Supporting Information

Total synthesis of diptoindonesin G via a highly efficient domino cyclodehydration/intramolecular Friedel-Crafts acylation/regioselective demethylation sequence

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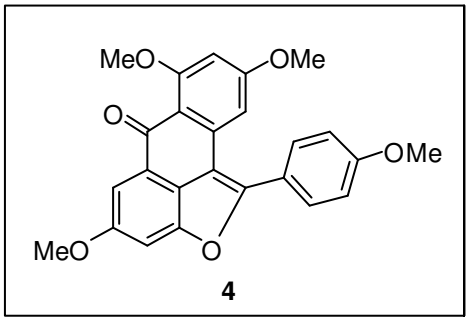
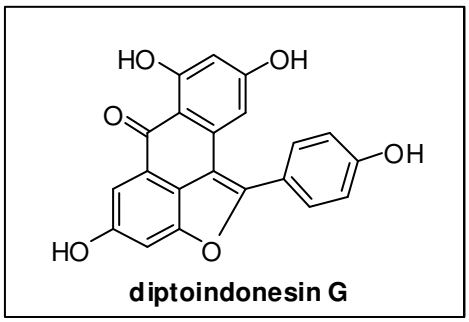


4

4,7,9-trimethoxy-1-(4-methoxyphenyl)-6*H*-anthra[1,9-*bc*]furan-6-one (4)

To a stirred solution of ester **3** (450 mg, 1 mmol) in THF/MeOH/H_2O (3/3/3 mL) was added NaOH (120 mg, 3 equiv) at rt. After being refluxed for 16 h, the reaction mixture was concentrated in vacuo, acidified with 10% HCl, and extracted with ethyl acetate. The organic layer was dried over $MgSO_4$ and concentrated under reduced pressure to give the corresponding acid (436 mg, 100%). **3-(3,5-dimethoxyphenyl)-6-methoxy-2-(4-methoxyphenyl)benzofuran-4-carboxylic acid:** ^{1}**H NMR** (300 MHz, DMSO-d_6) δ 7.47~7.43 (m, 3H), 7.09 (d, *J* = 2.2 Hz, 1H), 6.93 (d, *J* = 8.9 Hz, 2H), 6.51 (dd, *J* = 2.1 Hz, 1H), 6.43 (d, *J* = 2.1 Hz, 2H), 3.87 (s, 3H), 3.76 (s, 3H), 3.71 (s, 6H); ^{13}**C NMR** (75 MHz, DMSO-d_6) δ 167.4, 160.3, 159.4, 156.8, 154.7, 150.5, 135.4, 127.8, 127.1, 122.3, 120.3, 115.9, 114.1, 112.0, 107.8, 99.7, 98.5, 55.9, 55.2, 55.1; **MS** (EI) *m/z* 434 (M^+, 100), 419 (26), 375 (7); **HRMS** (EI) calcd for $[C_{25}H_{22}O_7]^+$: *m/z* 434.1366, found 434.1367. To a solution of **3** (195 mg, 0.45 mmol) in CH_2Cl_2 (2 mL) was added trifluoroacetic anhydride (0.2 mL, 3 equiv) at 0 °C. After being stirred at rt for 2 h, the reaction mixture was quenched with aq. $NaHCO_3$ solution and extracted with CH_2Cl_2. The organic layer was dried over $MgSO_4$, concentrated, and purified by flash column

chromatography (hexane:ethyl acetate:dichloromethane = 3:1:2 to 1:1:2) to afford **4** (144 mg, 77%). **^{1}H NMR** (300 MHz, $CDCl_3$) δ 7.88 (d, *J* = 8.7 Hz, 2H), 7.60 (d, *J* = 1.3 Hz, 1H), 7.29 (d, *J* = 2.1 Hz, 1H), 7.22 (d, *J* = 1.5 Hz, 1H), 7.08 (d, *J* = 8.7 Hz, 2H), 6.52 (d, *J* = 2.1 Hz, 1H), 3.99 (s, 3H), 3.95 (s, 3H), 3.92 (s, 3H), 3.76 (s, 3H); **^{13}C NMR** (75 MHz, $CDCl_3$) δ 182.2, 164.6, 163.3, 161.3, 160.0, 155.3, 153.2, 136.3, 130.8, 127.6, 124.9, 123.4, 116.8, 114.4, 109.3, 105.8, 102.4, 100.6, 99.1, 56.6, 56.4, 55.6, 55.5; **MS** (EI) *m/z* 416 (M^+, 100), 399 (53), 387 (37), 371 (18); **HRMS** (EI) calcd for $[C_{25}H_{20}O_6]^+$: *m/z* 416.1260, found 416.1261.

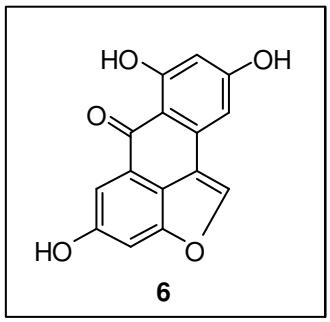


diptoindonesin G

4,7,9-trihydroxy-1-(4-hydroxyphenyl)-6*H*-anthra[1,9-*bc*]furan-6-one (diptoindonesin G) from 4

To a solution of **4** (200 mg, 0.48 mmol) in CH_2Cl_2 (17 mL) was added BBr_3 (0.91 mL, 20 equiv) at -78 °C. After being stirred at rt for 16 h, the reaction mixture was quenched with ice water. The insoluble material was filtered, washed with water and CH_2Cl_2, and dried to give **diptoindonesin G** (161 mg, 93%). **^{1}H NMR** (500 MHz, $(CD_3)_2CO$) δ 9.67 (s, 1H), 9.29 (s, 1H), 9.23 (s, 1H), 7.85 (d, *J* = 8.4 Hz, 2H), 7.54 (s, 1H), 7.35 (s, 1H), 7.26 (s, 1H), 7.12 (d, *J* = 8.5 Hz, 2H), 6.39 (s,

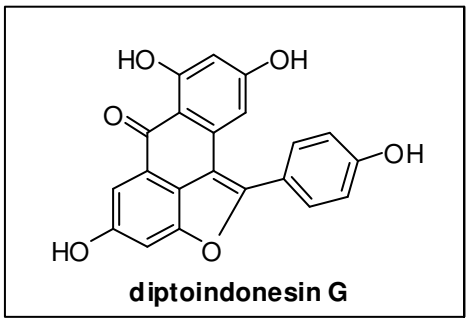
1H); **^{13}C NMR** (125 MHz, $(CD_3)_2CO$) δ 187.9, 168.5, 164.8, 160.6, 158.5, 157.6, 154.1, 135.7, 131.6, 126.1, 125.3, 122.5, 117.0, 112.2, 109.2, 108.3, 104.7, 103.8, 103.3; **MS** (EI) *m/z* 360 (M^+, 100), 321 (6), 303 (7), 247 (6); **HRMS** (EI) calcd for $[C_{21}H_{12}O_6]^+$: *m/z* 360.0634, found 360.0620.



6

4,7,9-trihydroxy-6*H*-anthra[1,9-*bc*]furan-6-one (6) from 5

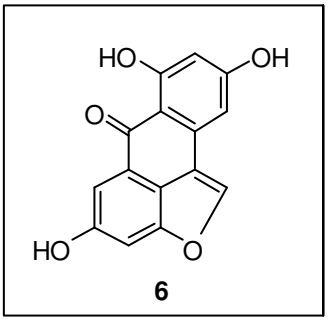
To a solution of **5** (300 mg, 0.88 mmol) in CH_2Cl_2 (5 mL) was added BBr_3 (1.2 mL, 15 equiv) at -78 °C. After being stirred at rt for 16 h, the reaction mixture was quenched with ice water. The insoluble material was filtered, washed with water and CH_2Cl_2, and dried to give **6** (212 mg, 90%). **^{1}H NMR** (500 MHz, $(CD_3)_2CO$) δ 13.80 (s, 1H), 9.78 (br s, 1H), 9.28 (br s, 1H), 8.61 (s, 1H), 7.55 (d, *J* = 1.7 Hz, 1H), 7.39 (d, *J* = 1.7 Hz, 1H), 7.07 (d, *J* = 1.1 Hz, 1H), 6.43 (d, *J* = 1.3 Hz, 1H); **^{13}C NMR** (125 MHz, $(CD_3)_2CO$) δ 188.3, 168.0, 165.1, 159.0, 155.2, 145.0, 134.8, 126.2, 123.0, 115.6, 111.9, 109.1, 105.3, 105.2, 103.4; **MS** (EI) *m/z* 268 (M^+, 100), 240 (24), 213 (29), 185 (23), 129 (44); **HRMS** (EI) calcd for $[C_{15}H_8O_5]^+$: *m/z* 268.0372, found 268.0374.



diptoindonesin G

4,7,9-trihydroxy-1-(4-hydroxyphenyl)-6*H*-anthra[1,9-*bc*]furan-6-one (diptoindonesin G) from 3

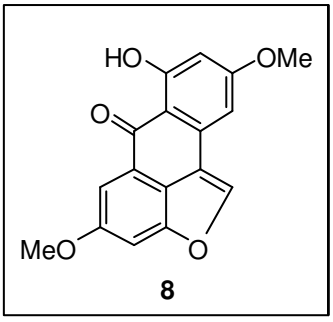
To a solution of **3** (77 mg, 0.17 mmol) in CH_2Cl_2 (5 mL) was added BBr_3 (0.5 mL, 30 equiv) at -78 °C. After being stirred at rt for 16 h, the reaction mixture was quenched with ice water. The insoluble material was filtered, washed with water and CH_2Cl_2, and dried to give **diptoindonesin G** (57 mg, 92%).



6

4,7,9-trihydroxy-6*H*-anthra[1,9-*bc*]furan-6-one (6) from 7

To a solution of **7** (841 mg, 2.33 mmol) in CH_2Cl_2 (17 mL) was added BCl_3 (4.7 mL, 1 M solution in CH_2Cl_2, 2 equiv) at -78 °C. After being slowly warmed to rt for 1 h, BBr_3 (4.4 mL, 20 equiv) was added at -78 °C. After being stirred at rt for 16 h, the reaction mixture was carefully quenched with ice water. The insoluble material was filtered, washed with water and CH_2Cl_2, and dried to give **6** (582 mg, 93%).



8

7-hydroxy-4,9-dimethoxy-6*H*-anthra[1,9-*bc*]furan-6-one

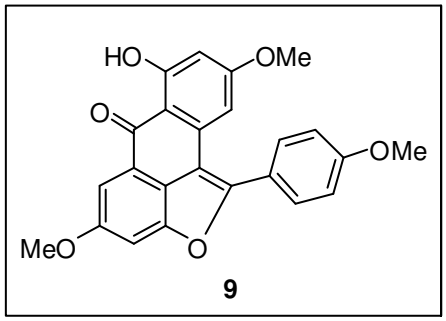
(8)

To a solution of **7** (1.01 g, 2.8 mmol) in CH_2Cl_2 (10 mL) was added BCl_3 (14 mL, 5 equiv) at -78 °C. After being stirred at rt for 16 h, the reaction mixture was quenched with ice water. The volatiles were removed under reduced pressure. The insoluble material was filtered, washed with water, and dried to give **8** (788 mg, 95%). **^{1}H NMR** (300 MHz, $CDCl_3$) δ 13.80 (s, 1H), 8.09 (s, 1H), 7.59 (d, *J* = 1.4 Hz, 1H), 7.29 (d, *J* = 1.4 Hz, 1H), 6.83 (d, *J* = 2.2 Hz, 1H), 6.47 (d, *J* = 2.2 Hz, 1H), 3.97 (s, 3H), 3.92 (s, 3H); **^{13}C NMR** (75 MHz, $CDCl_3$) δ 187.7, 167.3, 165.4, 160.4, 154.2, 143.0, 133.2, 125.4, 123.6, 115.0, 112.0, 106.6, 104.3, 103.7, 100.8, 56.7, 55.8; **MS** (EI) *m/z* 296 (M^+, 100), 281 (16), 267 (27), 253 (16), 225 (15), 126 (14); **HRMS** (EI) calcd for $[C_{17}H_{12}O_5]^+$: *m/z* 296.0685, found 296.0683.

General procedure for direct arylation of 8:

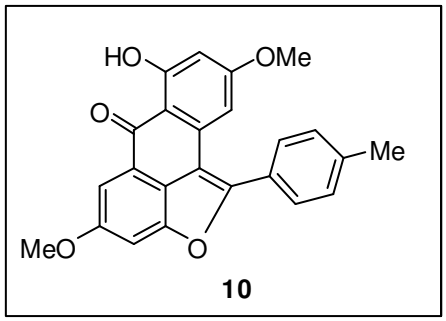
To a mixture of **8** (50 mg, 0.17 mmol), appropriate aryl halide (2 equiv), $Pd(OAc)_2$ (4 mg, 10 mol %), PCy_3HBF_4 (13 mg, 20 mol %), and K_2CO_3 (35 mg, 1.5 equiv) was added DMA (3 mL) containing pivalic acid (52 mg, 3 equiv) at rt. After being stirred at 100 °C for 1 h, the reaction mixture was cooled to rt. The mixture was concentrated in vacuo to give the residue which was purified by flash column chromatography

(hexane:ethyl acetate:dichloromethane = 15:1:2) to afford **9~13**.



9

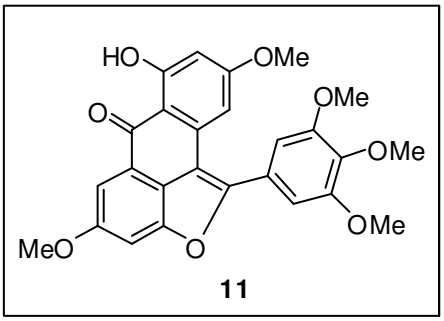
7-hydroxy-4,9-dimethoxy-1-(4-methoxyphenyl)-6*H*-anthra[1,9-*bc*]furan-6-one (9): The reaction with 4-bromoanisole (43 μL, 2 equiv) gave **9** (57 mg, 83%). **^{1}H NMR** (300 MHz, $CDCl_3$) δ 7.86 (d, *J* = 8.7 Hz, 2H), 7.56 (s, 1H), 7.25 (s, 1H), 7.21 (d, *J* = 1.8 Hz, 1H), 7.08 (d, *J* = 8.4 Hz, 2H), 6.45 (s, 1H), 3.95 (s, 3H), 3.93 (s, 3H), 3.80 (s, 3H); **^{13}C NMR** (75 MHz, $CDCl_3$) δ 187.3, 167.5, 165.1, 161.5, 159.8, 156.7, 153.1, 134.3, 130.5, 126.0, 125.1, 123.0, 114.6, 112.2, 108.9, 105.4, 103.9, 102.6, 100.6, 56.6, 55.6, 55.6; **MS** (EI) *m/z* 402 (M^+, 100), 387 (28), 316 (6), 273 (7); **HRMS** (EI) calcd for $[C_{24}H_{18}O_6]^+$: *m/z* 402.1103, found 402.1104.



10

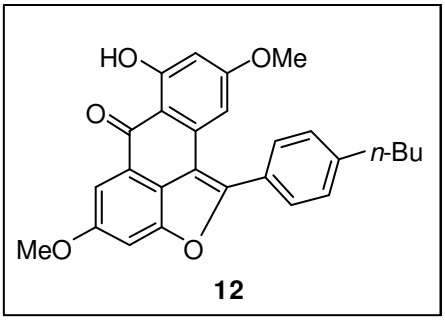
7-hydroxy-4,9-dimethoxy-1-p-tolyl-6H-anthra[1,9-*bc*]furan-6-one (10): The reaction with 4-bromotoluene (42 μL, 2 equiv) gave **10** (51 mg, 78%). **^{1}H NMR** (300 MHz, $CDCl_3$) δ 7.82 (d, *J* = 8.1 Hz, 2H), 7.59 (d, *J* = 1.7 Hz, 1H), 7.38 (d, *J* = 8.0 Hz, 2H), 7.28 (d, *J* = 1.8 Hz, 1H), 7.25 (d, *J* = 2.5 Hz, 1H), 6.46 (d, *J* = 2.4 Hz, 1H), 3.96 (s, 3H), 3.81 (s, 3H), 2.48

(s, 3H); **^{13}C NMR** (125 MHz, $CDCl_3$) δ 187.3, 167.4, 165.0, 159.8, 156.6, 153.0, 141.0, 134.0, 129.7, 128.7, 127.7, 125.7, 125.1, 112.0, 109.2, 105.4, 103.8, 102.7, 100.5, 56.5, 55.5, 21.7; **MS** (EI) *m/z* 386 (M^+, 100), 371 (20), 357 (6), 300 (6); **HRMS** (EI) calcd for $[C_{24}H_{18}O_5]^+$: *m/z* 386.1154, found 386.1156.



11

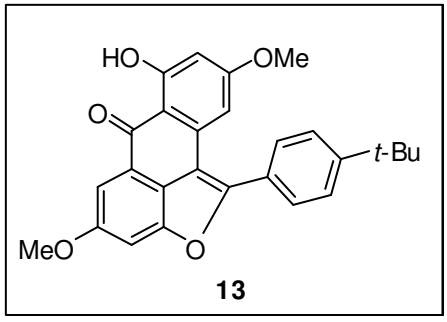
7-hydroxy-4,9-dimethoxy-1-(3,4,5-trimethoxyphenyl)-6H-anthra[1,9-*bc*]furan-6-one (11): The reaction with 5-bromo-1,2,3-trimethoxybenzene (84 mg, 2 equiv) gave **11** (33 mg, 42%). **^{1}H NMR** (300 MHz, $CDCl_3$) δ 7.61 (s, 1H), 7.41 (d, *J* = 2.1 Hz, 1H), 7.30 (s, 1H), 7.19 (s, 2H), 6.47 (d, *J* = 1.9 Hz, 1H), 3.98 (s, 3H), 3.97 (s, 3H), 3.96 (s, 6H), 3.83 (s, 3H); **^{13}C NMR** (75 MHz, $CDCl_3$) δ 187.3, 167.7, 165.3, 160.0, 156.1, 153.7, 153.0, 140.2, 134.0, 125.8, 125.7, 125.3, 112.1, 109.4, 106.2, 105.7, 103.9, 103.7, 100.3, 61.3, 56.6, 56.5, 55.7; **MS** (EI) *m/z* 462 (M^+, 100), 447 (42), 387 (4), 231 (4); **HRMS** (EI) calcd for $[C_{26}H_{22}O_8]^+$: *m/z* 462.1315, found 462.1316.



12

1-(4-butylphenyl)-7-hydroxy-4,9-dimethoxy-6H-anthra[1,9-*bc*]furan-6-one (12): The reaction

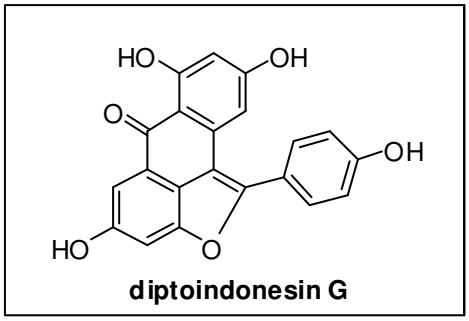
with 1-bromo-4-butylbenzene (60 μL, 2 equiv) gave **9** (32 mg, 44%). **^{1}H NMR** (300 MHz, $CDCl_3$) δ 14.17 (s, 1H), 7.84 (d, *J* = 7.7 Hz, 2H), 7.62 (s, 1H), 7.38 (d, *J* = 7.8 Hz, 2H), 7.29 (s, 1H), 7.27 (d, *J* = 0.7 Hz, 1H), 6.47 (s, 1H), 3.96 (s, 3H), 3.80 (s, 3H), 2.73 (t, *J* = 7.5 Hz, 2H), 1.74~1.65 (m, 2H), 1.46~1.39 (m, 2H), 0.97 (t, *J* = 7.3 Hz, 3H); **^{13}C NMR** (75 MHz, $CDCl_3$) δ 187.2, 167.3, 165.0, 159.8, 156.6, 153.0, 146.0, 134.0, 129.0, 128.7, 127.8, 125.7, 125.1, 112.0, 109.2, 105.4, 103.8, 102.6, 100.6, 56.5, 55.5, 35.7, 33.4, 22.4, 14.0; **MS** (EI) *m/z* 428 (M^+, 100), 385 (42), 299 (13), 271 (7); **HRMS** (EI) calcd for $[C_{27}H_{24}O_5]^+$: *m/z* 428.1624, found 428.1627.



13

1-(4-tert-butylphenyl)-7-hydroxy-4,9-dimethoxy-6H-anthra[1,9-bc]furan-6-one (13): The reaction with 1-bromo-4-*tert*-butylbenzene (59 μL, 2 equiv) gave **9** (41 mg, 56%). **^{1}H NMR** (300 MHz, $CDCl_3$) δ 7.89 (d, *J* = 8.4 Hz, 2H), 7.62 (s, 1H), 7.60 (d, *J* = 8.4 Hz, 2H), 7.31 (s, 1H),7.30 (s, 1H), 3.97 (s, 3H), 3.83 (s, 3H), 1.41 (s, 9H); **^{13}C NMR** (75 MHz, $CDCl_3$) δ 187.4, 167.6, 165.2, 159.9, 156.7, 154.3, 153.2, 134.2, 128.6, 127.8, 126.1, 125.9, 125.3, 112.2, 109.4, 105.6, 103.9, 103.1, 100.6, 56.6, 55.6, 35.3, 31.4, 14.3; **MS** (EI) *m/z* 428 (M^+, 100), 413 (60), 381 (19), 185 (36); **HRMS** (EI) calcd for

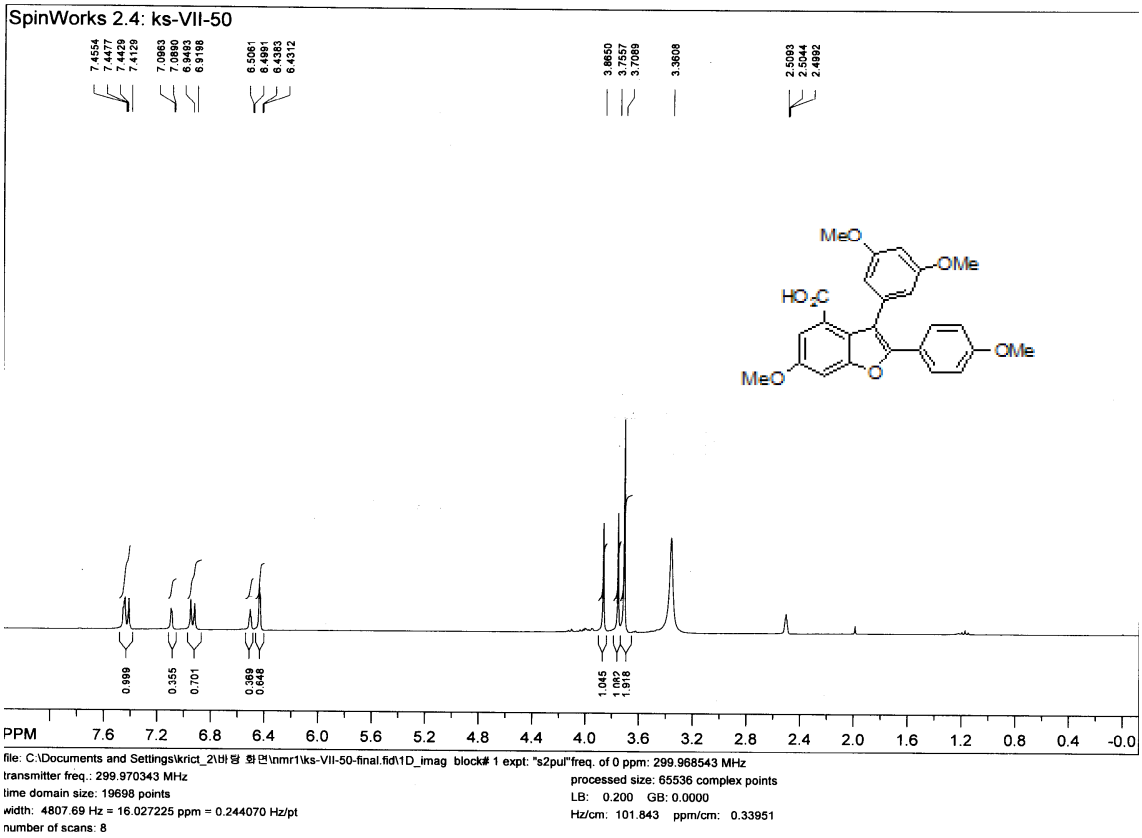
$[C_{27}H_{24}O_5]^+$: *m/z* 428.1624, found 428.1623.



diptoindonesin G

4,7,9-trihydroxy-1-(4-hydroxyphenyl)-6*H*-anthra[1,9-*bc*]furan-6-one (diptoindonesin G) from 9

To a solution of **9** (50 mg, 0.12 mmol) in CH_2Cl_2 (2 mL) was added BBr_3 (0.11 mL, 10 equiv) at -78 °C. After being stirred at rt for 16 h, the reaction mixture was quenched with ice water. The insoluble material was filtered, washed with water and CH_2Cl_2, and dried to give **diptoindonesin G** (42mg, 93%).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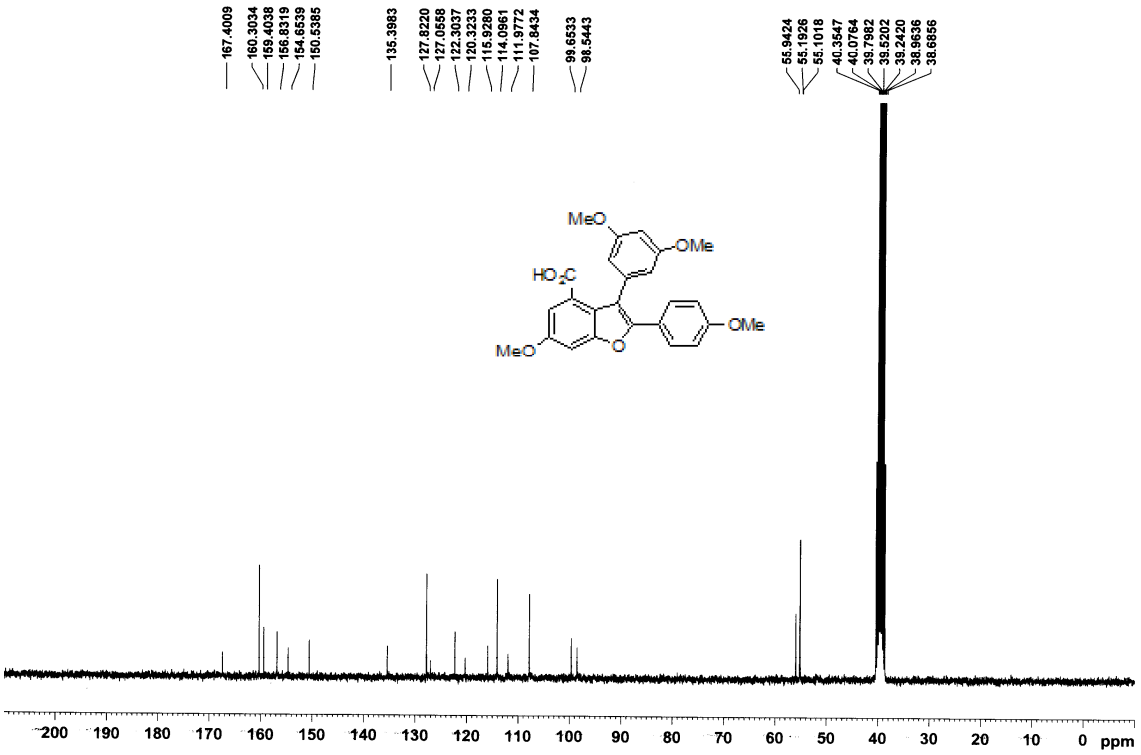
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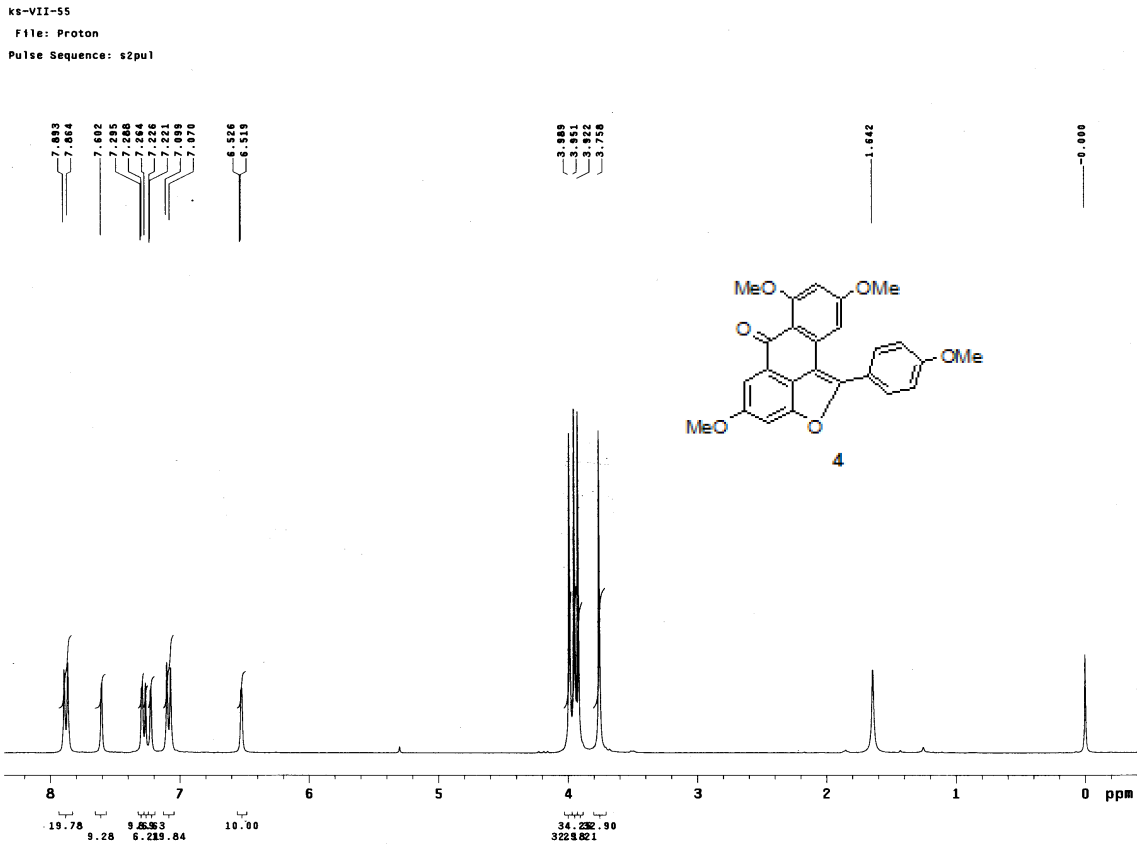
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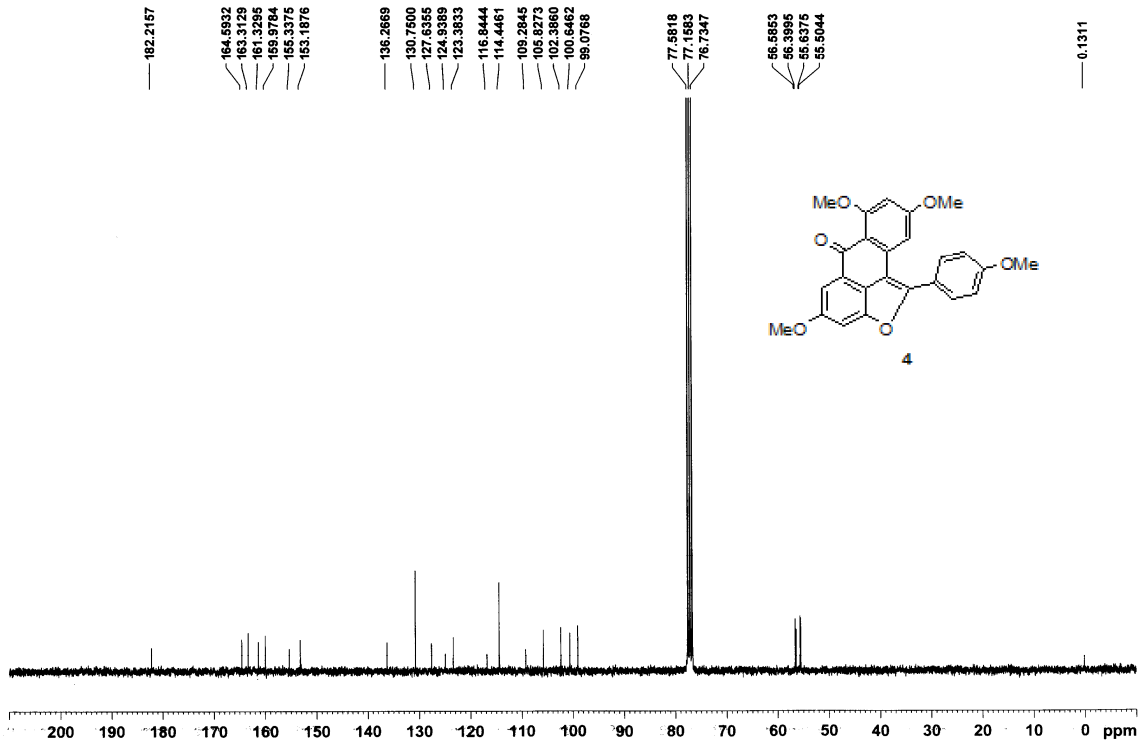
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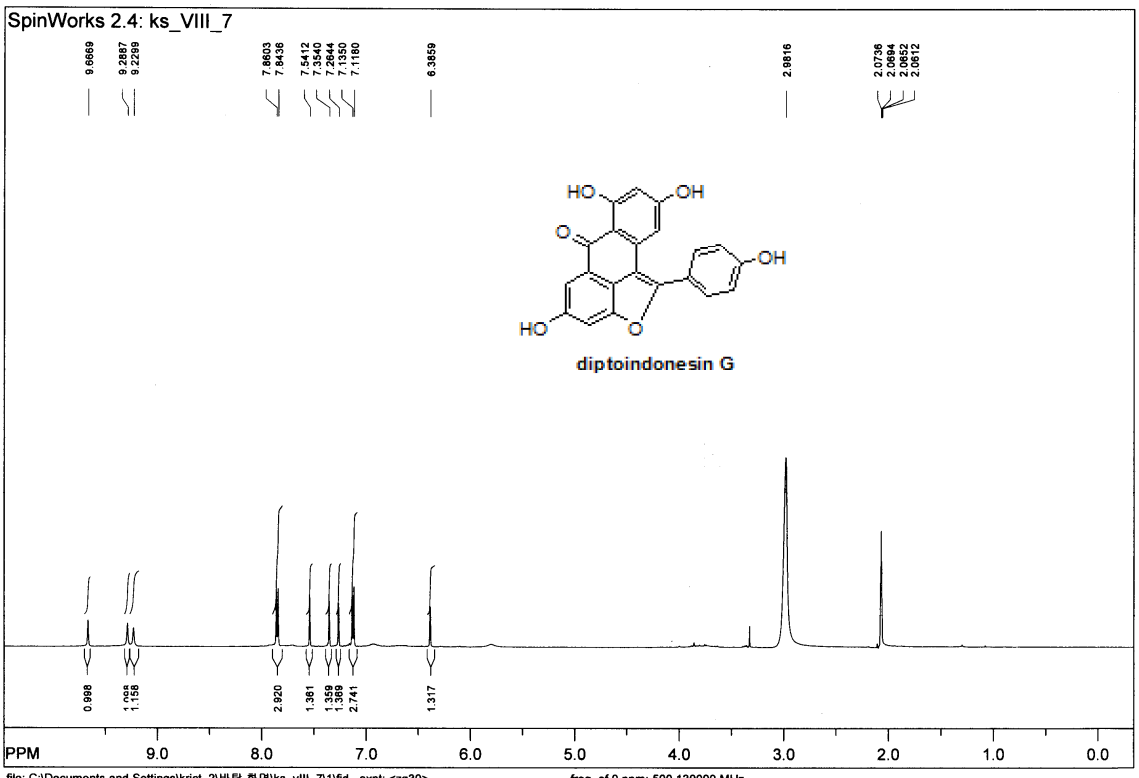

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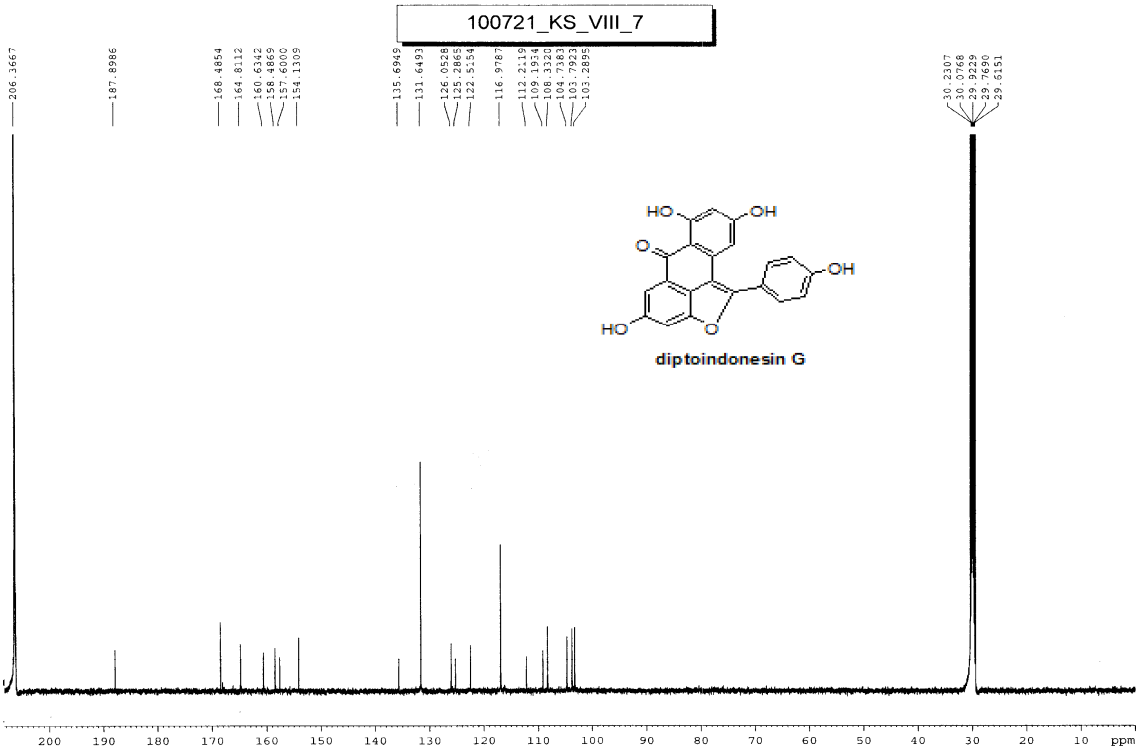
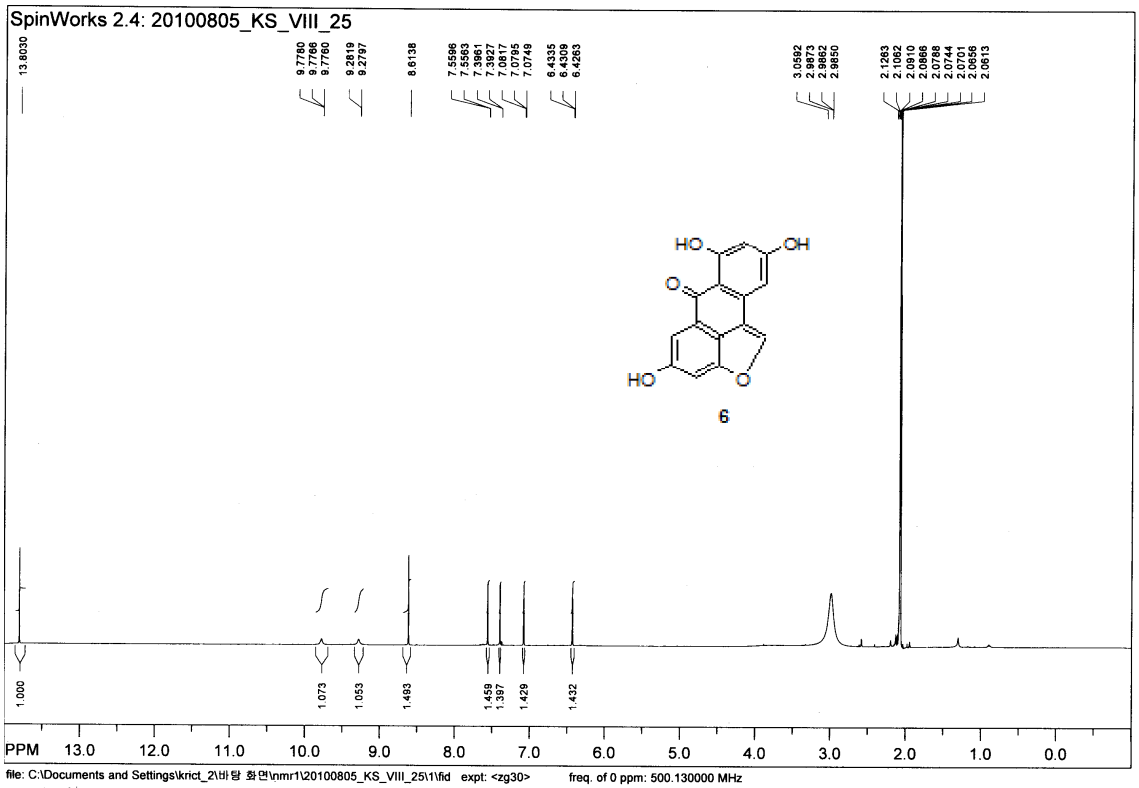
width: 7507.51 Hz = 15.011015 ppm = 0.114555 Hz/pt
number of scans: 16

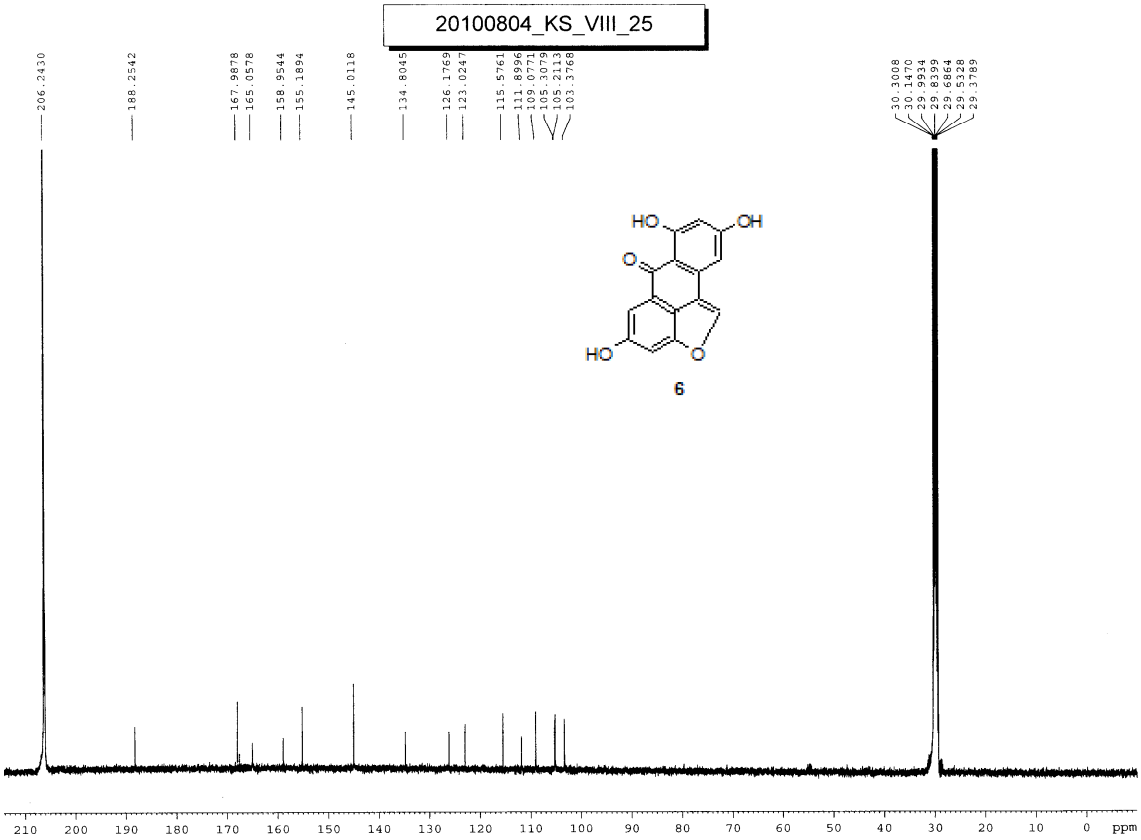
freq. of 0 ppm: 500.130000 MHz
processed size: 32768 complex points
LB: 0.300 GB: 0.0000
Hz/cm: 216.311 ppm/cm: 0.43251

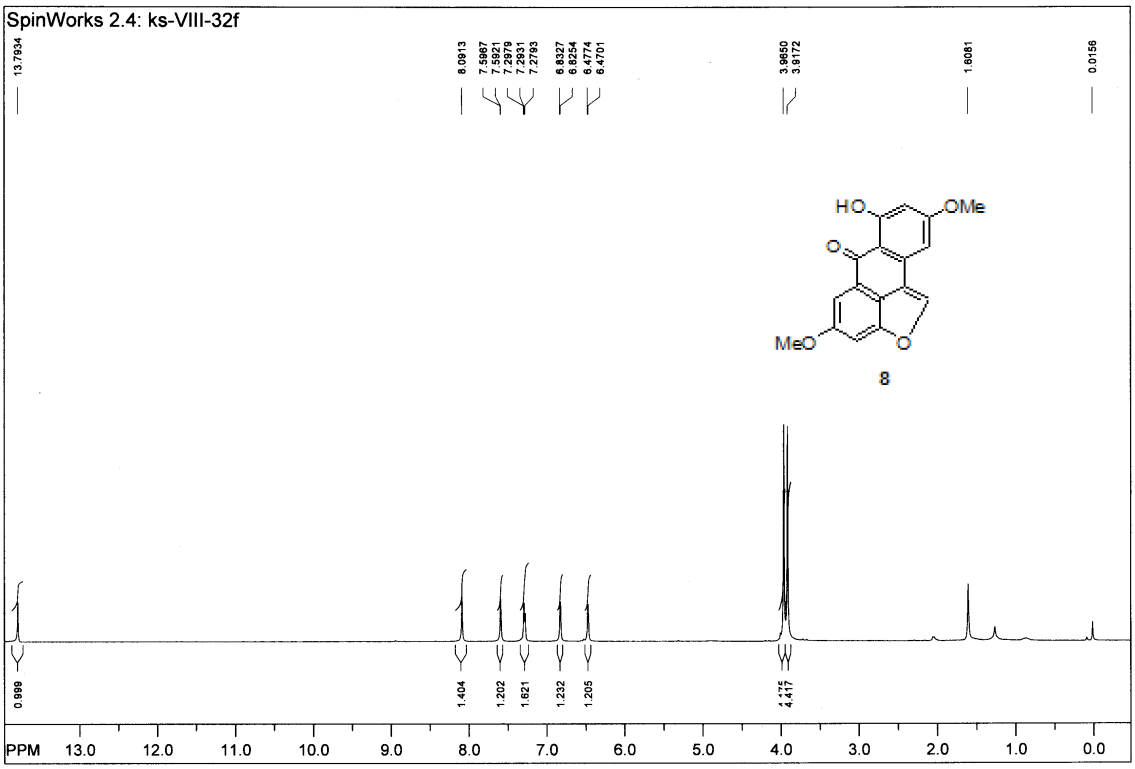




file: C:\Documents and Settings\krict_2\바탕 화면\nmr1\20100805_KS_VIII_25\1\fid expt: <zg30>
transmitter freq.: 500.133251 MHz
time domain size: 65536 points
width: 7507.51 Hz = 15.011015 ppm = 0.114555 Hz/pt
number of scans: 16

freq. of 0 ppm: 500.130000 MHz
processed size: 32768 complex points
LB: 0.300 GB: 0.0000
Hz/cm: 300.300 ppm/cm: 0.60044

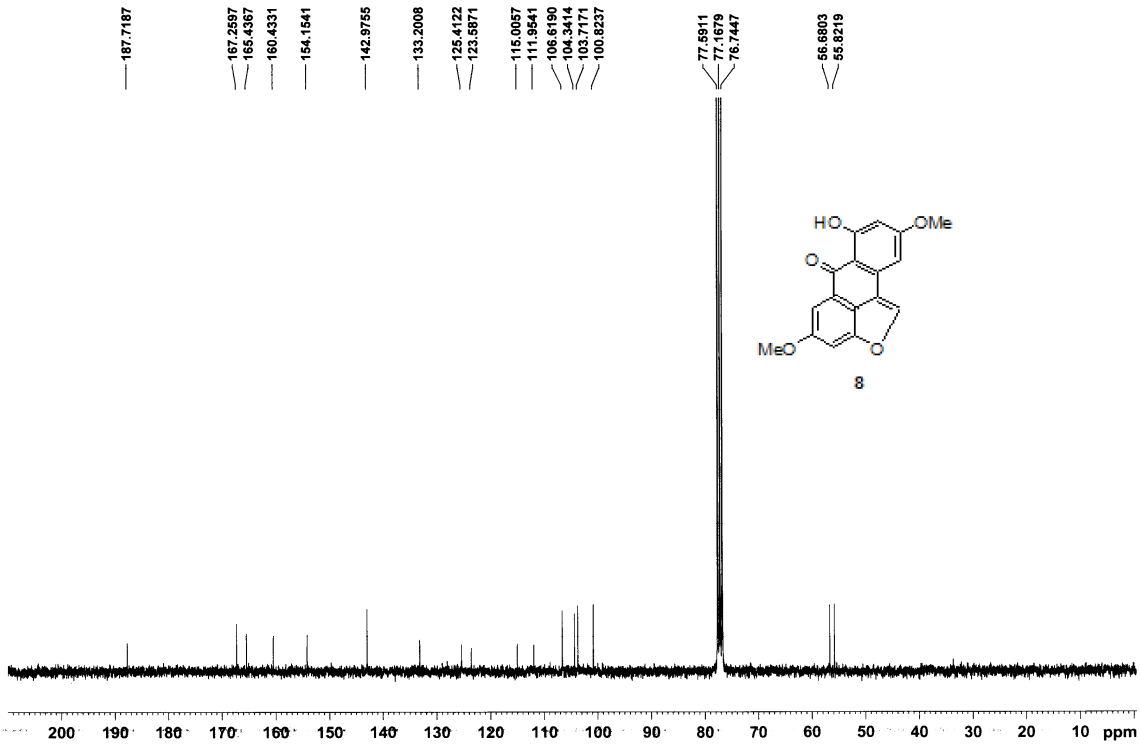




file: C:\Documents and Settings\krict_2\바탕 화면\nmr1\ks-VIII-32f.fid\log block# 1 expt: "s2pul"
transmitter freq.: 299.968918 MHz
time domain size: 19698 points
width: 4807.69 Hz = 16.027302 ppm = 0.244070 Hz/pt
number of scans: 8

freq. of 0 ppm: 299.967119 MHz
processed size: 65536 complex points
LB: 0.000 GB: 0.0000
Hz/cm: 173.247 ppm/cm: 0.57755

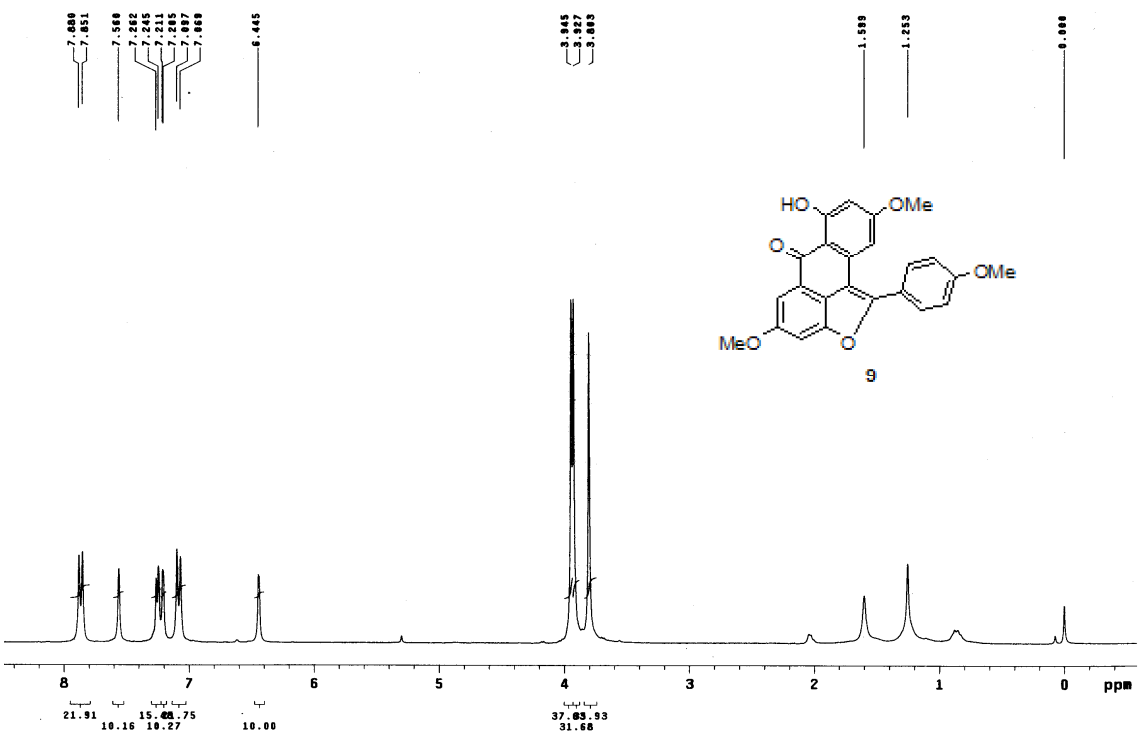
KS_VIII_32

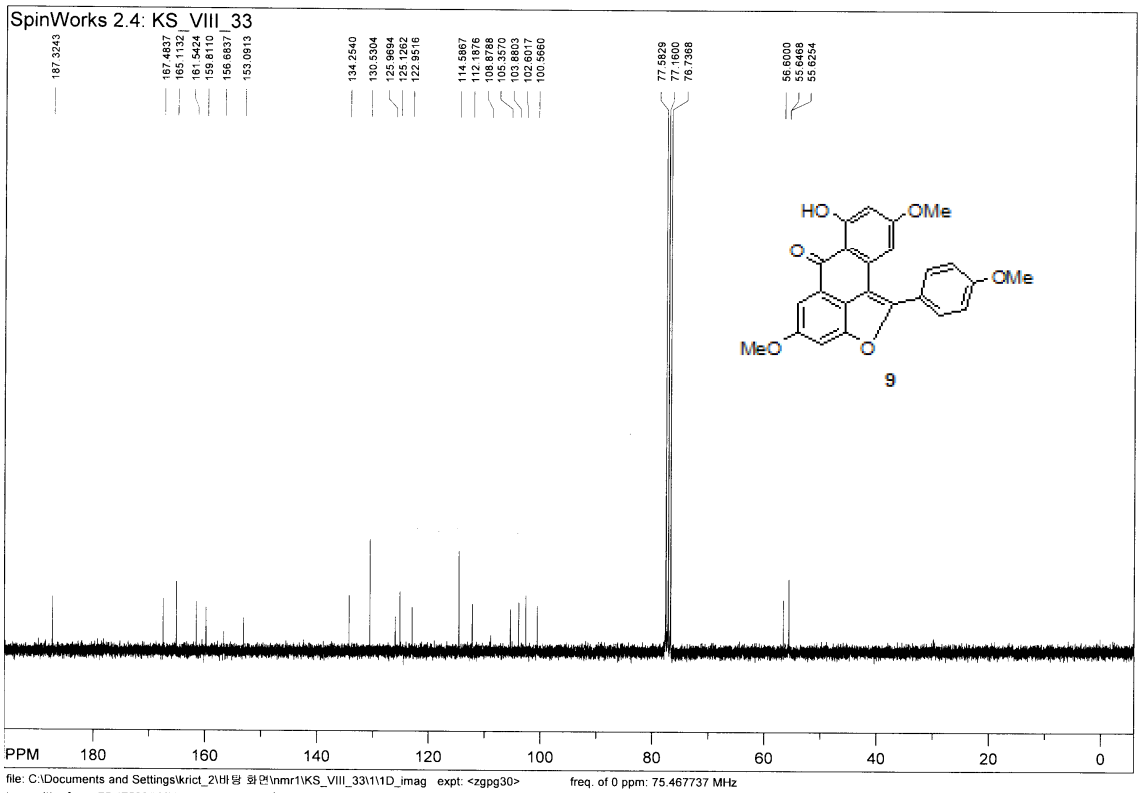


ks-VIII-33ff

File: Proton

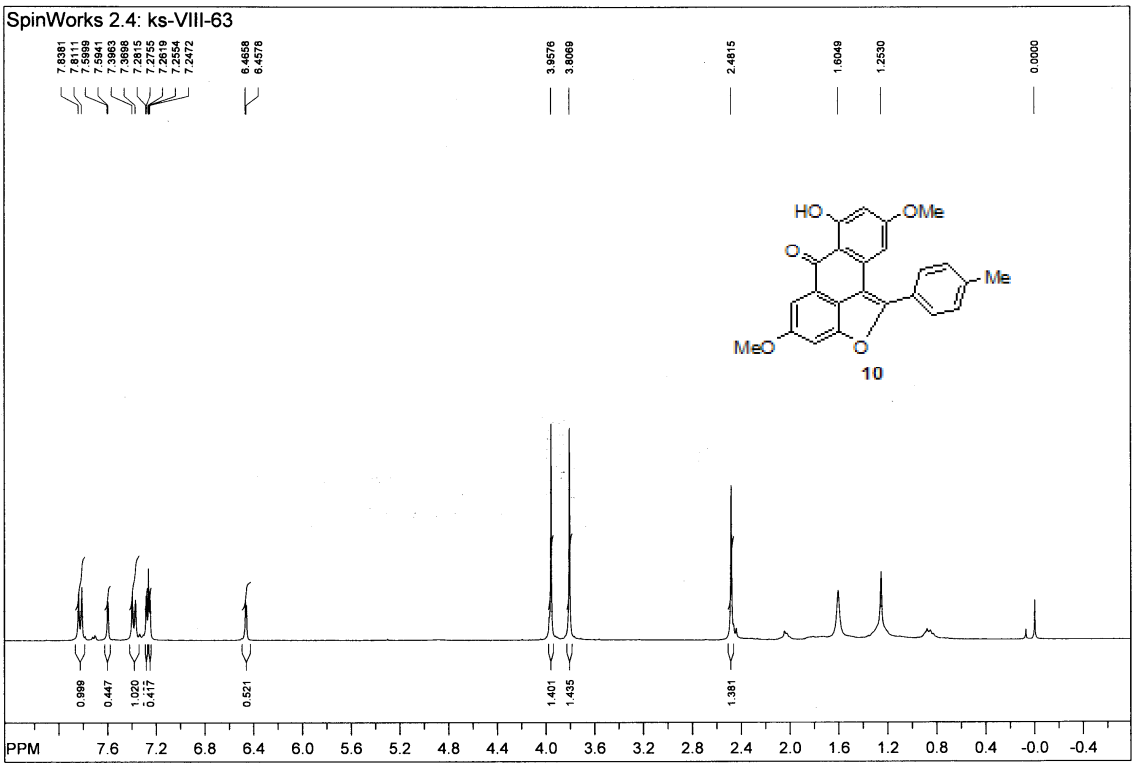
Pulse Sequence: s2pul





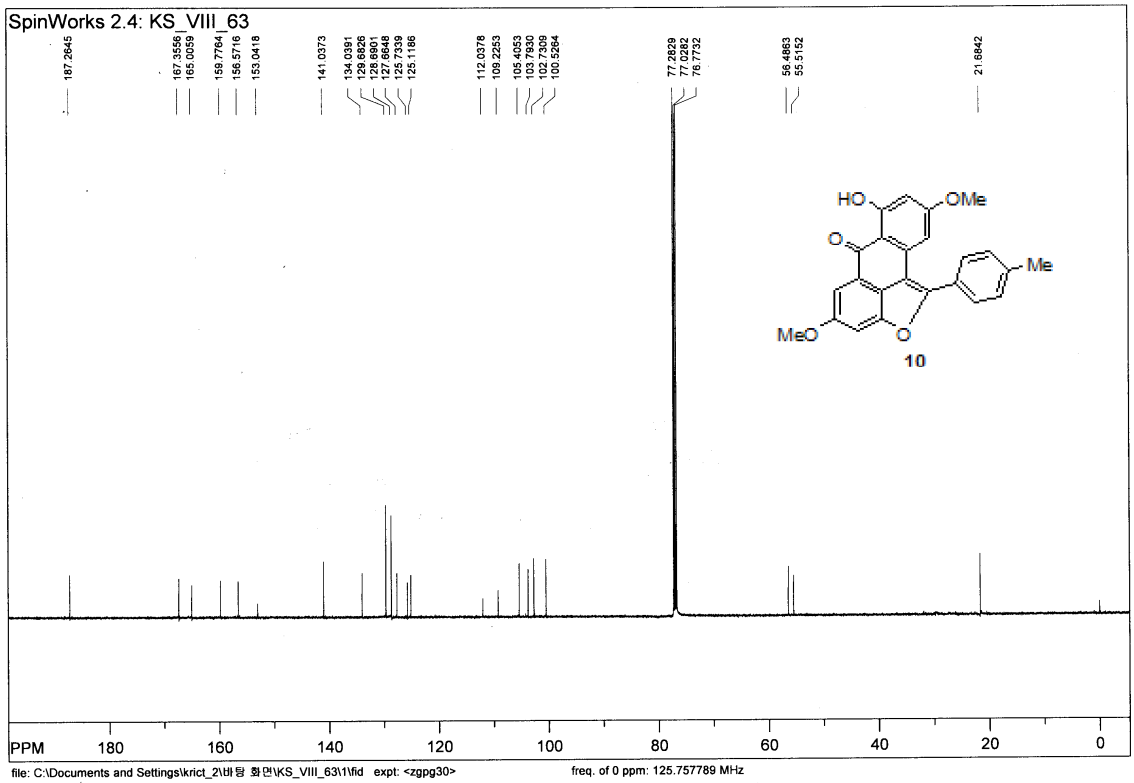
file: C:\Documents and Settings\krict_2\바탕 화면\nmr1\KS_VIII_33\1\1D_imag expt: <zgpg30>
transmitter freq.: 75.475295 MHz
time domain size: 65536 points
width: 17985.61 Hz = 238.297995 ppm = 0.274439 Hz/pt
number of scans: 2048

freq. of 0 ppm: 75.467737 MHz
processed size: 32768 complex points
LB: 0.000 GB: 0.0000
Hz/cm: 609.287 ppm/cm: 8.07267



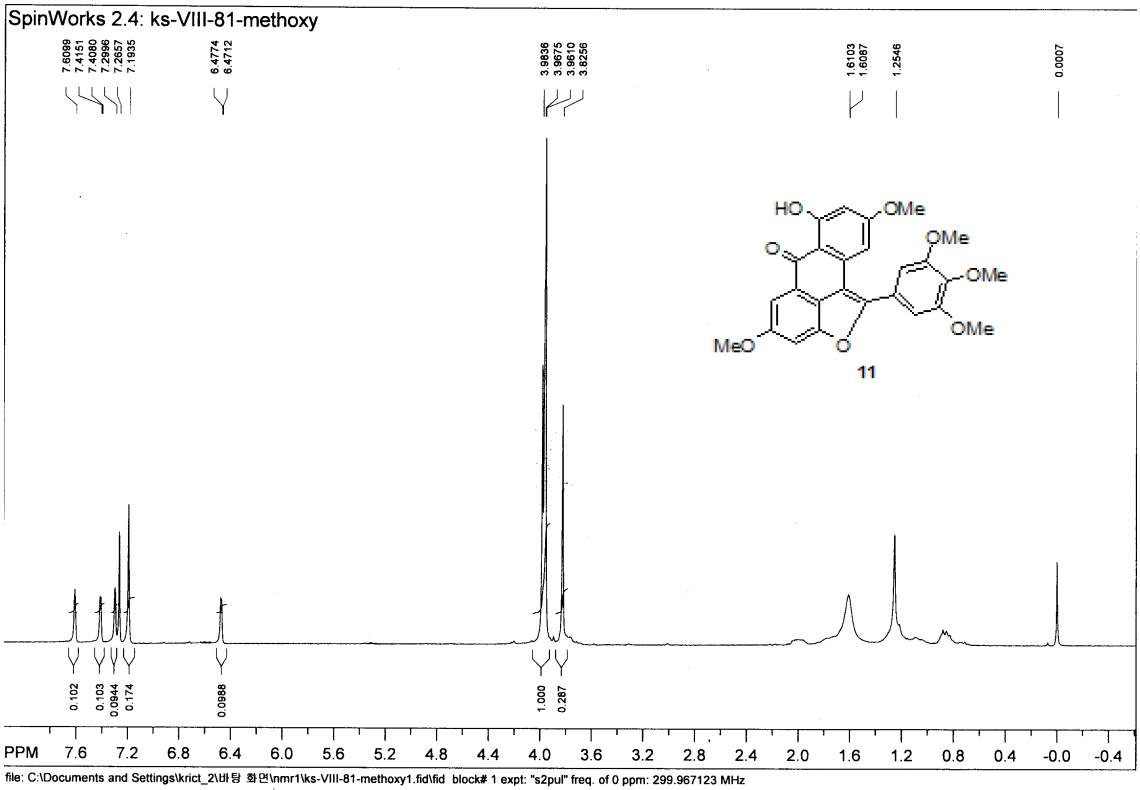
file: C:\Documents and Settings\krict_2\바탕 화면\nmr1\ks-VIII-63.fid\fid block# 1 expt: "s2pul"
transmitter freq.: 299.968918 MHz
time domain size: 19698 points
width: 4807.69 Hz = 16.027302 ppm = 0.244070 Hz/pt
number of scans: 8

freq. of 0 ppm: 299.967128 MHz
processed size: 65536 complex points
LB: 0.000 GB: 0.0000
Hz/cm: 110.780 ppm/cm: 0.36930

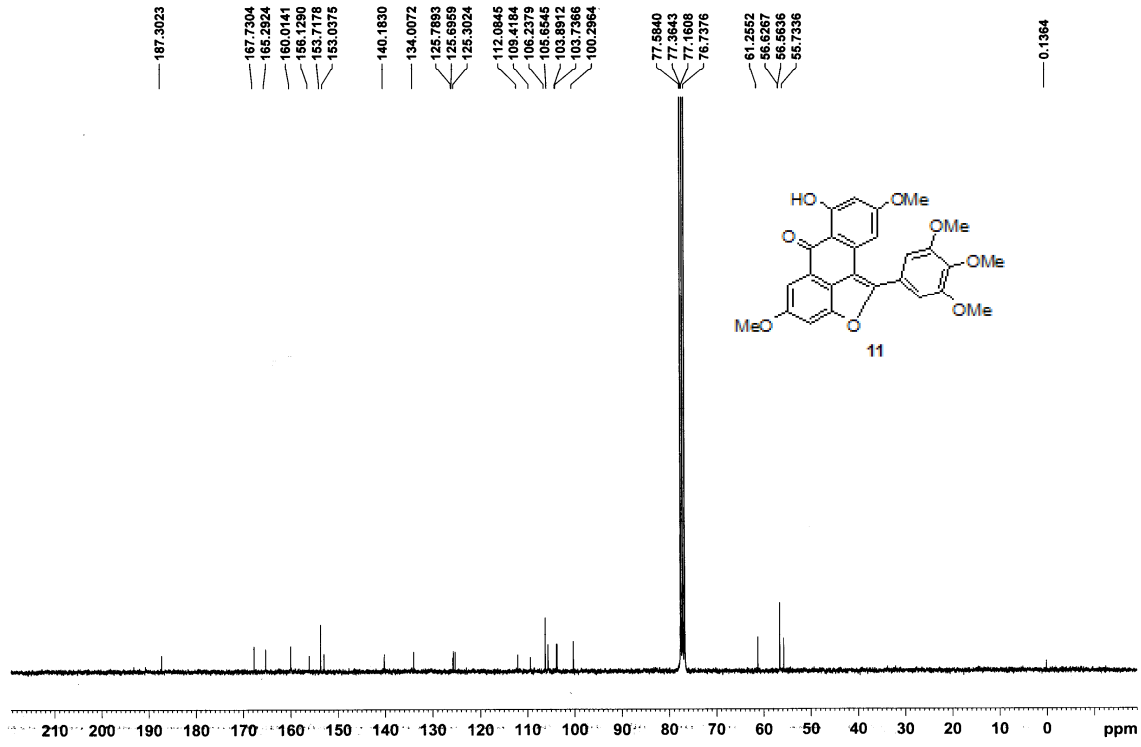


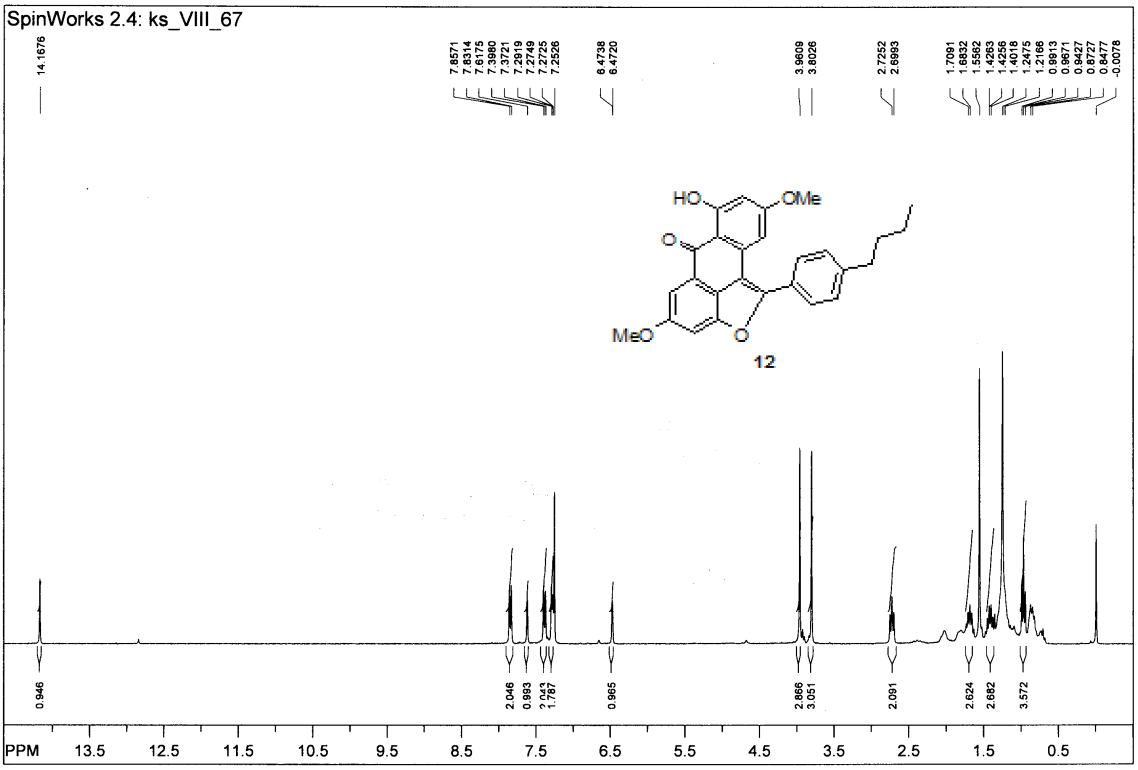
file: C:\Documents and Settings\krict_2\바탕 화면\KS_VIII_63\1\fid expt: <zgpg30>
transmitter freq.: 125.772880 MHz
time domain size: 65536 points
width: 35211.27 Hz = 279.959142 ppm = 0.537281 Hz/pt
number of scans: 12288

freq. of 0 ppm: 125.757789 MHz
processed size: 32768 complex points
LB: 0.200 GB: 0.0000
Hz/cm: 1025.584 ppm/cm: 8.15426


SpinWorks 2.4: ks-VIII-81-methoxy
7.8098
7.4151
7.4080
7.2996
7.2657
7.1935
6.4774
6.4712
3.9836
3.9675
3.9610
3.8256
1.8103
1.6067
1.2546
0.0007
HO
OMe
OMe
OMe
OMe
MeO
O
O
11
0.102
0.103
0.0944
0.174
0.0988
1.000
0.267
PPM 7.6 7.2 6.8 6.4 6.0 5.6 5.2 4.8 4.4 4.0 3.6 3.2 2.8 2.4 2.0 1.6 1.2 0.8 0.4 -0.0 -0.4
file: C:\Documents and Settings\krict_2\바탕 화면\nmr1\ks-VIII-81-methoxy1.fid\fid block# 1 expt: "s2pul" freq. of 0 ppm: 299.967123 MHz
transmitter freq.: 299.968918 MHz
time domain size: 19698 points
width: 4807.69 Hz = 16.027302 ppm = 0.244070 Hz/pt
number of scans: 8
processed size: 65536 complex points
LB: 0.200 GB: 0.0000
Hz/cm: 105.307 ppm/cm: 0.35106

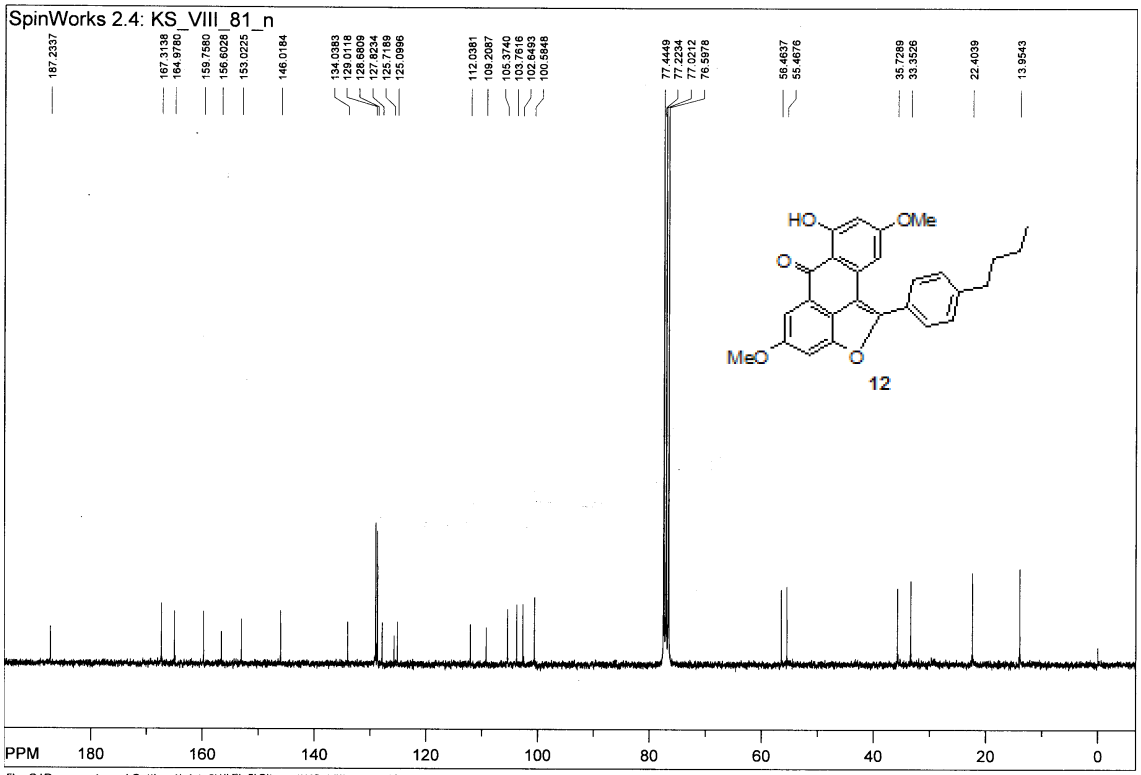
KS_VIII_81_M


187.3023
167.7304
165.2924
160.0141
158.1290
153.7178
153.0375
140.1830
134.0072
125.7893
125.6959
125.3024
112.0845
109.4184
106.2379
105.6545
103.8912
103.7366
100.2964
77.5840
77.3643
77.1608
76.7376
61.2552
56.6267
56.5636
55.7336
0.1364
HO
OMe
OMe
OMe
OMe
MeO
O
O
11
210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 ppm



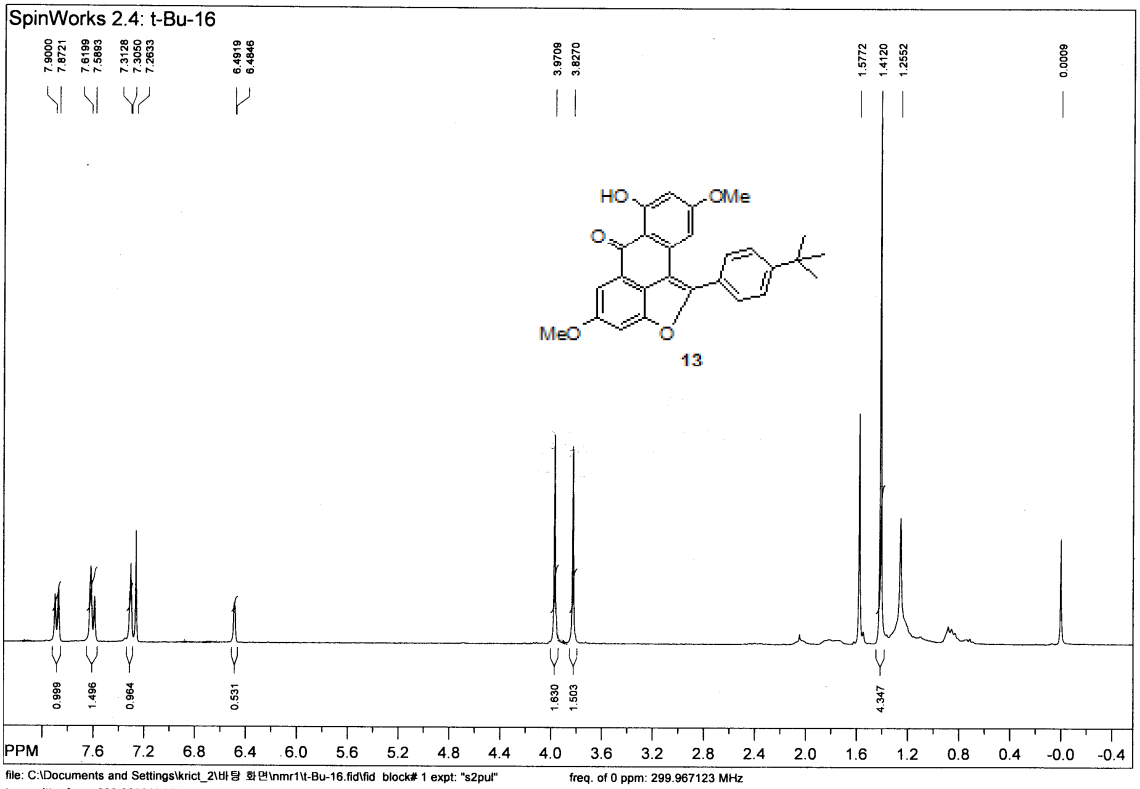
file: C:\Documents and Settings\krict_2\바탕 화면\nmr1\ks_VIII_67\1\fid expt: <zg30>
transmitter freq.: 300.131853 MHz
time domain size: 65536 points
width: 6172.84 Hz = 20.567092 ppm = 0.094190 Hz/pt
number of scans: 16

freq. of 0 ppm: 300.130009 MHz
processed size: 32768 complex points
LB: 0.000 GB: 0.0000
Hz/cm: 181.975 ppm/cm: 0.60632

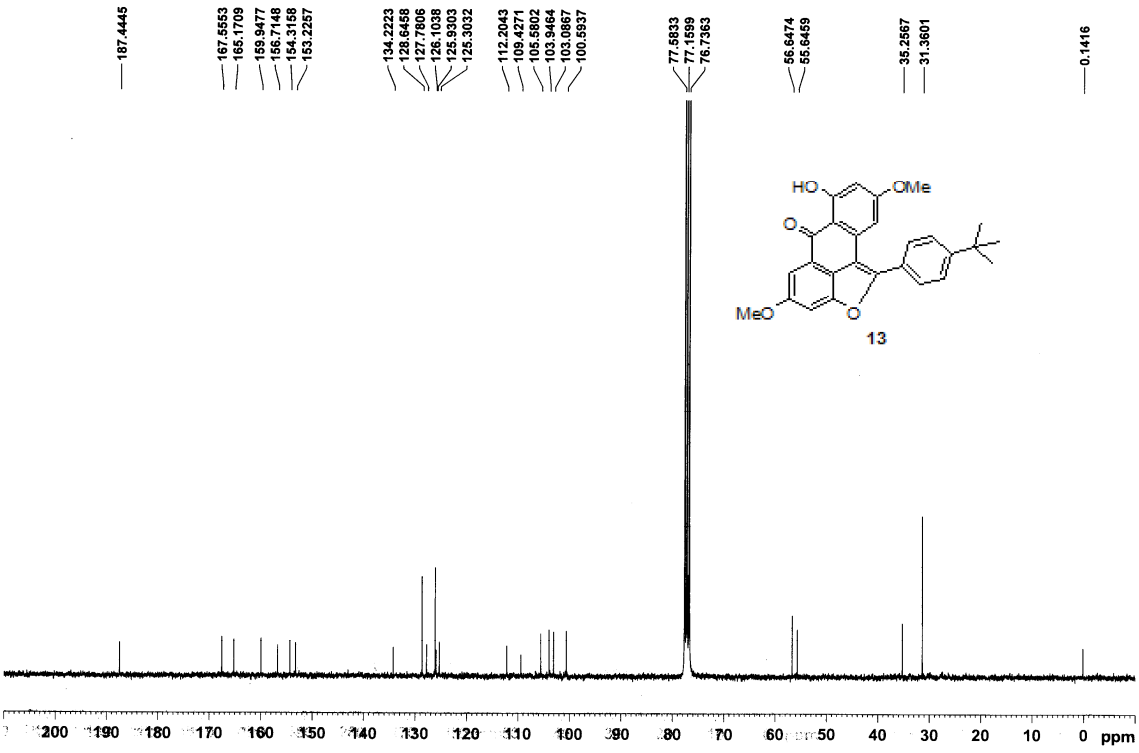


file: C:\Documents and Settings\krict_2\바탕 화면\nmr1\KS_VIII_81_n\1\fid expt: <zgpg30>
transmitter freq.: 75.475295 MHz
time domain size: 65536 points
width: 17985.61 Hz = 238.297995 ppm = 0.274439 Hz/pt
number of scans: 6144

freq. of 0 ppm: 75.467749 MHz
processed size: 32768 complex points
LB: 1.000 GB: 0.0000
Hz/cm: 610.699 ppm/cm: 8.09137


SpinWorks 2.4: t-Bu-16
7.9000
7.8721
7.6199
7.5893
7.3128
7.3050
7.2633
6.4919
6.4846
3.9709
3.8270
1.5772
1.4120
1.2552
0.0009
HO
OMe
O
MeO
O
13
0.999
1.496
0.964
0.531
1.630
1.503
4.347
PPM
7.6 7.2 6.8 6.4 6.0 5.6 5.2 4.8 4.4 4.0 3.6 3.2 2.8 2.4 2.0 1.6 1.2 0.8 0.4 -0.0 -0.4
file: C:\Documents and Settings\krict_2\바탕 화면\nmr1\t-Bu-16.fid\fid block# 1 expt: "s2pul"
transmitter freq.: 299.968918 MHz
time domain size: 19698 points
width: 4807.69 Hz = 16.027302 ppm = 0.244070 Hz/pt
number of scans: 8
freq. of 0 ppm: 299.967123 MHz
processed size: 65536 complex points
LB: 0.000 GB: 0.0000
Hz/cm: 106.439 ppm/cm: 0.35483

KS_VIII_81_t


187.4445
167.5553
165.1709
159.9477
156.7148
154.3158
153.2257
134.2223
128.6458
127.7806
126.1038
125.9303
125.3032
112.2043
109.4271
105.5802
103.9464
103.0867
100.5937
77.5833
77.1599
76.7363
56.6474
55.6459
35.2567
31.3601
0.1416
HO
OMe
O
MeO
O
13
200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 ppm