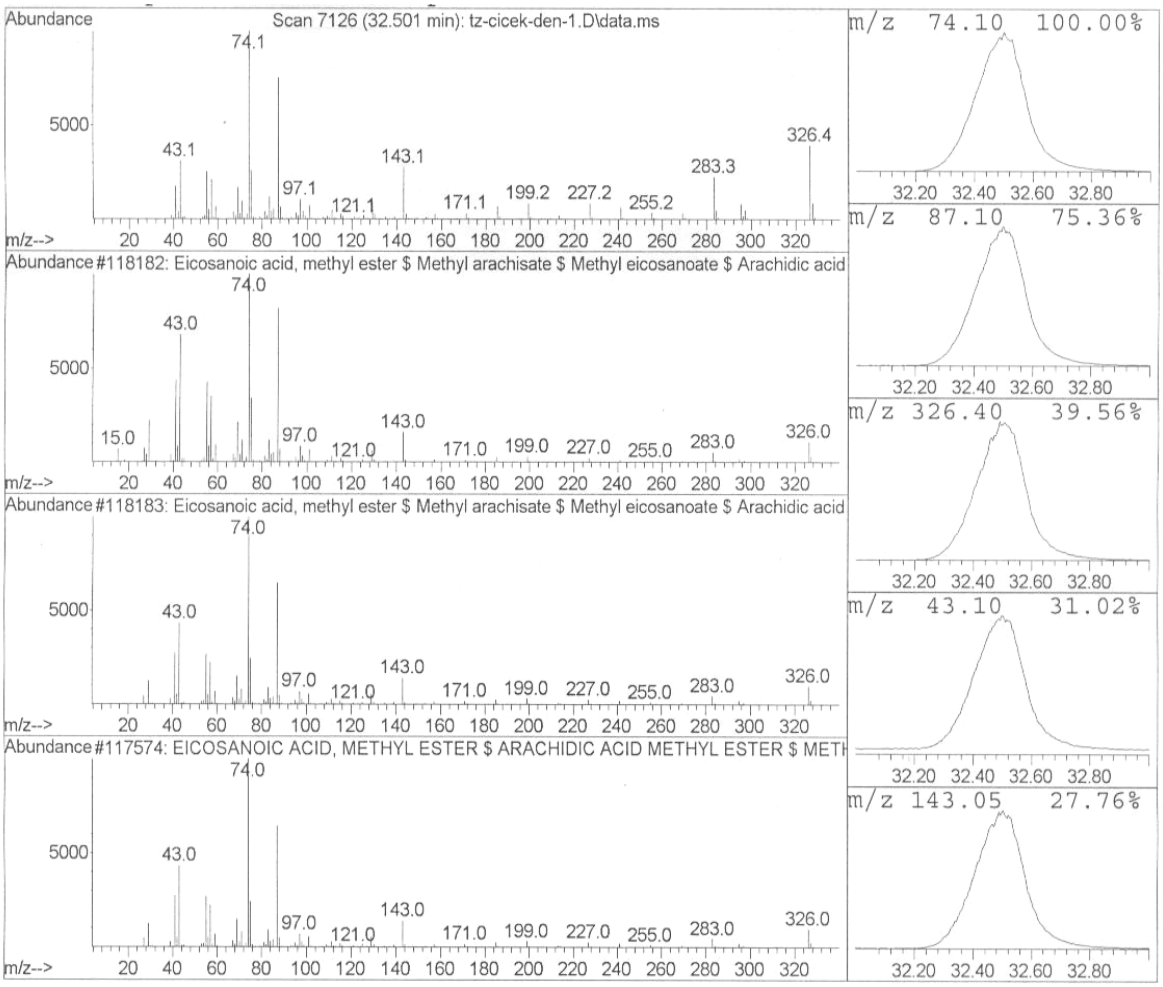

```
Data File: C:\msdchem\1\5975\tz-govde-den-1.D
Sample   : tz govde

Peak Number:  12    at     28.708 min  Area: 276002986  Area % 13.63

 The 3 best hits from each library.          Ref\#    CAS\#       Qual
-------------------------------------------------------------------------
    C:\Database\Wiley8NST.L
     1 9,12,15-OCTADECATRIENOIC ACID, M...     129092 000301-00-8    99
     2 9,12,15-Octadecatrienoic acid, m...     130256 000301-00-8    99
     3 9,12,15-OCTADECATRIENOIC ACID, M...     129096 007361-80-0    98
```

S14: Mass Spectrum of 9,12,15-Octadecatrienoic Acid ME

m/z: 292 ($C_{19}H_{32}O_2$) $[M]^+$, 261 $[292\text{-}OCH_3]^+$, 108 (C_{10} β-rearrangement), 79 $[108\text{-}CH_3CH_2]^+$, 55 $[CH_3CH2CH{=}CH]^+$ (C_{13} β-rearrangement).



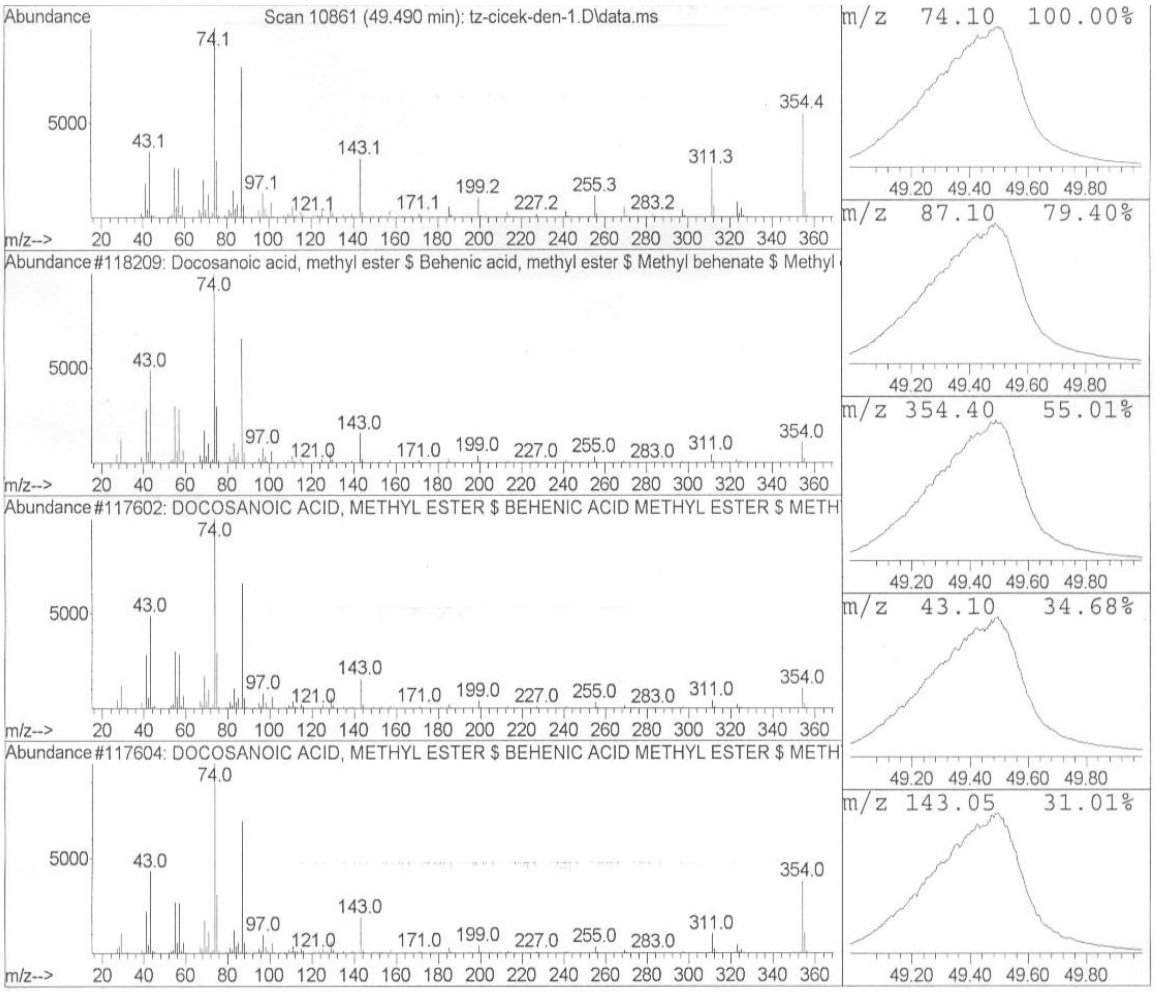

```
Data File: C:\msdchem\1\5975\tz-cicek-den-1.D
Sample   : tz cicek

Peak Number:  14    at     32.501 min  Area: 156995904  Area % 6.64

 The 3 best hits from each library.          Ref\#    CAS\#       Qual
-------------------------------------------------------------------
    C:\Database\Wiley8NST.L
     1 Eicosanoic acid, methyl ester $ ...     118182 001120-28-1   99
     2 Eicosanoic acid, methyl ester $ ...     118183 001120-28-1   99
     3 EICOSANOIC ACID, METHYL ESTER $ ...     117574 001120-28-1   99
```

S15: Mass Spectrum of Eicosanoic Acid ME

m/z: 326 ($C_{21}H_{42}O_2$) $[M]^+$, 283 $[M\text{-}C_3H_7]^+$, 255 $[283\text{-}C_2H_4]^+$, 227 $[255\text{-}C_2H_4]^+$, 199 $[227\text{-}C_2H_4]^+$, 171 $[199\text{-}C_2H_4]^+$, 143 $[171\text{-}C_2H_4]^+$, 74 $[CH_3O\text{-}C(OH)=CH_2]^{+\cdot}$ (Mc Lafferty Rearrangement), 43 $[C_3H_7]^+$.




```
Data File: C:\msdchem\1\5975\tz-cicek-den-1.D
Sample   : tz cicek

Peak Number:  16    at    49.490 min  Area: 298194937  Area % 12.61

 The 3 best hits from each library.          Ref\#    CAS\#       Qual
-------------------------------------------------------------------------
    C:\Database\Wiley8NST.L
     1 Docosanoic acid, methyl ester $ ...     118209 000929-77-1   99
     2 DOCOSANOIC ACID, METHYL ESTER $ ...     117602 000929-77-1   99
     3 DOCOSANOIC ACID, METHYL ESTER $ ...     117604 000929-77-1   99
```

S16: Mass Spectrum of Docosanoic Acid ME

m/z: 254 ($C_{23}H_{46}O_2$) $[M]^+$, 311 $[M\text{-}C_3H_7]^+$, 283 $[311\text{-}C_2H_4]^+$, 255$[283\text{-}C_2H_4]^+$, 227 $[255\text{-}C_2H_4]^+$, 199 $[227\text{-}C_2H_4]^+$, 171 $[199\text{-}C_2H_4]^+$, 143 $[171\text{-}C_2H_4]^+$, 74$[CH_3O\text{-}C(OH)=CH_2]^{+\cdot}$ (Mc Lafferty rearrangement), 43 $[C_3H_7]^+$.

Microorganism	Root	Flower	Stem	Reference
Gram positive bacteria				**Chloramphenicol**
Staphylococcus aureus	1.250	1.250	1.250	0.0156
Staphylococcus epidermidis	0.625	1.250	1.250	0.0156
Bacillus subtilis	1.250	0.625	1.250	0.0156
Meth. Resist. S. aureus MRSA	1.250	0.625	0.625	0.0156
Gram negative bacteria				**Chloramphenicol**
Escherichia coli	2.500	2.500	2.500	0.06250
Proteus vulgaris	2.500	2.500	2.500 <	0.03125
***Candida* sp.**				**Ketoconazole**
Candida parapsilosis	1.250	0.156	1.250	1.25
Candida albicans	1.250	0.156	0.625	1.25

S17: Microdilution activity results (concentration values were given in mg/mL)