Supporting Information

Asymmetric first total synthesis of Preoxazinin, Oxazinin-5 and Oxazinin-6

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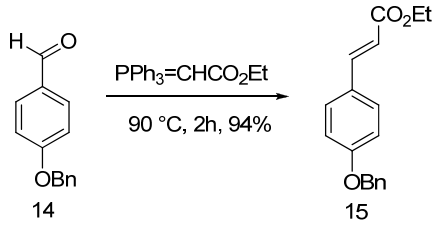
General Information

All reactions were carried out under nitrogen atmosphere with dry solvents under anhydrous conditions, unless otherwise mentioned. All the chemicals were purchased commercially, and used without further purification. Anhydrous THF and diethyl ether were distilled from sodium-benzophenone and dichloromethane was distilled from calcium hydride. Yields refer to chromatographically pure material, unless otherwise stated. Reaction were monitored by thin-layer chromatography (TLC) carried out on 0.25 mm Merck silica gel plates (60F-254) using UV light as a visualizing agent and p-anisaldehyde or ninhydrine stain, and heat as developing agents. Merck silica gel (particle size 100-200 and 230-400 mesh) was used for flash column chromatography. Optical rotations were measured with JASCO P-2000 digital polarimeter at room temperature using 50 mm cell of 1 ml capacity. Infrared spectra were recorded on a Perkin-Elmer Spectrum One FT-IR spectrometer. Reagents were purchased at the highest commercial quality and used without further purification, unless otherwise stated. NMR spectra were recorded on either a Bruker Avance 200 (^{1}H: 200 MHz, ^{13}C: 50 MHz), Bruker Avance 400 (^{1}H: 400 MHz, ^{13}C: 100 MHz), Bruker Avance 500 (^{1}H: 500 MHz, ^{13}C: 125 MHz). Mass spectrometric data were obtained using QTOF-Micromass-UK. The following abbreviations were used to explain the multiplicities: s = singlet, d = doublet, t = triplet, q = quartet, dd = doublet of a doublet, ddd = doublet of a doublet of a doublet, dt = doublet of a triplet, m = multiplet, br = broad, td = triplet of a doublet.

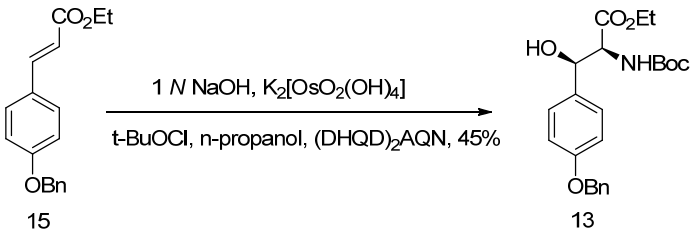
(E)-ethyl 3-(4-(benzyloxy)phenyl)acrylate (15):



To a solution of the aldehyde **14** (8.0 g, 37.7 mmol) in water (150 ml) was added PPh_3=$CHCO_2Et$ salt (19.7 g, 56.5 mmol) and heated it to 90 °C for 2h. The reaction mixture was cooled to RT and extracted with CH_2Cl_2 (3 x 80 ml), washed with brine and dried over Na_2SO_4. Evaporation of the solvent and purification of the residue on a silica gel column using EtOAc-petroleum ether (1:9) as eluent furnished the ester **15** (*E*/*Z*-ratio: 95/5, 10.0 g, 94%) as white solid, *Rf* = 0.30 (EtOAc-petroleum ether, 1:9).

IR (neat): ν_{max}/cm^{-1} 3282, 1682 (C=O), 1632, 1603, 1585, 1515, 1439, 1371, 1279, 1189, 1033, 830; **^{1}H NMR** (200 MHz, $CDCl_3$): δ 7.64 (d, *J* 16.0 Hz, 1H) 7.53-7.29 (m, 7H), 6.97 (td, *J* 8.7 and 2.0 Hz, 2H) , 6.31 (d, *J* 16.0 Hz, 1H), 5.10 (s, 2H), 4.25 (q, *J* 14.3 and 7.1 Hz, 2H), 1.33 (t, *J* 7.1 Hz, 3H); **^{13}C NMR** (50 MHz, $CDCl_3$): δ 167.3, 160.5, 144.2, 136.5, 129.7, 128.6, 128.1, 127.4, 115.9, 115.2, 70.1, 60.3, 14.3; **HRMS-ESI**: calcd for $C_{18}H_{19}O_3$ (M+H) 283.1334; found 283.1330.

Ethyl (2*S*,3*R*)-3-(4-(benzyloxy)phenyl)-2-((tert-butoxycarbonyl)amino)-3-hydroxypropanoate (13):

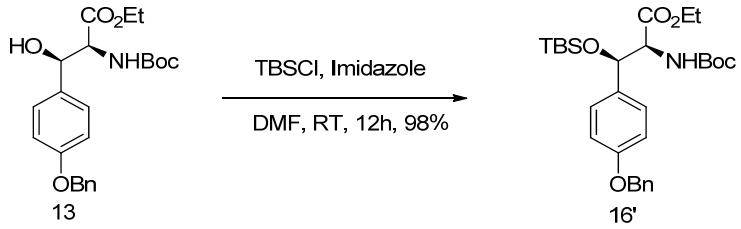


A round bottom flask was charged with sodium hydroxide (30.5 ml of 1 *N* solution) and diluted with water (45 ml) in a dark fume hood. Part of this alkaline solution (5.00 ml) was transferred into a vial to dissolve $K_2[OsO_2(OH)_4]$ (147 mg,0.4 mmol). With vigorous stirring, n-propanol (40.0 ml) and tert-butyl carbamate (3.63 g, 31.0 mmol) were added to the flask, followed by dropwise addition of freshly prepared t-butyl hypochlorite (3.46 ml, 3.05 mmol). After five minutes, n-propanol solution (35 ml) of $(DHQD)_2AQN$ (343 mg, 0.4 mmol) and ethyl cinnamate **15** (2.82 g, 1.0 mmol), and the aqueous $K_2[OsO_2(OH)_4]$ solution

were added. After 2 h, the solution was quenched with 5 g sodium bisulfite, added water and extracted with ethyl acetate (3 x 50 ml), washed with brine and dried over Na_2SO_4. Evaporation of the solvent and purification of the residue on a flash silica gel column using ethyl acetate-petroleum ether (1:4) furnished the ester **13** (1.61 g, 45%, 92% ee), *Rf* = 0.30 (EtOAc-petroleum ether 1:4).

$[\alpha]^{25}_D$ = -12.8 (*c* 4.0, $CHCl_3$); **IR (neat):** ν_{max}/cm^{-1} 3421, 2930, 1716, 1690, 1512, 1392, 1244, 1162, 1162, 1025; **^{1}H NMR** (200 MHz, $CDCl_3$): δ 7.50-7.20 (m, 7H), 6.94 (td, *J* 8.7 and 2.0 Hz, 2H) , 5.35 (d, *J* 8.8 Hz, 1H), 5.12 (t, *J* 3.4 Hz, 1H), 5.04 (s, 2H), 4.45 (br d, *J* 7.4 Hz, 1H), 4.18 (q, *J* 14.3 and 7.2 Hz, 2H), 2.9 (br s, 1H), 1.35 (s, 9H), 1.22 (t, *J* 7.1 Hz, 3H); **^{13}C NMR** (50 MHz, $CDCl_3$): δ 171.0, 158.6, 155.8, 136.9, 132.4, 128.6, 128.0, 127.5, 127.4, 114.7, 80.1, 73.7, 70.0, 61.7, 59.7, 28.2, 14.1; **HRMS-ESI**: calcd for $C_{23}H_{30}NO_6$ (M+H) 416.2073; found 416.2086.

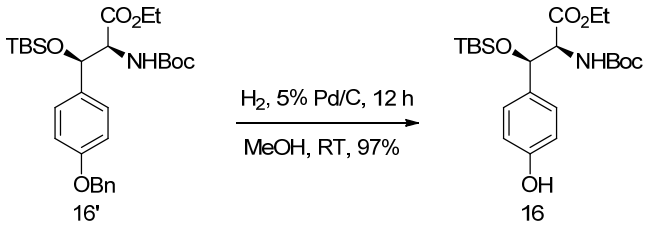
(2S,3R)-ethyl 3-(4-(benzyloxy)phenyl)-2-((tert-butoxycarbonyl)amino)-3-((tert-butyl dimethylsilyl)oxy)propanoate (16'):



To a solution of the alcohol **13** (4.0 g, 9.6 mmol) in DMF (25 ml) were added TBSCl (1.9 g, 12.5 mmol), imidazole (0.9 g, 14.4 mmol) and stirred magnetically at RT for 12 h. Water was added to the reaction mixture, extracted with ethyl acetate (3 x 20 ml), washed with brine and dried over Na_2SO_4. Evaporation of the solvent and purification of the residue on a silica gel column using ethyl acetate-petroleum ether (1:9) furnished the TBS ether **16'** (4.9 g, 98%) as colorless oil, *Rf*= 0.40 (EtOAc-petroleum ether 1:9).

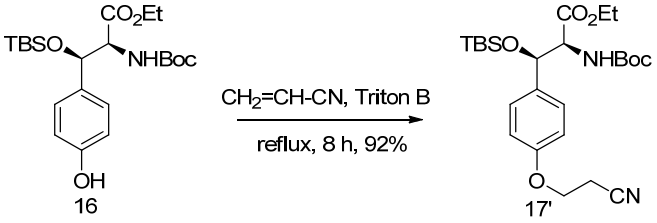
$[\alpha]_D^{25}$ = -16.5 (*c* 5.4, $CHCl_3$); **IR (neat)**: ν_{max}/cm^{-1} 2930, 1720, 1643, 1510, 1367, 1250, 830, 778; **^{1}H NMR** (200 MHz, $CDCl_3$): δ 7.50-7.20 (m, 7H), 6.94 (dt, *J* 8.7 and 2.0 Hz, 2H), 5.30-5.10 (m, 2H), 5.05 (s, 2H), 4.38 (dd, *J* 7.5 and 2.5 Hz, 1H), 4.30-4.10 (m, 2H), 1.35 (s, 9H), 1.31 (t, *J* 7.1 Hz, 3H), 0.89 (s, 9H), 0.00 (s, 3H), -0.15 (s, 3H); **^{13}C NMR** (50 MHz, $CDCl_3$): δ 170.0, 158.3, 154.9, 137.1, 133.0, 128.6, 127.9, 127.5, 114.3, 79.6, 75.2, 69.9, 61.0, 60.9, 53.5, 28.4, 25.8, 18.2, 14.1, -4.8, -5.3; **HRMS-ESI**: calcd for $C_{29}H_{44}NO_6Si$ (M+H) 530.2938; found 530.2941.

Ethyl (2*S*,3*R*)-2-((tert-butoxycarbonyl)amino)-3-((tert-butyldimethylsilyl) oxy)-3-(4-hydroxyphenyl)propanoate (16):



To a solution of the ester 16' (2 g, 3.8 mmol) in methanol was added 5% Pd/C (40 mg) and shaken in hydrogenation atmosphere at RT for 12 h. The reaction mixture was filtered on celite using ethyl acetate. Evaporation of the solvent and purification of the residue on a silica gel column using ethyl acetate-petroleum ether (1:4) as eluent furnished hydroxy ester **16** (1.6 g, 97%) as a colorless oil, *Rf* = 0.30 (EtOAc-petroleum ether 1:4). $[\alpha]_D^{25}$ = -17.8 (*c* 2.3, $CHCl_3$); **IR** (neat): ν_{max}/cm^{-1} 3434, 3020, 2859, 1694, 1616, 1516, 1369, 1169, 1084, 834; **^{1}H NMR** (400 MHz, CD_3CN): δ 7.22 (d, *J* 8.5 Hz, 2H), 6.97 (s, 1H), 6.79 (d, *J* 8.5 Hz, 2H), 5.50 (br d, *J* 9.3 Hz, 1H), 5.22 (s, 1H), 4.30-4.05 (m, 3H), 1.36 (s, 9H), 1.27 (t, *J* 7.0 Hz, 3H), 0.89 (s, 9H), 0.01 (s, 3H), -0.15 (s, 3H); **^{13}C NMR** (100 MHz, CD_3CN): δ 172, 157.9, 156.9, 133.7, 129.1, 116.0, 80.4, 75.6, 62.6, 62.3, 28.9, 26.4, 19.0, 14.8, -4.0, -4.8; **HRMS-ESI**: calcd for $C_{22}H_{38}NO_6Si$ (M+H) 440.2468; found 440.2467.

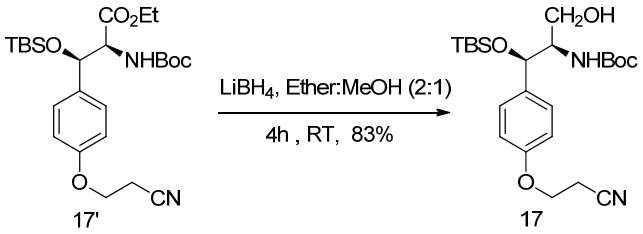
Ethyl (2*S*, 3*R*)-2-((tert-butoxycarbonyl)amino)-3-((tert-butyldimethylsilyl) oxy)-3-(4-(2-cyanoethoxy)phenyl)propanoate (17'):



To a solution of the phenol **16** (1.0 g, 2.3 mmol) in acrylonitrile (10 ml) was added catalytic amount of triton B and refluxed for 8 h. Excess acrylonitrile was removed under reduced pressure and the reaction mixture was diluted with water, extracted with CH_2Cl_2, washed with brine and dried over Na_2SO_4. Evaporation of the solvent and purification of the residue on silica gel column using ethyl acetate-petroleum ether (1:4) as eluent furnished the cyano ester **17'** (1.0 g, 92%). *Rf* = 0.40 (EtOAc-petroleum ether, 1:4).

$[\alpha]_D^{25}$ = -15.6 (*c* 2.0, $CHCl_3$); **IR** (neat): ν_{max}/cm^{-1} 3447, 3020, 2931, 2240, 1712, 1612, 1510, 1215, 1171, 1086, 757, 669; **^{1}H NMR** (200 MHz, $CDCl_3$): δ 7.30 (d, *J* 8.3 Hz, 2H), 6.87 (d, *J* 8.4 Hz, 2H), 5.35-5.00 (m, 2H), 4.40-4.05 (m, 5H), 2.82 (t, *J* 6.3 Hz, 2H), 1.35 (s, 9H), 1.32 (t, *J* 7.2 Hz, 3H), 0.89 (s, 9H), 0.00 (s, 3H), -0.15 (s, 3H); **^{13}C NMR** (50 MHz, $CDCl_3$): δ 170.5, 157.1., 155.3, 133.9, 127.5, 117.1, 114.1, 79.5, 74.2, 62.5, 61.3, 60.5, 28.1, 25.5, 18.4, 17.9, 13.9, -4.8, -5.7; **HRMS-ESI**: calcd for $C_{25}H_{41}N_2O_6Si$ (M+H) 493.2734; found 493.2727.

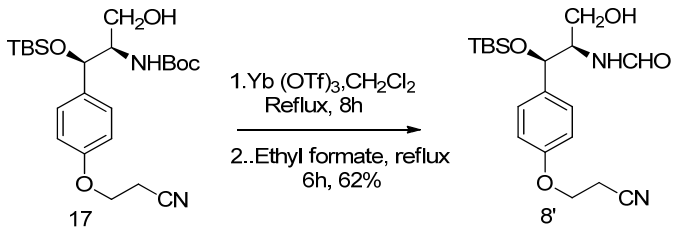
Tert-butyl((1*R*,2*R*)-1-(4-(2-cyanoethoxy)phenyl)-3-hydroxy-1((tri methyl silyl)oxy)-propan-2-yl)carbamate (17):



To a magnetically stirred solution of the cyano ester **17'** (2 g, 4.1 mmol) in ether/methanol (20:10 ml) was added $LiBH_4$ (0.45 g, 20.5 mmol) and stirred for 4 h at RT. Solvent was evaporated under reduced pressure, water (15 ml) was added to the residue and extracted with ether (3 x 20 ml). The combined extract was washed with brine (15 ml) and dried over Na_2SO_4. Evaporation of the solvent and purification of the residue on a silica gel column using ethyl acetate-petroleum ether (1:2) as eluent furnished the alcohol **17** (1.5 g, 83%), *Rf* = 0.30 (EtOAc-petroleum ether, 1:2).

$[\alpha]_D^{25}$ = -22.2 (*c* 4.2, $CHCl_3$); **IR** (neat): ν_{max}/cm^{-1} 3442, 3020, 2931, 2255, 1700, 1510, 1392, 1367, 1216, 1172, 1086, 838; **^{1}H NMR** (200 MHz, $CDCl_3$): δ 7.25 (d, *J* 8.6 Hz, 2H), 6.86 (d, *J* 8.6 Hz, 2H), 5.0-4.8 (m, 2H), 4.18 (t, *J* 6.3 Hz, 2H), 3.75-3.50 (m, 3H), 2.83 (t, *J* 6.3, Hz, 2H), 1.37 (s, 9H), 0.90 (s, 9H), 0.06 (s, 3H), -0.16 (s, 3H); **^{13}C NMR** (50 MHz, $CDCl_3$): δ 156.9, 156.1, 135.0, 127.6, 117.2, 114.2, 79.5, 72.9, 62.7, 62.5, 58.5, 28.2, 25.7, 18.5, 18.0, -4.7, -5.3; **HRMS-ESI**: calcd for $C_{23}H_{39}N_2O_5Si$ (M+H) 451.2628; found 451.2620.

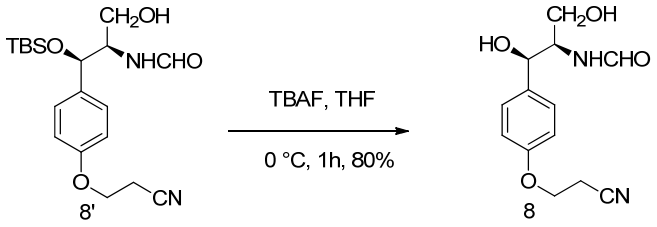
***N*-((1*R*,2*R*)-1-(4-(2-cyanoethoxy)phenyl)-3-hydroxy-1-((trimethylsilyl) oxy) propan-2-yl)formamide (8') :**



To a solution of boc-amine **17** (80.0 mg, 0.18 mmol) in CH_2Cl_2 (8 ml) was added $Yb(OTf)_3$ (110 mg, 0.18 mmol) and refluxed for 8 h. It was quenched with $NaHCO_3$ and concentrated on vacuo. The residue was dissolved in ethyl formate (6 ml) and refluxed for 6 h. Evaporation of the solvent and purification of the residue on a silica gel column using MeOH-CH_2Cl_2 (1:19) furnished TBS-protected bursatellin **8'** (41.6 mg, 62%, 2 steps) as colorless oil, *Rf* = 0.30 (MeOH-CH_2Cl_2 1:19).

$[\alpha]_D^{25}$ = -15.1 (*c* 4.4, $CHCl_3$); **IR** (neat): ν_{max}/cm^{-1} 3358, 2928, 2856, 2280,1746, 1672, 1512, 1389, 1245, 1080, 1047, 837; **^{1}H NMR** (500 MHz, $CDCl_3$, peaks due to major rotamer): δ 8.14 (s, 1H), 7.25 (d, *J* 15.0 Hz, 2H), 6.86 (d, *J* 8.8 Hz, 1H), 6.10 (d, *J* 7.3 Hz, 1H), 4.97 (d, *J* 3.3 Hz, 1H), 4.19 (t, *J* 6.5 Hz, 2H), 4.07-4.01 (m, 1H), 3.68 (d, *J* 5.8 Hz, 2H), 2.84 (t, *J* 6.0 Hz, 2H), 0.91 (s, 9H), 0.08 (s, 3H), -0.14 (s, 3H); **^{13}C NMR** (125 MHz, $CDCl_3$): δ 165.0, 161.6, 157.3, 134.7, 127.8, 127.4, 117.2, 114.5, 114.5, 73.5, 72.3, 63.0, 62.6, 60.8, 57.2, 25.8, 25.8, 18.7, 18.2, -4.6, -5.2; **HRMS-ESI**: calcd for $C_{19}H_{30}N_2O_4SiNa$ (M+Na) 401.1873; found 401.1869.

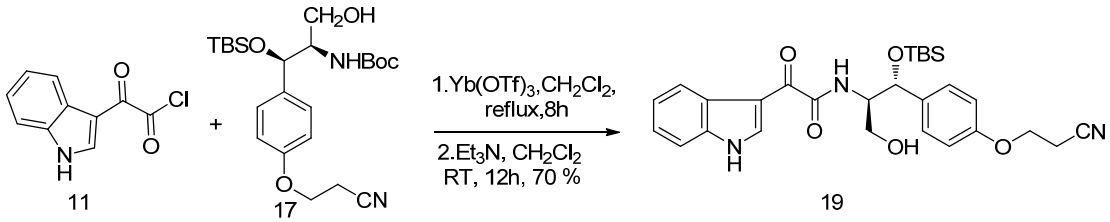
Synthesis of (-)-bursatellin (8):



To a magnetically stirred solution of the TBS protected bursatellin **8'** (20 mg, 0.05 mmol) in THF (2 ml) was added 1 *M* solution of TBAF in THF (0.05 ml, 0.05 mmol) and stirred for 1 h at 0 °C. Solvent was evaporated under reduced pressure, water (3 ml) was added to the residue and extracted with CH_2Cl_2 (3 x 8 ml). The combined extract was washed with brine (6 ml) and dried over Na_2SO_4. Evaporation of the solvent and purification of the residue on a silica gel column using MeOH-CH_2Cl_2 (1:9) as eluent furnished the (-)-bursatellin **(8)** (11.2 mg, 80%), *Rf* = 0.40 (MeOH:CH_2Cl_2, 1:9).

[α]$_D^{25}$ = -8.6 (*c* 0.6, MeOH); **IR** (neat): ν_{max}/cm^{-1} 3360, 2977, 2240, 1660, 1450, 1377, 1174, 1089; **^{1}H NMR** (400 MHz, CD_3OD): δ 7.90 (s, 1H), 7.23 (d, *J* 8.5 Hz, 2H), 6.82 (d, *J* 8.5 Hz, 2H), 4.80 (d, *J* 3.6 Hz, 1H), 4.07 (t, *J* 6.0 Hz, 2H), 4.01-3.96 (m, 1H), 3.54 (dd, *J* 10.8 and 6.2 Hz, 1H), 3.38 (dd, *J* 10.8 and 6.0 Hz, 1H), 2.80 (t, *J* 6.0 Hz, 2H); **^{13}C NMR** (100 MHz, CD_3OD): δ 164.0, 159.0, 136.7, 128.6, 119.0, 115.4, 71.9, 64.2, 62.5, 57.1, 19.0;

***N*-((1*R*,2*R*)-1-((tert-butyldimethylsilyl)oxy)-1-(4-(2-cyanoethoxy)phenyl)-3-hydroxy propan-2-yl)-2-(1H-indol-3-yl)-2-oxoacetamide (19):**



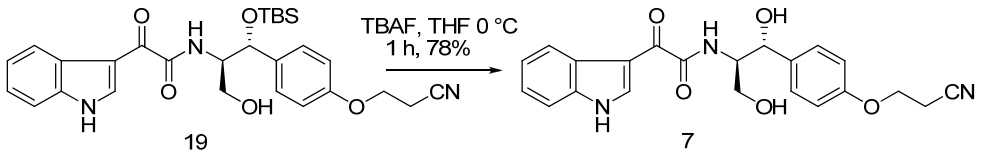
To a solution of indole (1 g, 8.6 mmol) in anhydrous diethyl ether (15 ml) at 0 °C, freshly distilled oxalyl chloride (0.8 ml, 9.5 mmol) was added dropwise. The reaction mixture was stirred at 0 °C for 0.5 h and then allowed to warm to RT. The resulting yellow crystals were collected by filtration, washed with cold anhydrous diethyl ether and dried under vacuum (1.63 g, 15.7 mmol). The yellow solid has been used without further purification.

To a solution of boc-amine **17** (100 mg, 0.2 mmol) in CH_2Cl_2 (10 ml) was added $Yb(OTf)_3$ (138 mg, 0.2 mmol) and refluxed for 8 h. Aq. $NaHCO_3$ was added to the reaction mixture and extracted with CH_2Cl_2 (3 x 10 ml). The organic layer was washed with brine and dried over Na_2SO_4. After evaporation of the solvent, the residue was dissolved in CH_2Cl_2, cooled to 0 °C. To the cold solution was added Et_3N (17 mg, 0.16 mmol) followed by 3-indoleglyoxalyl chloride **11** (40 mg, 0.14 mmol) and stirred magnetically at RT for 12 h. Water (10 ml) was added to the reaction mixture and extracted with CH_2Cl_2 (3 x 10 ml). Combined organic layers were washed with brine and dried over anhydrous Na_2SO_4. Evaporation of the solvent and purification of the residue on a silica gel column using MeOH:CH_2Cl_2 (1:19) furnished the TBS-protected preoxazinin **(19)** (73 mg, 70%) as yellow solid.

[α]$_D^{25}$ = -24.0 (*c* 0.9, $CHCl_3$); **IR** (neat): ν_{max}/cm^{-1} 3392, 3020, 2930, 2400, 2280, 1635, 1511, 1423, 1215, 1045, 929, 758, 669; **^{1}H NMR** (400 MHz, $CDCl_3$): δ 9.58 (s, 1H), 8.71 (dd, *J* 5.1 and 3.4 Hz, 1H), 8.39 (d, *J* 7.5 Hz, 1H), 7.92 (d, *J* 9.0 Hz, 1H), 7.40-7.20 (m, 5H), 6.73 (d, *J* 8.7 Hz, 2H), 5.00 (d, *J* 3.1 Hz, 1H), 4.15-4.05 (m, 1H), 4.02 (t, *J* 6.2 Hz, 2H), 3.85-3.70 (m, 2H), 2.72 (t, *J* 6.2 Hz, 2H), 0.92 (s, 9H), 0.07 (s, 3H), -0.15 (s, 3H); **^{13}C NMR** (100 MHz,

$CDCl_3$): δ 180.3, 163.0, 157.0, 138.5, 135.8, 134.7, 127.4, 126.5, 124.1, 123.3, 122.2, 117.4, 114.2, 112.9, 111.9, 72.73, 62.73, 62.36, 58.1, 25.8, 18.6, 18.1, -4.61, -5.25; **HRMS-ESI**: calcd for $C_{28}H_{36}N_3O_5S_i$ (M+H) 522.2424; found 522.2424.

Synthesis of preoxazinin-7 (7):

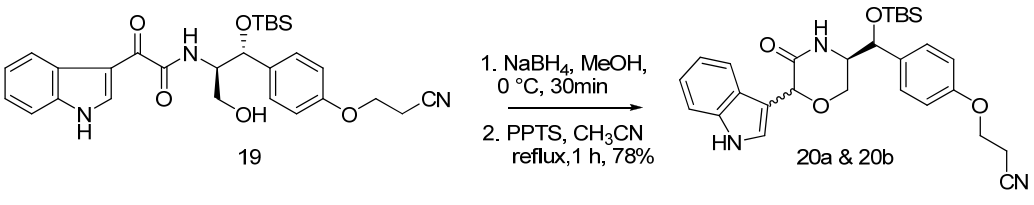


To the solution of **19** (80 mg, 0.2 mmol) in THF (5.0 ml) was added TBAF (1.0 M in THF, 0.2 ml, 0.2 mmol). The resulting mixture was stirred for 1 h at 0 °C, before it was concentrated in vacuo. Water (5 ml) was added to the residue and extracted with ether (3 x 20 ml). The combined extract was washed with brine (15 ml) and dried over Na_2SO_4. Evaporation of the solvent and purification of the residue on a silica gel column using ethyl acetate-petroleum ether (9:1) as eluent furnished the preoxazinin-7 **(7)** (48.7 mg, 78 %) as a white solid, *Rf* = 0.30 (EtOAc-petroleum ether, 9:1).

$[\alpha]_D^{25}$ = -11 (*c* 0.6, MeOH); **IR** (neat): ν_{max}/cm^{-1} 3480, 3340, 3162, 2977, 2270, 1660, 1622, 1450, 1377, 1174, 1089, 929; **^{1}H NMR** (400 MHz, CD_3CN): δ 10.12 (br s , 1H), 8.81 (s, 1H), 8.31 (d, *J* 9.1 Hz, 1H), 7.79 (br s, 1H), 7.54 (d, *J* 9.1 Hz, 1H), 7.30 (dd, *J* 9.1 and 7.3 Hz, 2H), 7.29 (dd, *J* 9.1 and 7.3 Hz, 2H), 6.88 (d, *J* 8.9 Hz, 2H), 5.00 (t, *J* 3.6 Hz, 1H), 4.14 (t, *J* 6.2 Hz, 2H), 4.10-4.00 (m, 1H), 3.86 (d, *J* 4.0 Hz, 1H), 3.70 (dd *J* 11.4 and 5.6 Hz, 1H), 3.63 (dd, *J* 11.4 and 5.6 Hz, 2H), 2.81 (t, *J* 6.2 Hz, 2H); **^{13}C NMR** (100 MHz, CD_3CN): δ 181.8, 163.6, 158.4, 139.9, 137.2, 136.5, 128.5, 127.6, 124.9, 124.0, 122.7, 119.3, 115.3, 113.5, 113.3, 72.5, 64.0, 63.1, 57.8, 19.2,

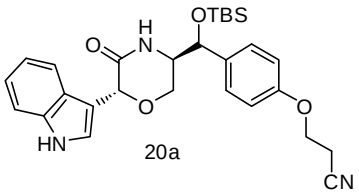
HRMS-(ESI): calcd for $C_{22}H_{21}N_3O_5Na$ (M+Na) 430.1379; found 430.1382.

3-(4-((R)-((3R,6R)-6-(1H-indol-3-yl)-5-oxomorpholin-3-yl)((tert-butyldimethylsilyl)oxy) methyl)phenoxy)propanenitrile (20a) & 3-(4-((R)-((3R,6S)-6-(1H-indol-3-yl)-5-oxomorpholin-3-yl)((tert-butyldimethylsilyl)oxy) methyl)phenoxy)propanenitrile (20b) :



To a cold solution (0 °C) of **19** (104 mg, 0.2 mmol) in MeOH was added $NaBH_4$ (40 mg, 1 mmol) and stirred vigorously at the same temperature for 30 min. Excess MeOH was removed from reaction mixture under reduced pressure. Added water (10 ml), extracted with ethyl acetate (3 x 8 ml), washed with brine (10 ml) and dried over Na_2SO_4 and concentrated. To the crude alcohol was added acetonitrile (50 ml), catalytic (10 mg) pyridine para-toluene sulfonate (PPTS) and refluxed for 1 h. The reaction mixture was quenched with aq. $NaHCO_3$ (20 ml), extracted with ethyl acetate (3 x 8 ml), washed with brine and dried over Na_2SO_4. Evaporation of the solvent and purification of the residue using preparative thin layer chromatography furnished the diastereomers **20a** (23 mg) and **20b** (58 mg) (yield 78% for two steps).

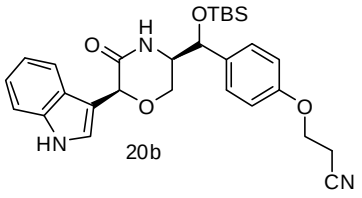
TBS-protected oxazinin-5 (20a):



20a

[α]$_D^{25}$ = +19.1 (*c* 2.0 $CHCl_3$); **IR** (neat): ν_{max}/cm^{-1} 3396, 3269, 2928, 2856, 1668 (C=O), 1612, 1512, 1462, 1238, 1105, 858, 839, 780, 744, 618; **^{1}H NMR** ($CDCl_3$, 400 MHz): δ 8.35 (br s, 1H), 7.68 (d, *J* 7.8 Hz, 1H), 7.35-7.00 (m, 6H), 6.89 (d, *J* 8.6 Hz, 1H), 6.55 (br s, 1H), 5.51 (s, 1H), 4.63 (d, *J* 8.3 Hz, 1H), 4.18 (t, *J* 6.3 Hz, 2H), 3.70-3.55 (m, 2H), 3.41 (dd, *J* 11.5 and 5.0 Hz, 1H), 2.83 (t, *J* 6.3 Hz, 2H), 1.64 (br s, 1H), 0.91 (s, 9H), 0.10 (s, 3H), -0.19 (s, 3H); **^{13}C NMR** ($CDCl_3$, 100 MHz): δ 169.4, 157.8, 136.4, 133.7, 128.2, 126.1, 124.6, 122.4, 120.0, 119.5, 117.1, 114.7, 111.3, 76.2, 73.8, 62.6, 61.5, 58.6, 25.8, 18.6, 18.1, -4.5, -5.0; **HRMS**: calcd for $C_{28}H_{36}N_3O_4Si$ (M+H) 506.2475; found 506.2486.

Synthesis of TBS-protected oxazinin-6 (20b):

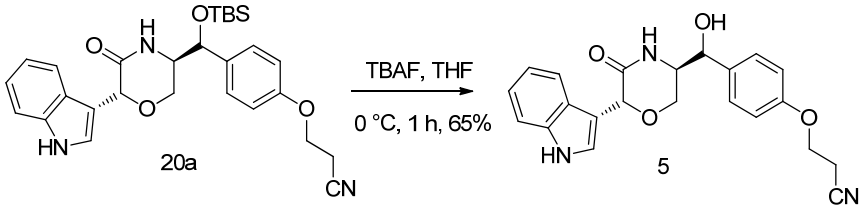


20b

[α]$_D^{25}$= -28.4 (*c* 4.5, $CHCl_3$); **IR** (neat): ν_{max}/cm^{-1} 3398, 2927, 2856, 1668 (C=O), 1611, 1511, 1459, 1248, 1097, 859, 838, 779, 743, 617; **^{1}H NMR** ($CDCl_3$, 500 MHz): δ 8.65 (br s, 1H), 7.71 (d, *J* 7.6 Hz, 1H), 7.35-7.00 (m, 6H), 6.81 (d, *J* 8.6 Hz, 2H), 6.62 (s, 1H), 5.51 (s, 1H), 4.61 (d, *J* 8.5 Hz, 1H), 4.12 (t, *J* 6.1 Hz, 2H), 3.70-3.50 (m, 2H), 3.50-3.40 (m, 1H), 2.79 (t, *J* 6.1 Hz, 2H), 0.90 (s, 9H), 0.09 (s, 3H), -0.21 (s, 3H).

^{13}C NMR ($CDCl_3$, 125 MHz): δ 169.7, 157.7, 136.5, 133.5, 128.2, 126.2, 124.9, 122.3, 119.9, 119.4, 117.1, 114.6, 111.5, 110.9, 76.1, 73.8, 62.5, 61.1, 58.6, 25.8, 18.6, 18.1, -4.5, -5.0; **HRMS**: calcd for $C_{28}H_{36}N_3O_4Si$(M+H) 506.2475; found 506.2463.

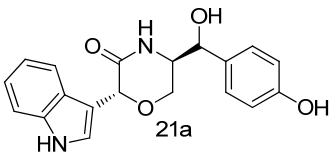
Oxazinin-5 (5) and (2R,5R)-5-((R)-(tert-butyldimethylsilyloxy)(4-hydroxyphenyl)methyl)-2-(1H-indol-3-yl)morpholin-3-one (21a):



To an ice cold (0 °C) solution of the compound **20a** (22 mg, 0.043 mmol) in anhydrous THF (2 ml) was added dropwise 1 *M* solution of TBAF in THF (0.08 ml, 0.08 mmol) and stirred magnetically for 1 h. The reaction mixture was quenched with aq. $NaHCO_3$ (5 ml), extracted with ethyl acetate (5 ml x 3), washed with brine and dried over Na_2SO_4. Evaporation of the solvent and purification of the residue using preparative TLC furnished oxazinin-5 **(5)** (11 mg, 65%) and the diol **21a** (2.5 mg, 15%) as white solid.

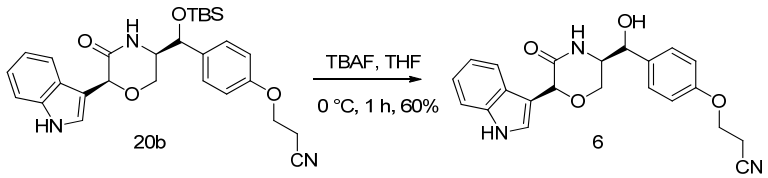
$[\alpha]_D^{25}$ = 6.9 (*c* 0.4, MeOH); **IR** (neat): ν_{max}/cm^{-1} 3360, 3302, 2924, 2853, 2257, 1660, 1609, 1513, 1456, 1306, 1240, 1177, 1106, 1049, 838, 749, 618; **^{1}H NMR** ($CDCl_3$, 400 MHz): δ 9.29 (br s, 1H), 7.58 (d, *J* 8.1 Hz, 1H), 7.40 (d, *J* 8.3 Hz, 1H), 7.34 (d, *J* 8.5 Hz, 2H), 7.27 (d, *J* 2.7 Hz, 1H), 7.15 (dd, *J* 8.1 and 7.1 Hz, 1H), 7.05 (dd, *J* 8.1 and 7.1 Hz, 1H), 6.96 (d, *J* 8.8 Hz, 1H), 5.29 (s, 1H), 4.58 (dd, *J* 8.1 and 4.2 Hz, 1H), 4.19 (t, *J* 6.1 Hz, 2H), 3.86 (d, *J* 4.1 Hz, 1H), 3.85-3.70 (m, 1H), 3.59 (dd, *J* 12.0 and 3.9 Hz, 1H), 3.50 (dd, *J* 12.0 and 7.6 Hz, 1H), 2.85 (t, *J* 6.1 Hz, 2H); **^{13}C NMR** ($CDCl_3$, 100 MHz): δ 169.2, 158.0, 136.5, 134.1, 128.1, 126.1, 125.3, 121.8, 119.4, 118.2, 114.6, 112.0, 111.5, 73.9, 73.6, 63.1, 63.0, 57.5, 18.1; **HRMS**: calcd for $C_{22}H_{21}N_3O_4Na$ (M+Na) 414.1430; found 414.1418.

Side chain cleaved compound (21a)



$[\alpha]_D^{25}$ = 5.3 (*c* 0.6, MeOH); **IR** (neat): ν_{max}/cm^{-1} 3362, 3169, 2923, 2853, 1653, 1612, 1463, 1186, 1108, 967, 838, 745, 618; **^{1}H NMR** ($CDCl_3$, 400 MHz): δ 9.30 (br s, 1H), 7.58 (d, *J* 8.0 Hz, 1H), 7.39 (d, *J* 8.0 Hz, 1H), 7.25 (s, 1H), 7.20 (d, *J* 7.3 Hz, 2H), 7.18-7.00 (m, 3H), 6.85-6.75 (m, 2H), 5.28 (s, 1H), 4.49 (dd, *J* 8.1 and 3.9 Hz, 1H), 3.85-3.75 (m, 2H), 3.56 (dd, *J* 12.0 and 3.9 Hz, 1H), 3.47 (dd, *J* 11.7 and 7.8 Hz, 1H); **^{13}C NMR** ($CDCl_3$, 100 MHz): δ 169.3, 156.9, 136.4, 132.2, 128.0 (2C), 126.2, 125.3, 121.8, 119.4 (2C), 115.2 (2C), 111.9, 74.1, 73.6, 63.2, 57.6; **HRMS**: m/z calcd for $C_{19}H_{18}N_2O_4Na$ (M+Na) 361.1164; found 361.1181.

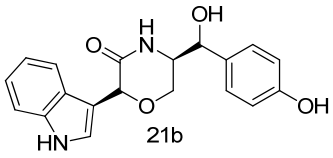
Oxazinin-6 (6) and (2S,5R)-5-((R)-(tert-butyldimethylsilyloxy)(4-hydroxyphenyl)methyl)-2-(1H-indol-3-yl)morpholin-3-one (21b):



To an ice cold (0 °C) solution of the compound **20b** (20 mg, 0.04 mmol) in anhydrous THF (2 ml) was added dropwise 1 *M* solution of TBAF in THF (0.08 ml, 0.08 mmol) and stirred magnetically for 1 h. The reaction mixture was quenched with aq. $NaHCO_3$ (5 ml), extracted with ethyl acetate (5 ml x 3), washed with brine and dried over Na_2SO_4. Evaporation of the solvent and purification of the residue using preparative TLC furnished oxazinin-6 **(6)** (9.3 mg, 60%) and the diol **21b** (3.7 mg, 24%) as white solid.

$[\alpha]_D^{25}$ = 9.00 (*c* 0.5, MeOH); **IR** (neat): ν_{max}/cm^{-1} 3360 (OH), 3163, 2924, 2857, 2256 (CN), 1661 (C=O), 1618, 1513, 1456, 1306, 1241, 1177, 1107, 1051, 838, 749, 618; **^{1}H NMR** ($CDCl_3$, 400 MHz): δ 9.37 (br s, 1H), 7.62 (d, *J* 7.8 Hz, 1H), 7.43 (d, *J* 8.0 Hz, 1H), 7.35-7.26 (m, 2H), 7.25-7.20 (m, 1H), 7.18-7.14 (m, 1H), 7.09-7.05 (m, 1H), 6.92 (d, *J* 8.3 Hz, 2H), 6.86 (br s, 1H), 5.38 (s, 1H), 4.71 (dd, *J* 7.8 and 3.9 Hz, 1H), 4.17 (t, *J* 6.1 Hz, 2H), 3.91 (d, *J* 3.9 Hz, 1H), 3.68-3.52 (m, 3H), 2.84 (t, *J* 6.1 Hz, 2H); **^{13}C NMR** ($CDCl_3$, 100 MHz): δ 170.1, 158.8, 137.3, 135.4, 129.3, 127.3, 126.3, 122.7, 126.3, 122.7, 120.6, 120.2, 119.2, 115.6, 112.7, 112.5, 75.3, 74.5, 64.2, 62.7, 58.2, 19.0.

Side chain cleaved compound (21b)



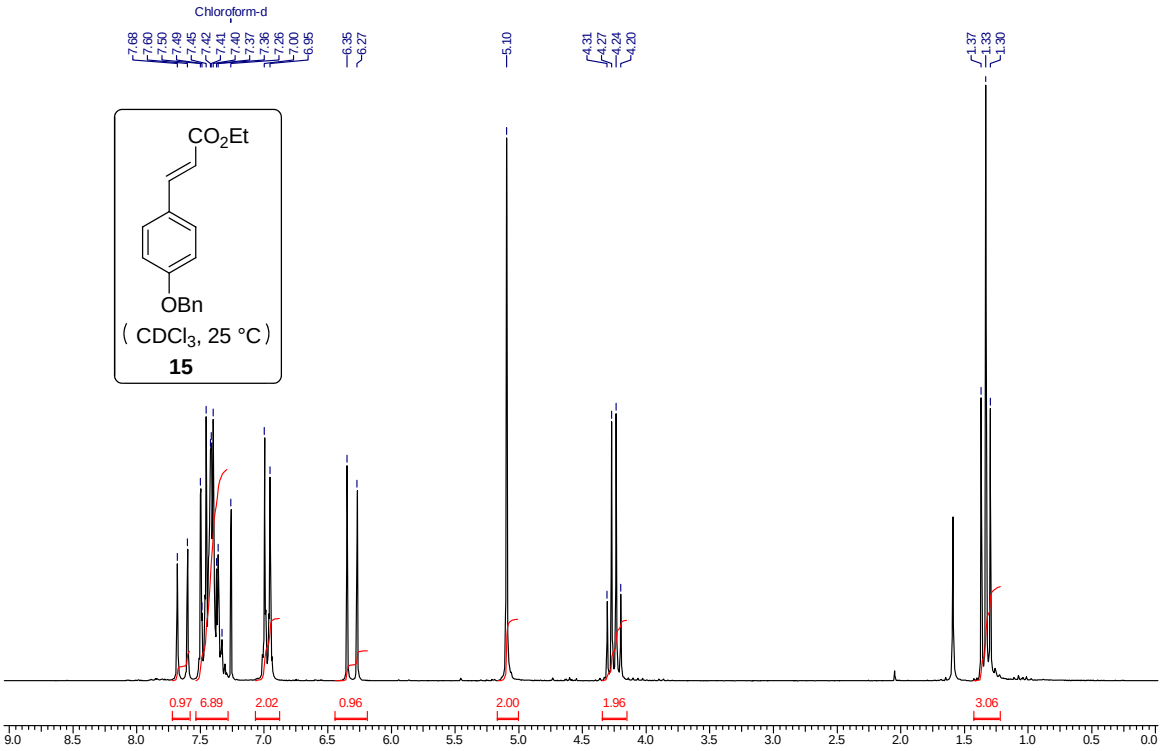
$[\alpha]_D^{25}$ = 7.00 (*c* 0.6, MeOH); **IR** (neat): ν_{max}/cm^{-1} 3360 (OH), 2923, 2853, 1652 (C=O), 1613, 1457, 1182, 1108, 966, 838, 745, 618; **^{1}H NMR** ($CDCl_3$, 400 MHz): δ 9.38 (br s, 1H), 7.63 (d, *J* 7.6 Hz, 1H), 7.43 (d, *J* 8.1 Hz, 1H), 7.30-7.00 (m, 6H), 6.87 (br s, 1H), 6.85-9.70 (m, 2H), 5.38 (s, 1H), 4.70-4.60 (m, 1H),3.83 (br s, 1H), 3.65-3.50 (m, 3H).

^{13}C NMR ($CDCl_3$, 100 MHz): δ 170.2, 157.8, 137.5, 133.4, 129.2, 127.5, 126.4, 122.9, 120.5, 120.4, 116.2, 112.7, 112.6, 75.6, 74.5, 62.8, 58.6; **HRMS**: calcd for $C_{19}H_{18}N_2O_4Na$ (M+Na) 361.1164; found 361.1158.

NMR Spectrum :

30 May 2011
Alok

Acquisition Time (sec)	7.9167	***Comment***	Alok	***Date***	19/10/2009 15:38:24	***Frequency (MHz)***	200.13
Nucleus	1H	***Original Points Count***	32768	***Points Count***	32768	***Sweep Width (Hz)***	4139.07
Temperature (grad C)	0.000						



Z:\AV200\OCT_09~1\data\ADMINI~1\nmr\MOE13D~1\1\pdata\1\1r

30 May 2011
Alok

Acquisition Time (sec)	2.7329	***Comment***	Alok	***Date***	22/10/2009 07:47:24	***Frequency (MHz)***	50.32
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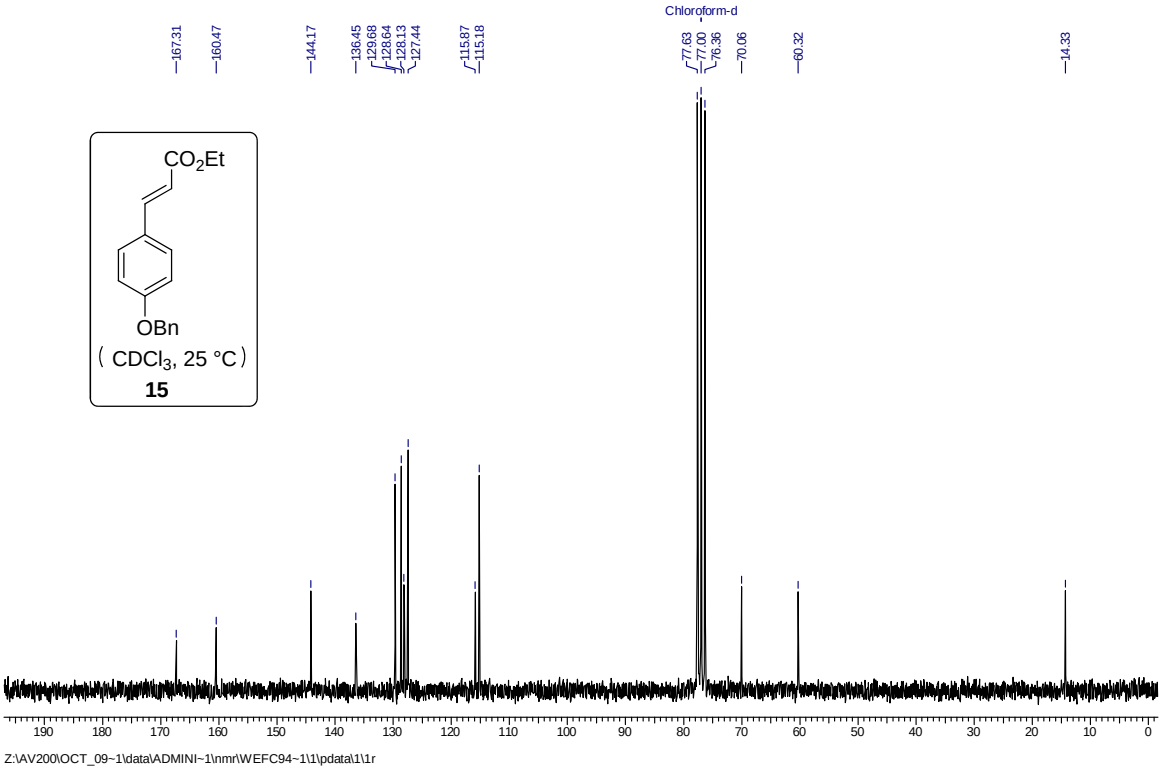
Temperature (grad C)	0.000						



Z:\AV200\OCT_09~1\data\ADMINI~1\nmr\WEFC94~1\1\pdata\1\1r

30 May 2011
Alok

Acquisition Time (sec)	2.7329	***Comment***	Alok	***Date***	22/10/2009 08:22:32			***Frequency (MHz)***	50.32
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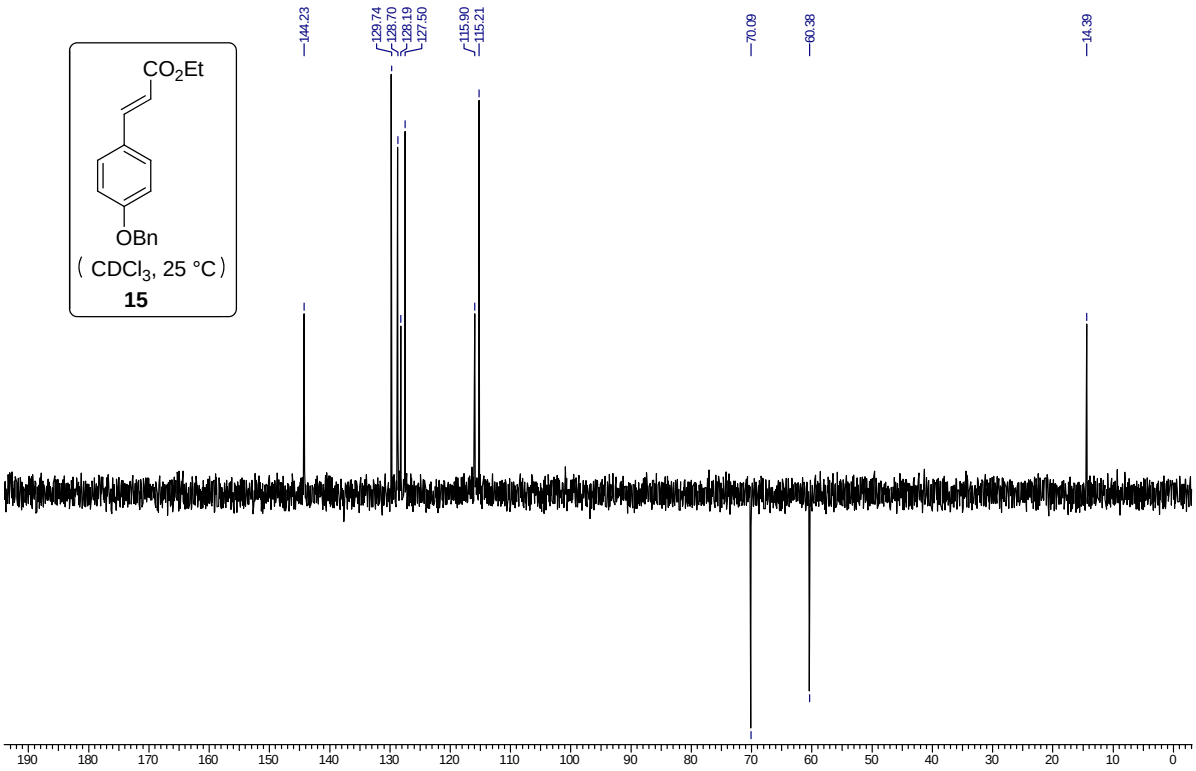
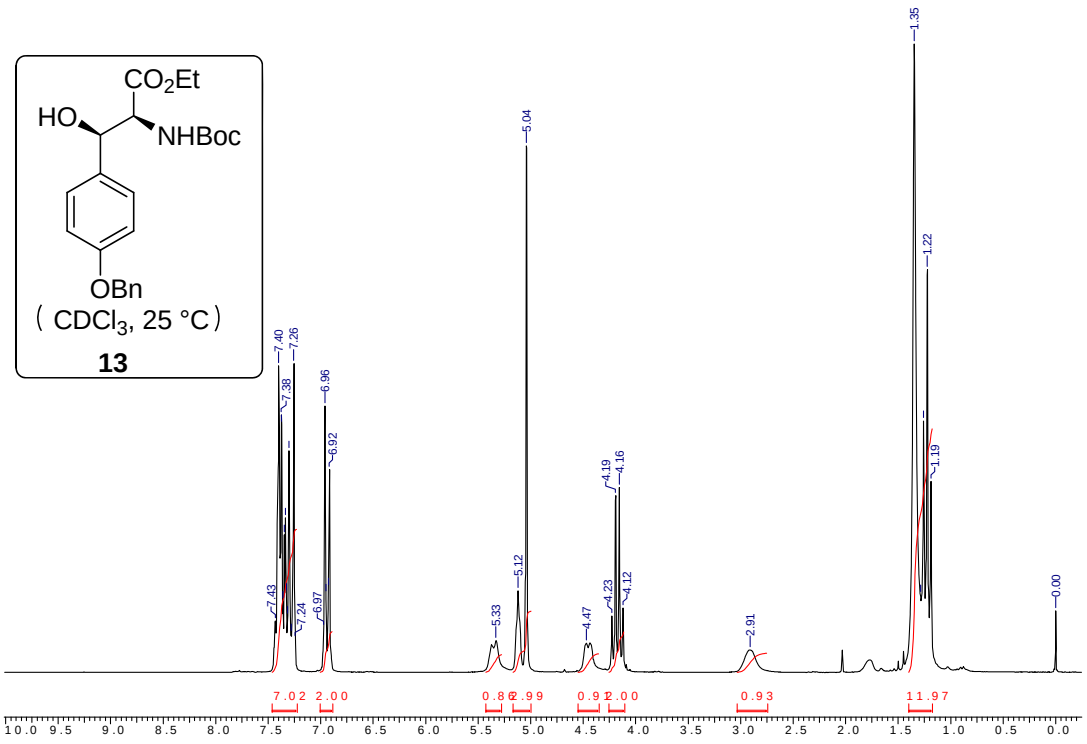
Temperature (grad C)	0.000								

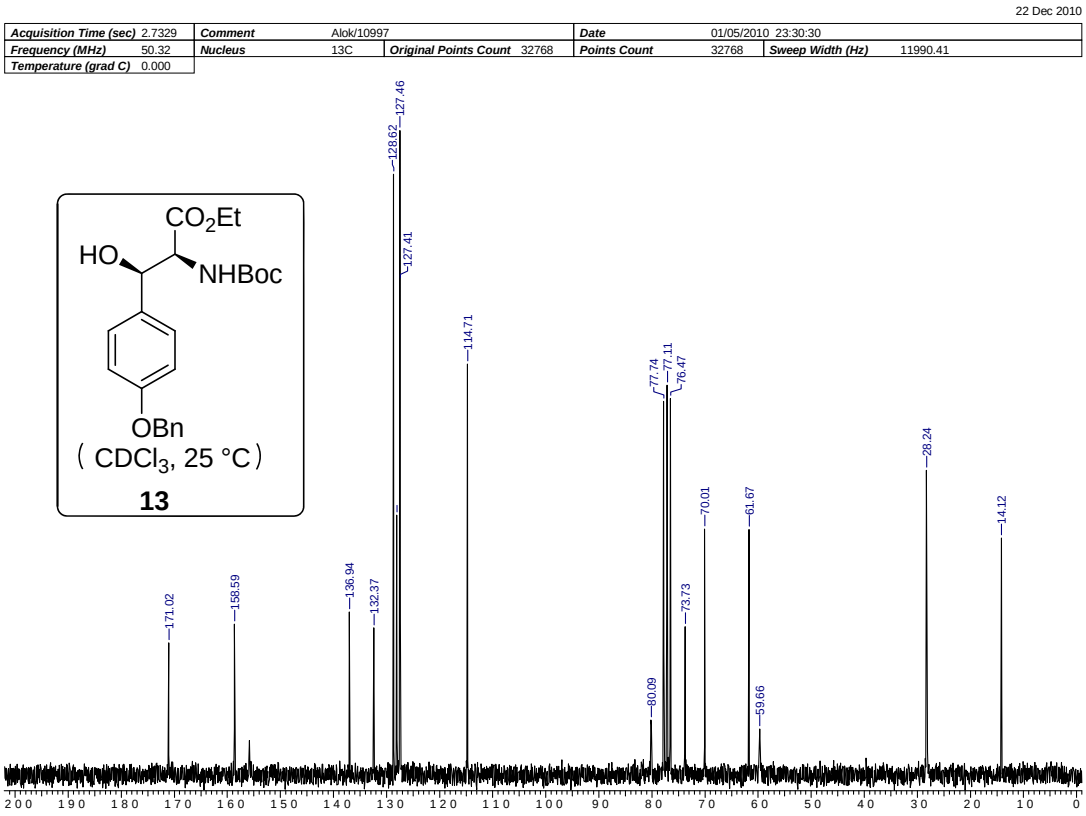


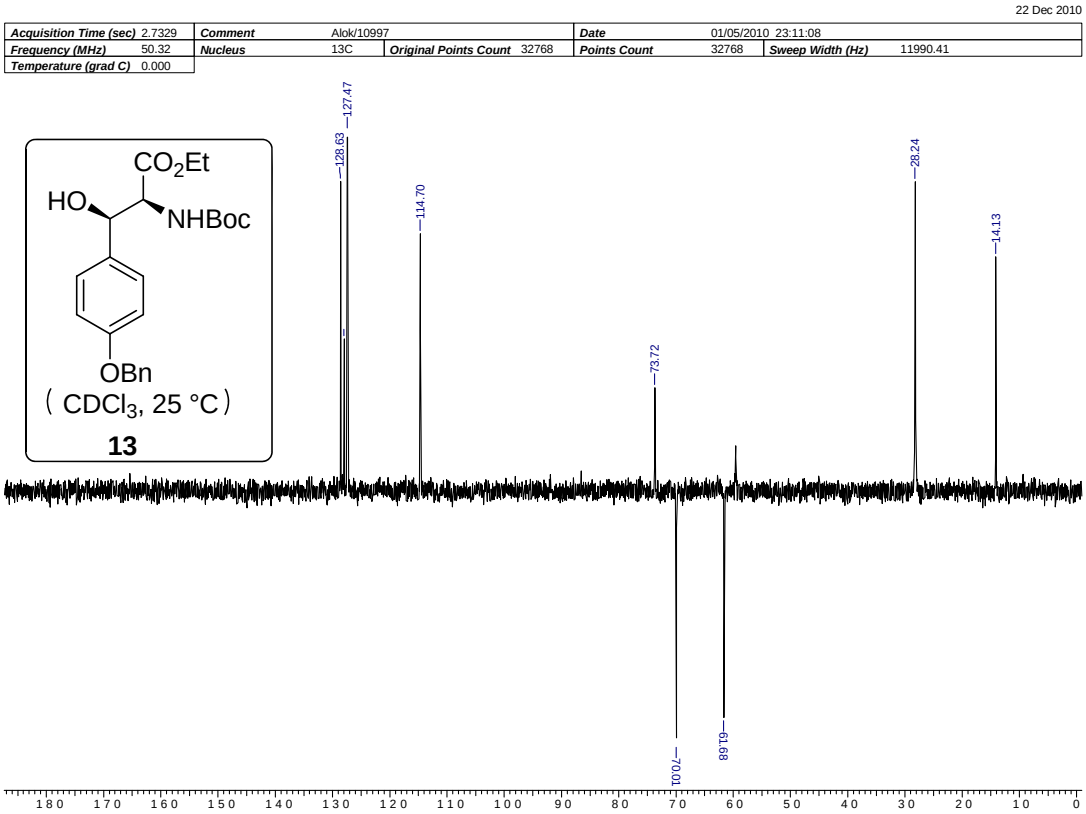
Z:\AV200\OCT_09~1\data\ADMINI~1\nmr\WEFC94~1\2\pdata\1\1r

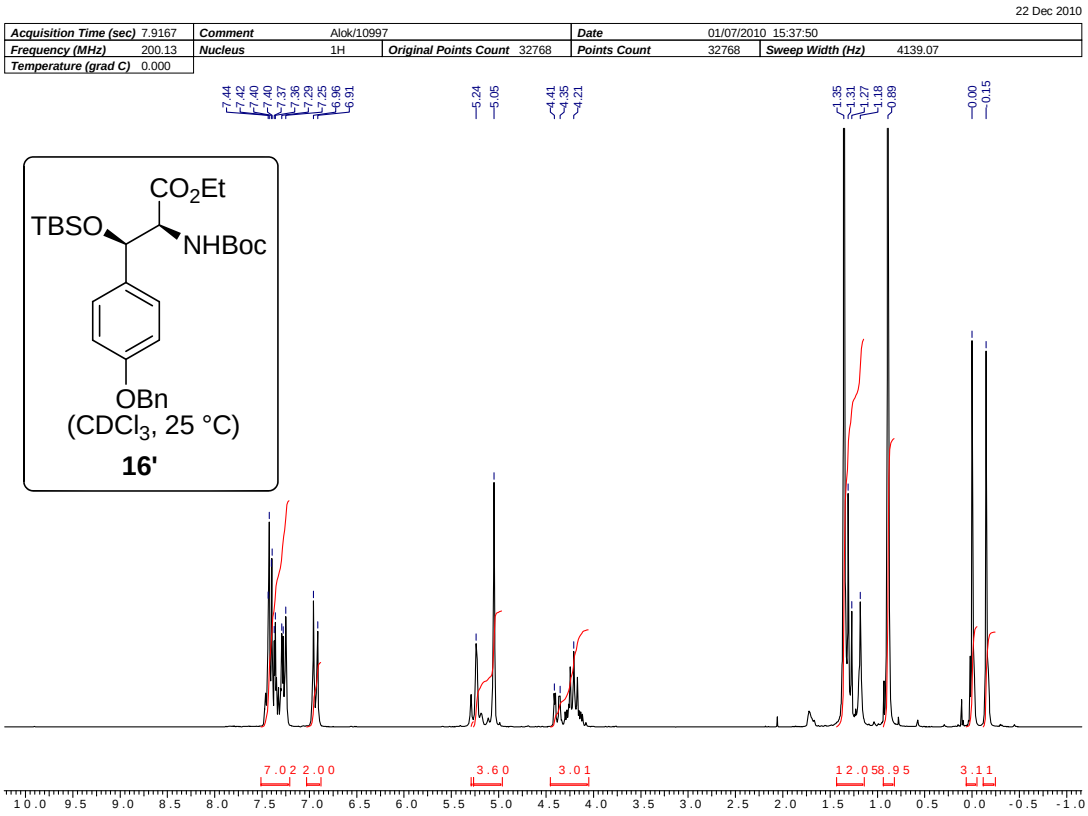
22 Dec 2010

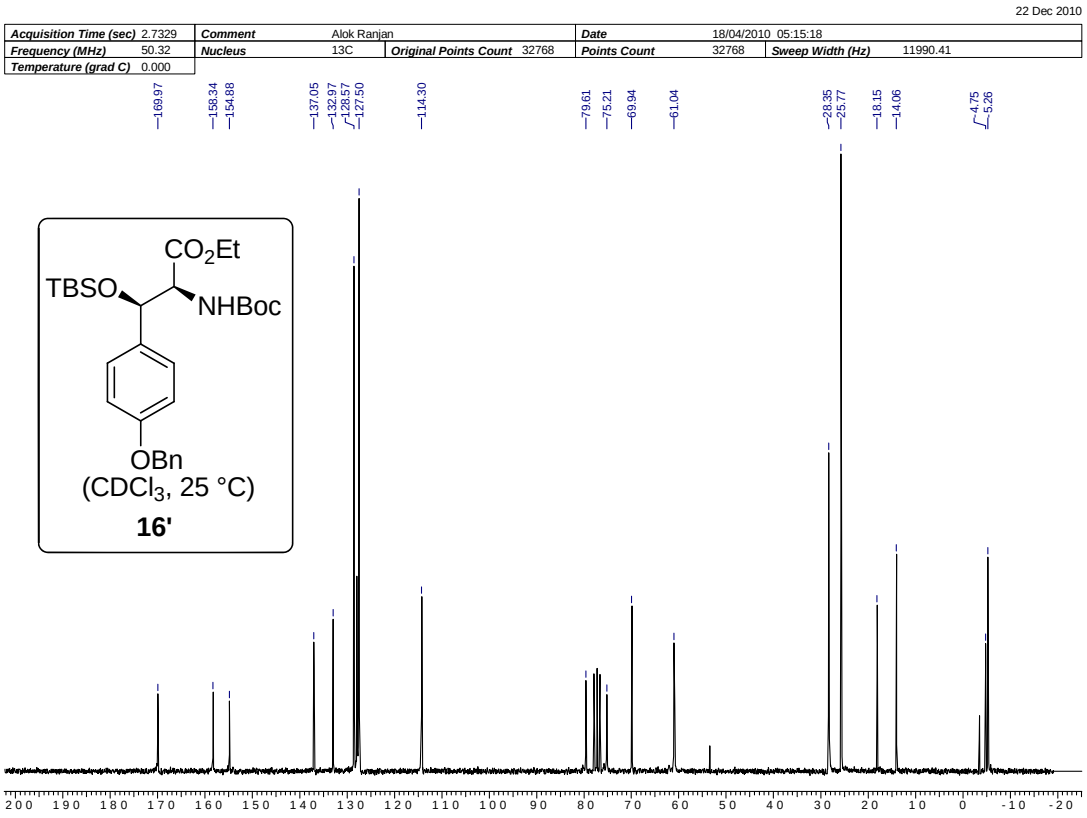
Acquisition Time (sec)	7.9167	***Comment***	Alok/10997			***Date***	28/04/2010 11:04:28		
Frequency (MHz)	200.13	***Nucleus***	1H	***Original Points Count***	32768	***Points Count***	32768	***Sweep Width (Hz)***	4139.07
Temperature (grad C)	0.000								




22 Dec 2010
Acquisition Time (sec) 2.7329
Comment Alok/10997
Date 01/05/2010 23:30:30
Frequency (MHz) 50.32
Nucleus 13C
Original Points Count 32768
Points Count 32768
Sweep Width (Hz) 11990.41
Temperature (grad C) 0.000
CO2Et
HO
NHBoc
OBn
(CDCl3, 25 °C)
13
127.46
128.62
127.41
114.71
77.74
77.11
76.47
70.01
61.67
28.24
14.12
171.02
158.59
136.94
132.37
73.73
80.09
59.66

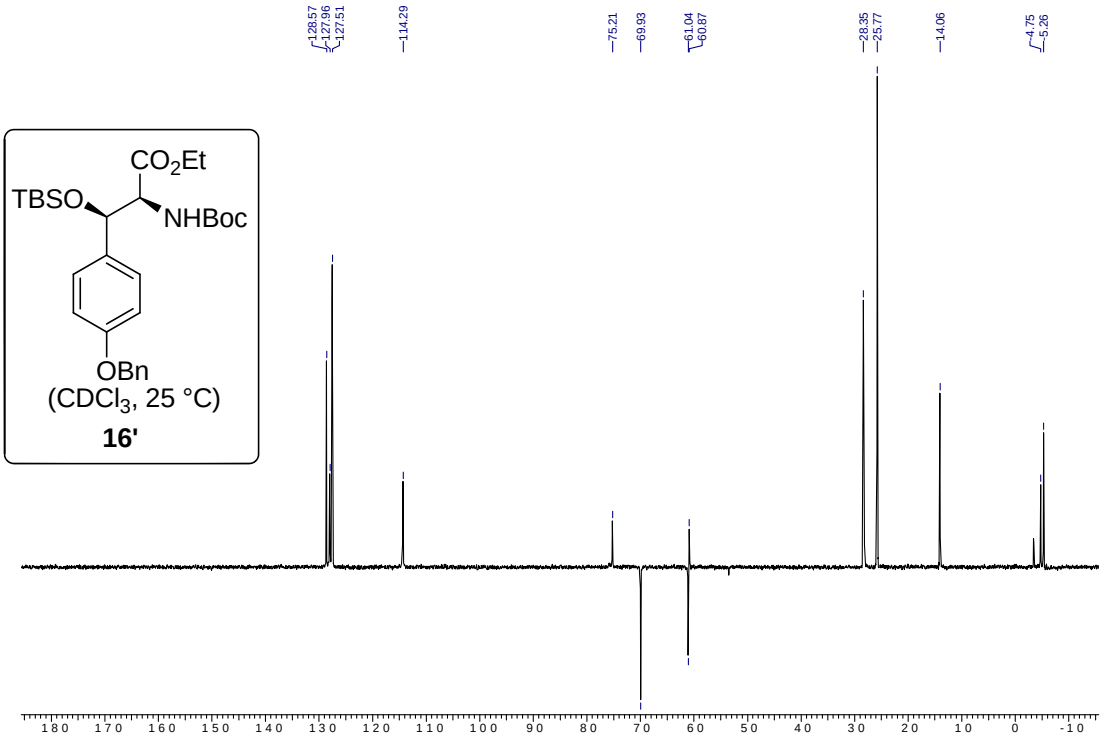

22 Dec 2010
Acquisition Time (sec) 2.7329
Comment Alok/10997
Date 01/05/2010 23:11:08
Frequency (MHz) 50.32
Nucleus 13C
Original Points Count 32768
Points Count 32768
Sweep Width (Hz) 11990.41
Temperature (grad C) 0.000
CO2Et
HO
NHBoc
OBn
(CDCl3, 25 °C)
13
127.47
128.63
114.70
28.24
14.13
73.72
70.01
61.68


22 Dec 2010
Acquisition Time (sec) 7.9167
Comment Alok/10997
Date 01/07/2010 15:37:50
Frequency (MHz) 200.13
Nucleus 1H
Original Points Count 32768
Points Count 32768
Sweep Width (Hz) 4139.07
Temperature (grad C) 0.000
7.44
7.42
7.40
7.37
7.36
7.29
7.25
6.96
6.91
5.24
5.05
4.41
4.35
4.21
1.35
1.31
1.27
1.18
0.89
0.00
0.15
CO2Et
TBSO
NHBoc
OBn
(CDCl3, 25 °C)
16'
7.02
2.00
3.60
3.01
12.05
8.95
3.11


22 Dec 2010
Acquisition Time (sec) 2.7329
Comment Alok Ranjan
Date 18/04/2010 05:15:18
Frequency (MHz) 50.32
Nucleus 13C
Original Points Count 32768
Points Count 32768
Sweep Width (Hz) 11990.41
Temperature (grad C) 0.000
169.97
158.34
154.88
137.05
132.97
128.57
127.50
114.30
79.61
75.21
69.94
61.04
28.35
25.77
18.15
14.06
4.75
5.26
CO2Et
TBSO
NHBoc
OBn
(CDCl3, 25 °C)
16'

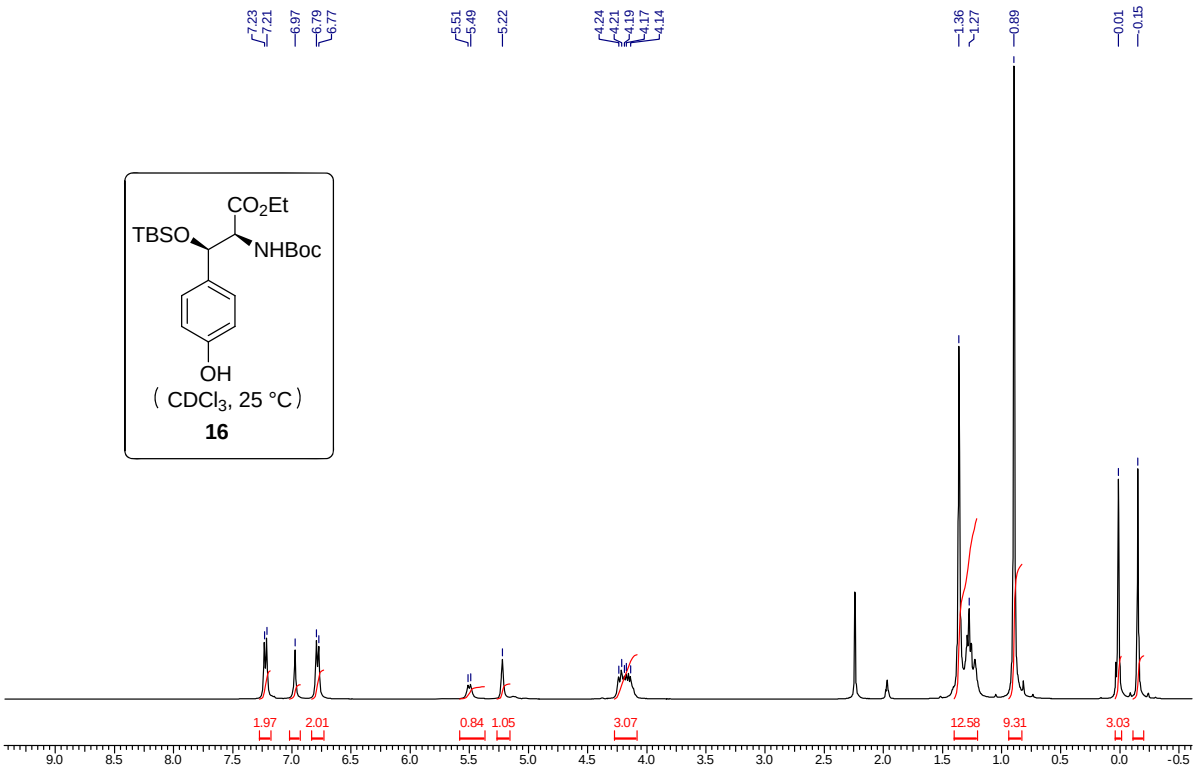
22 Dec 2010

Acquisition Time (sec)	2.7329	*Comment*	Alok Ranjan	*Date*	18/04/2010 04:55:30		
Frequency (MHz)	50.32	*Nucleus*	13C	*Original Points Count*	32768	*Points Count*	32768	*Sweep Width (Hz)*	11990.41
Temperature (grad C)	0.000						

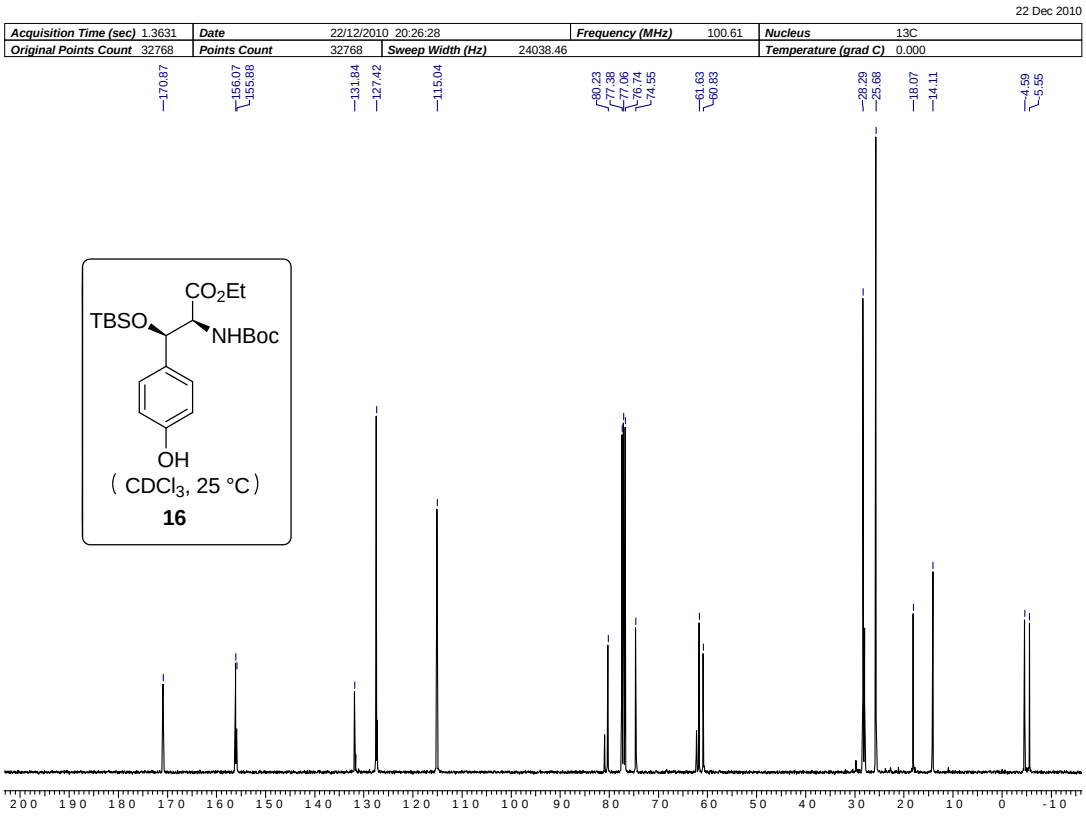


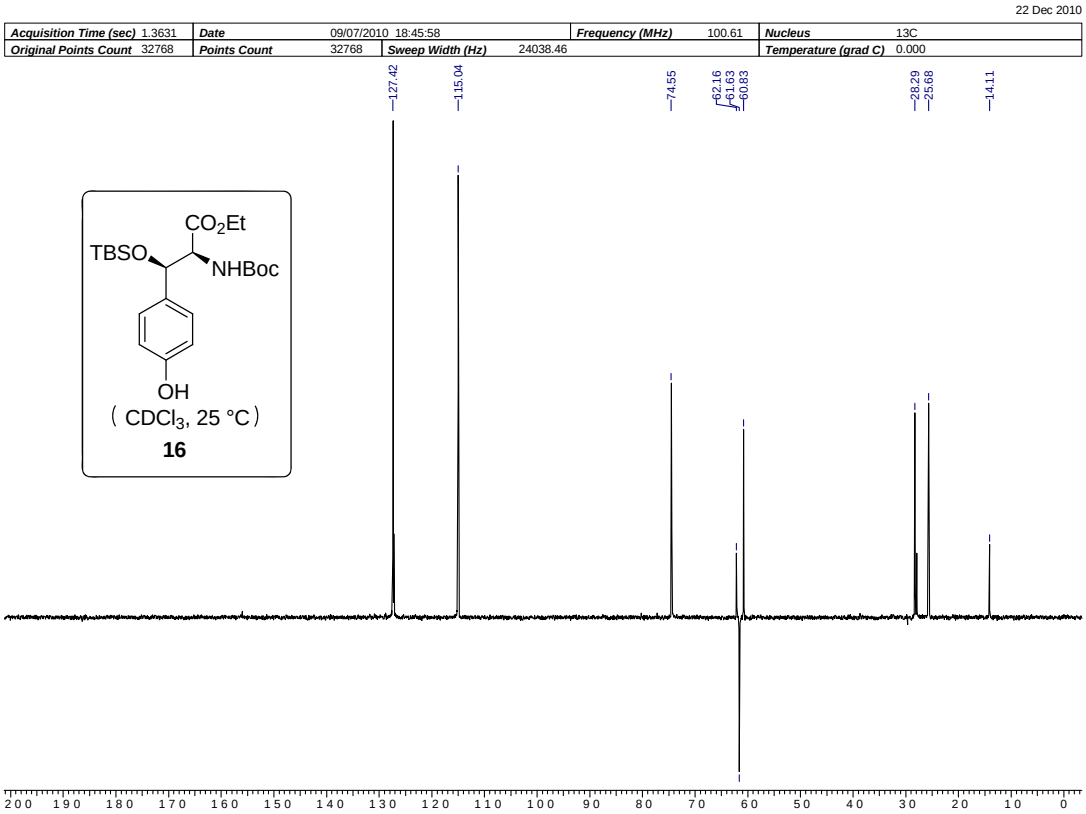
28 May 2011
Alok/10997 (303K)

Acquisition Time (sec)	3.9846	*Comment*	Alok/10997 (303K)	*Date*	16/01/2011 16:21:56		
Frequency (MHz)	400.13	*Nucleus*	1H	*Original Points Count*	32768	*Points Count*	32768	*Sweep Width (Hz)*	8223.68
Temperature (grad C)	0.000						



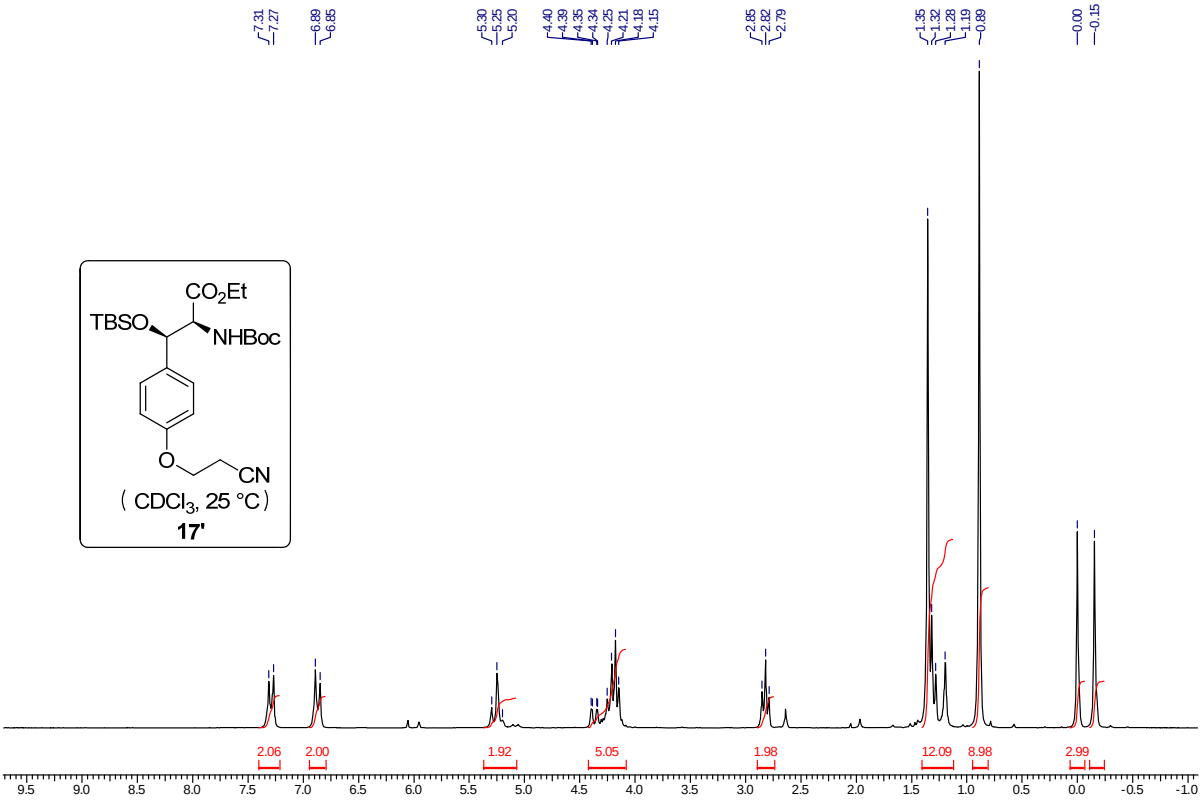
Z:\AV400\JAN_11~1\SUN4AV~1\2\pdata\1\1r


22 Dec 2010
Acquisition Time (sec) 1.3631
Date 22/12/2010 20:26:28
Frequency (MHz) 100.61
Nucleus 13C
Original Points Count 32768
Points Count 32768
Sweep Width (Hz) 24038.46
Temperature (grad C) 0.000
170.87
156.07
155.88
131.84
127.42
115.04
80.23
77.38
77.06
76.74
74.55
61.63
60.83
28.29
25.68
18.07
14.11
4.59
-5.55
CO2Et
TBSO
NHBoc
OH
(CDCl3, 25 °C)
16


22 Dec 2010
Acquisition Time (sec) 1.3631
Date 09/07/2010 18:45:58
Frequency (MHz) 100.61
Nucleus 13C
Original Points Count 32768
Points Count 32768
Sweep Width (Hz) 24038.46
Temperature (grad C) 0.000
127.42
115.04
74.55
62.16
61.63
60.83
28.29
25.68
14.11
CO2Et
TBSO
NHBoc
OH
(CDCl3, 25 °C)
16

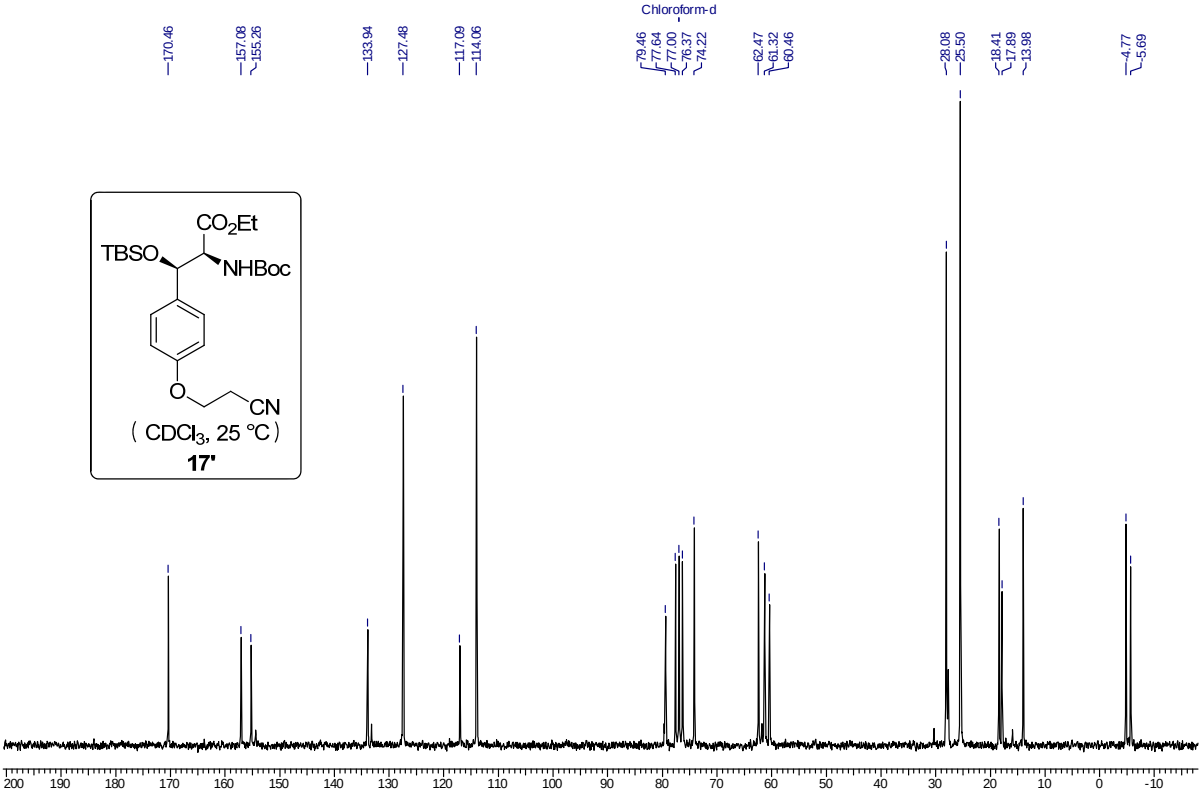
2 May 2011
Alok/10997

Acquisition Time (sec)	7.9167	*Comment*	Alok/10997		*Date*	28/04/2011 10:47:56	
Frequency (MHz)	200.13	*Nucleus*	1H	*Original Points Count* 32768	*Points Count*	32768	*Sweep Width (Hz)* 4139.07
Temperature (grad C)	0.000						



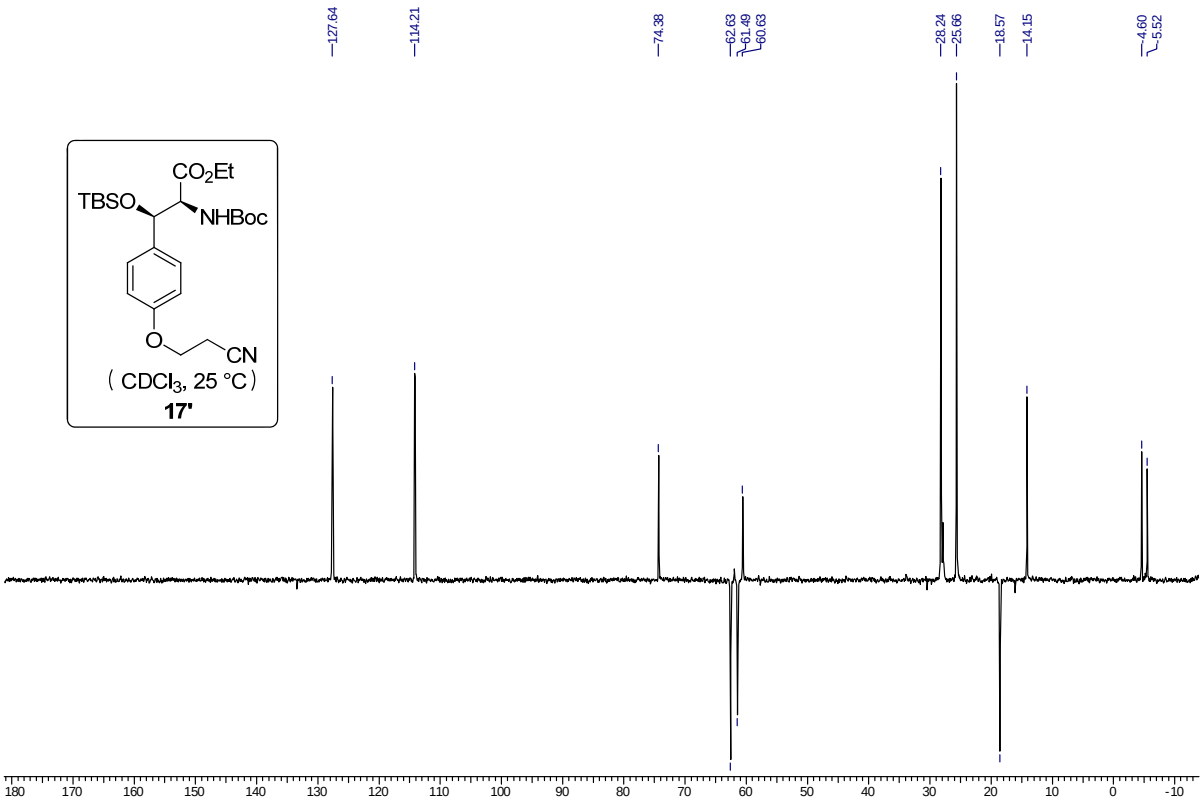
9 May 2011
Alok/10997

Acquisition Time (sec)	2.7329	*Comment*	Alok/10997		*Date*	07/05/2011 03:00:28	
Frequency (MHz)	50.32	*Nucleus*	13C	*Original Points Count* 32768	*Points Count*	32768	*Sweep Width (Hz)* 11990.41
Temperature (grad C)	0.000						



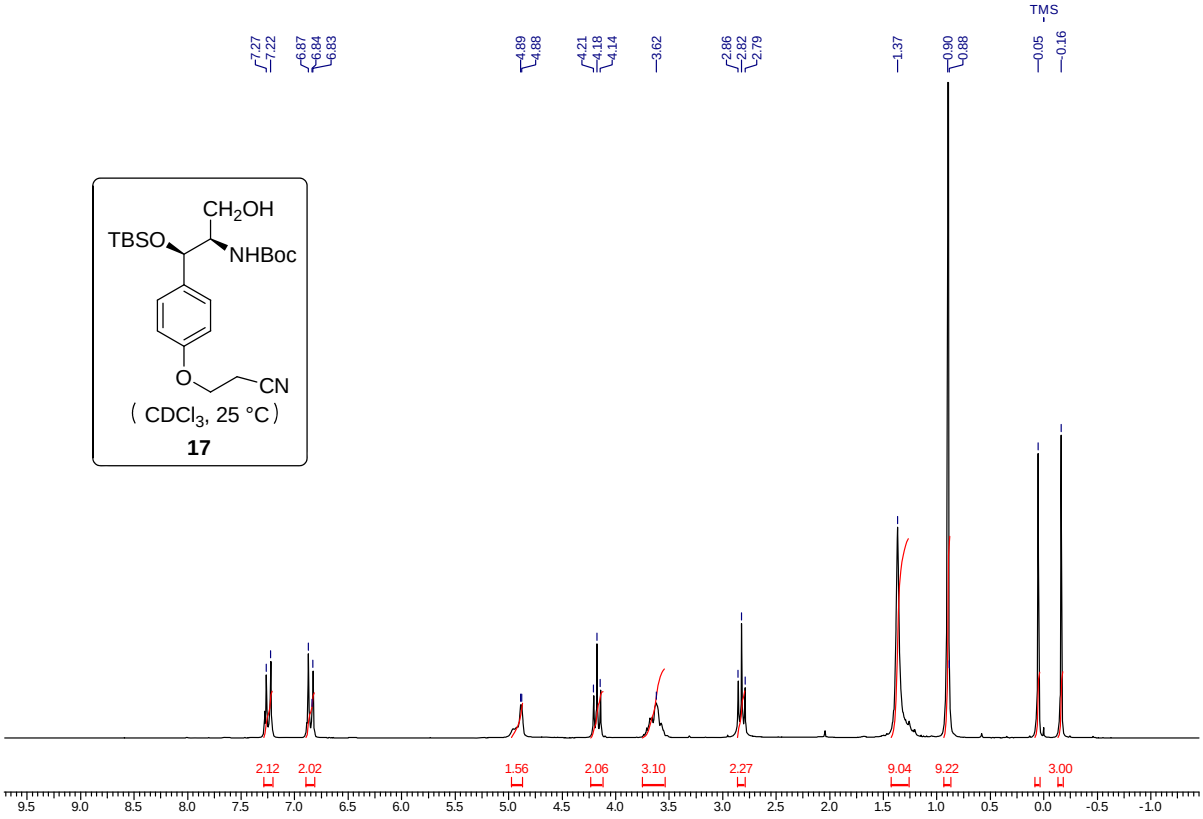
9 May 2011
Alok/10997

Acquisition Time (sec)	2.7329	***Comment***	Alok/10997		***Date***	07/05/2011 02:21:42	
Frequency (MHz)	50.32	***Nucleus***	13C	***Original Points Count*** 32768	***Points Count***	32768	***Sweep Width (Hz)*** 11990.41
Temperature (grad C)	0.000						



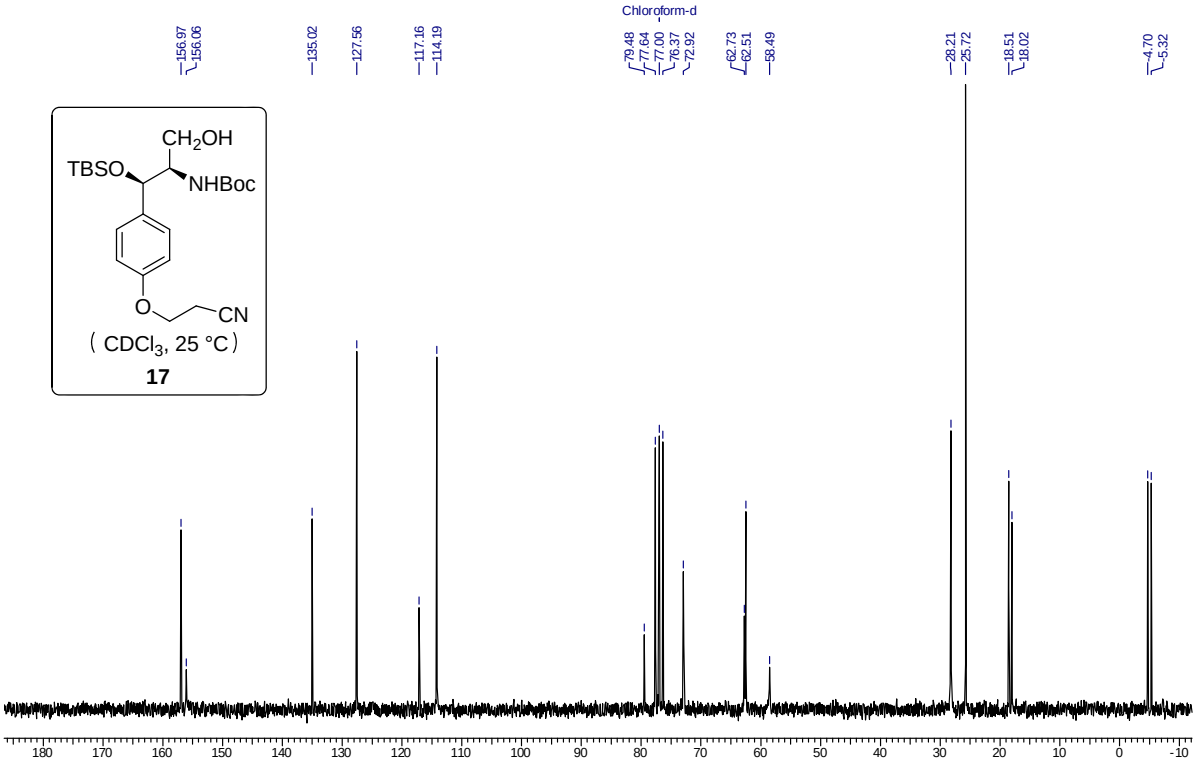
20 Jan 2011

Acquisition Time (sec)	7.9167	***Comment***	Alok/10997		***Date***	28/04/2010 15:37:50	
Frequency (MHz)	200.13	***Nucleus***	1H	***Original Points Count*** 32768	***Points Count***	32768	***Sweep Width (Hz)*** 4139.07
Temperature (grad C)	0.000						



30 May 2011
Alok/10997

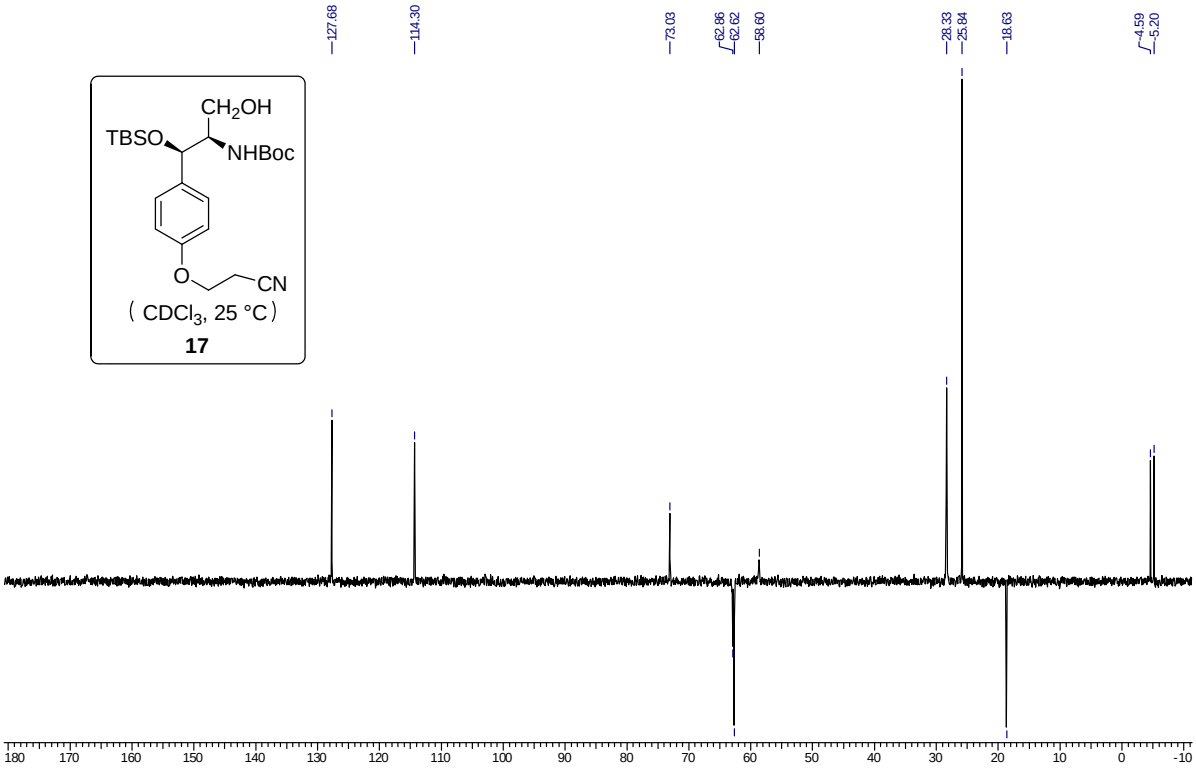
Acquisition Time (sec)	2.7329	***Comment***	Alok/10997		***Date***	02/05/2010 13:24:16	
Frequency (MHz)	50.32	***Nucleus***	13C	***Original Points Count*** 32768	***Points Count***	32768	***Sweep Width (Hz)*** 11990.41
Temperature (grad C)	0.000						



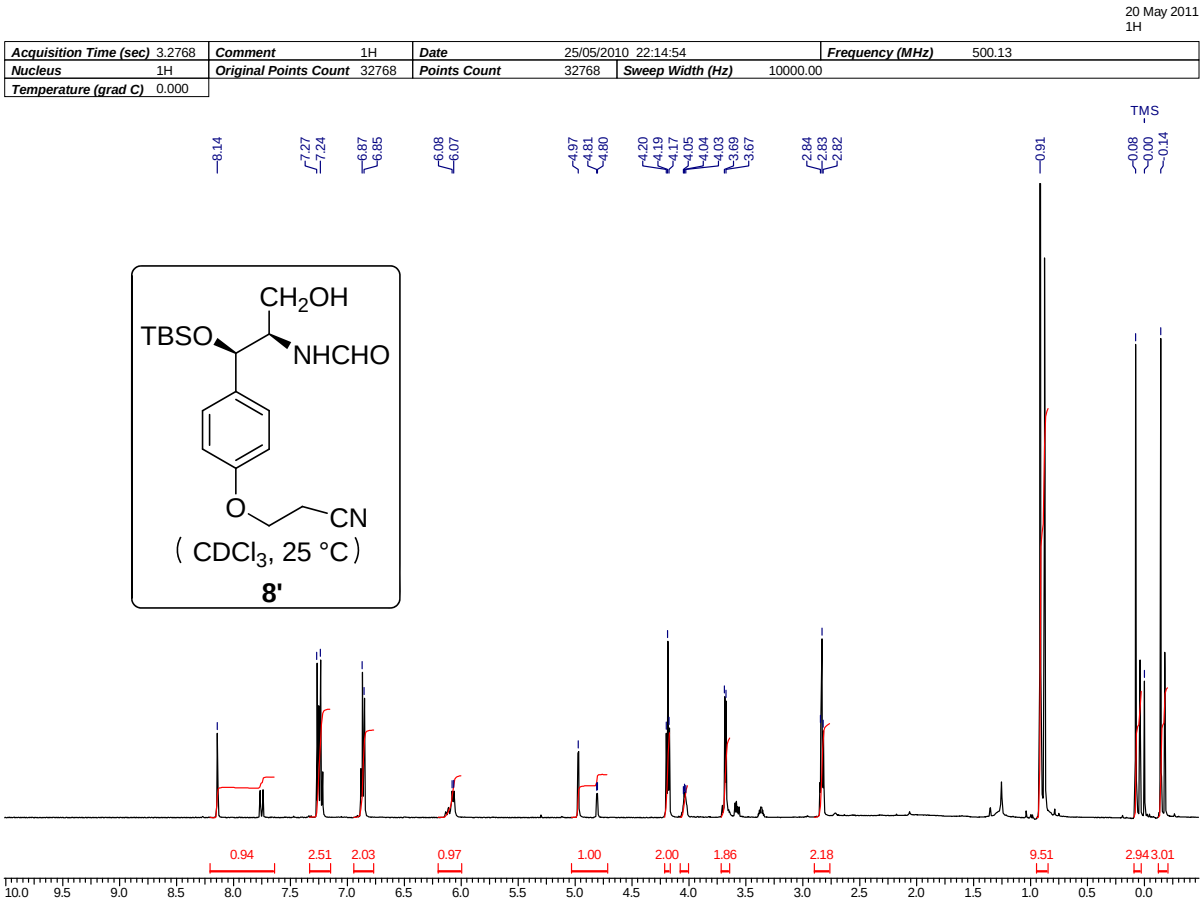
Z:\AV200\MAY_10~1\data\ADMINI~1\nmr\SA0B7F~1\2\pdata\1\1r

30 May 2011
Alok/10997

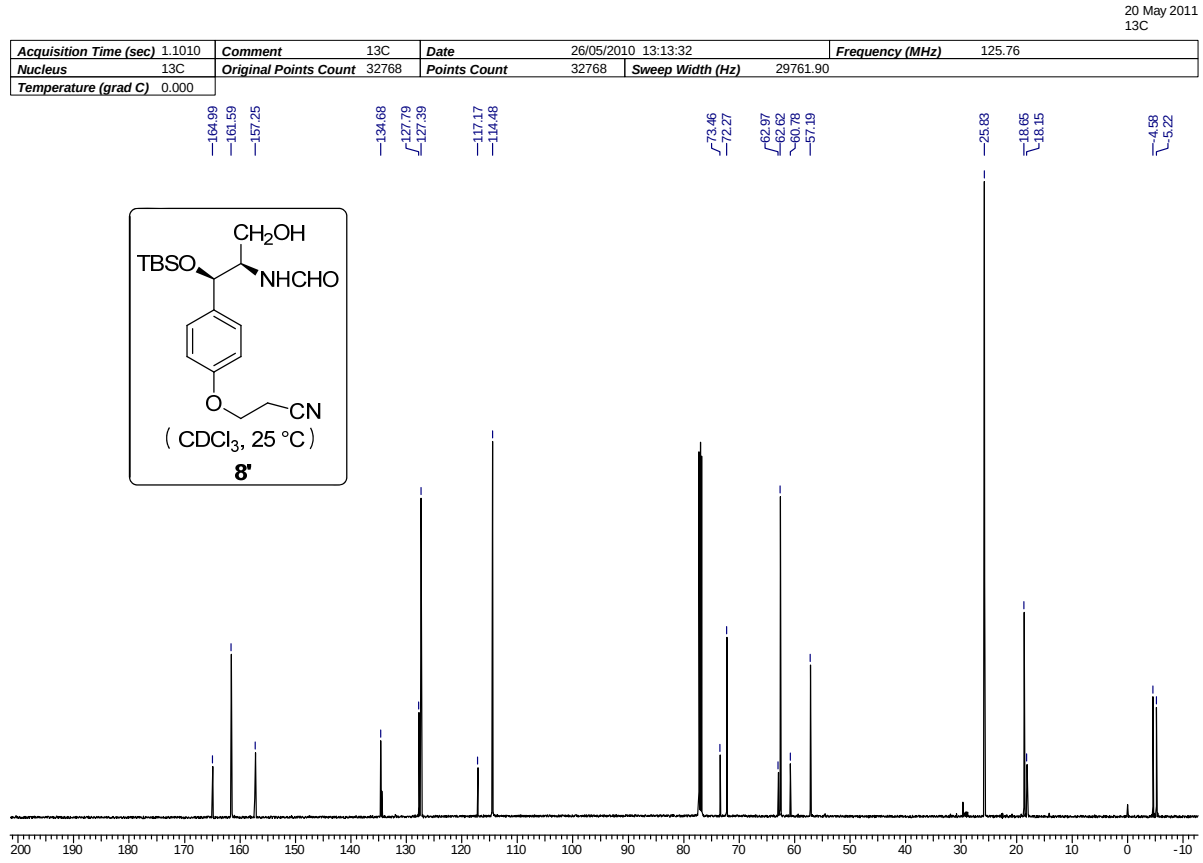
Acquisition Time (sec)	2.7329	***Comment***	Alok/10997		***Date***	02/05/2010 13:04:54	
Frequency (MHz)	50.32	***Nucleus***	13C	***Original Points Count*** 32768	***Points Count***	32768	***Sweep Width (Hz)*** 11990.41
Temperature (grad C)	0.000						



Z:\AV200\MAY_10~1\data\ADMINI~1\nmr\SA0B7F~1\1\pdata\1\1r



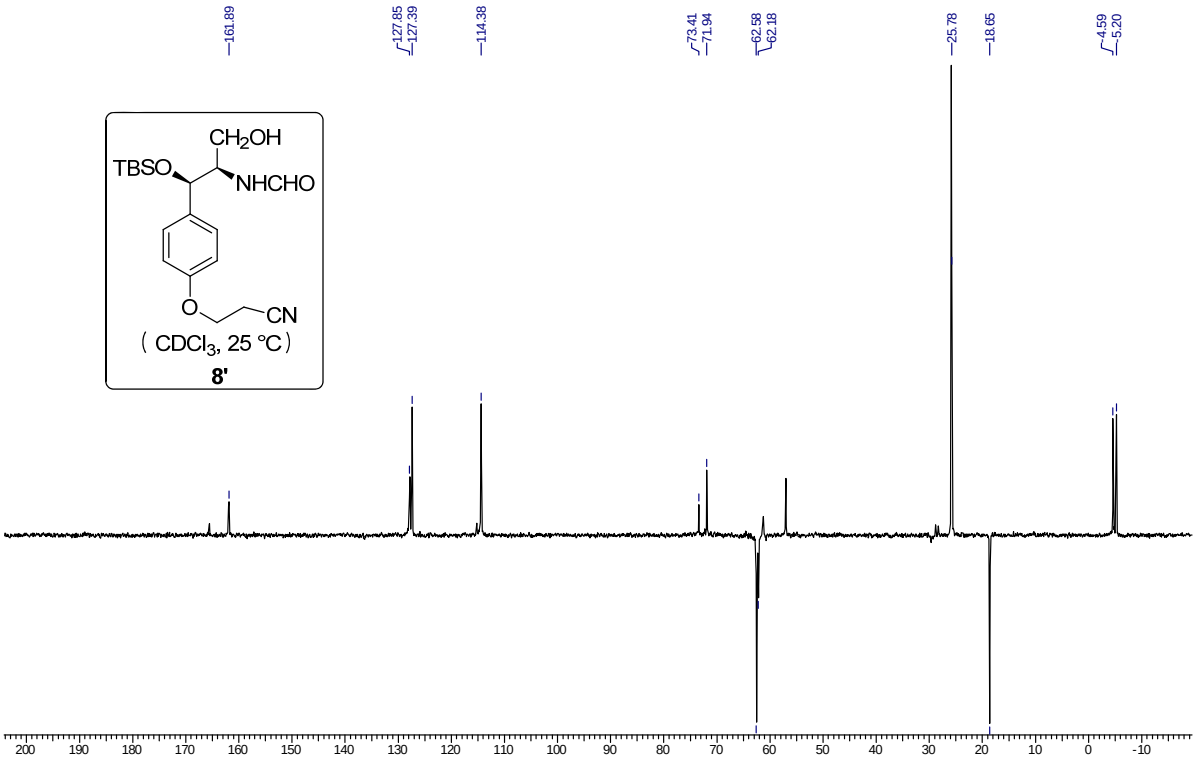
TBS-Protected Bursatellin



TBS-Protected Bursatellin

20 May 2011
Alok/10997

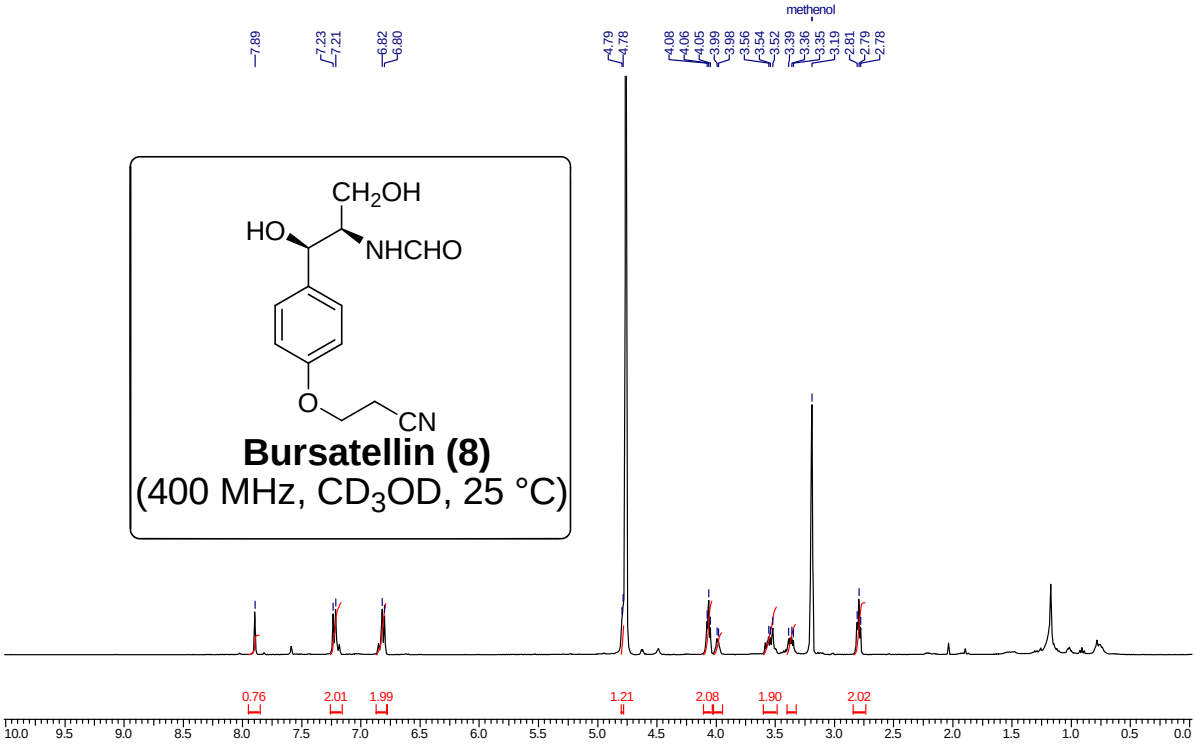
Acquisition Time (sec)	2.7329	*Comment*	Alok/10997		*Date*	06/11/2010 16:10:58	
Frequency (MHz)	50.32	*Nucleus*	13C	*Original Points Count* 32768	*Points Count*	32768	*Sweep Width (Hz)* 11990.41
Temperature (grad C)	0.000						



(-)-Bursatellin

19 May 2011
Thu2av400#009
Alok

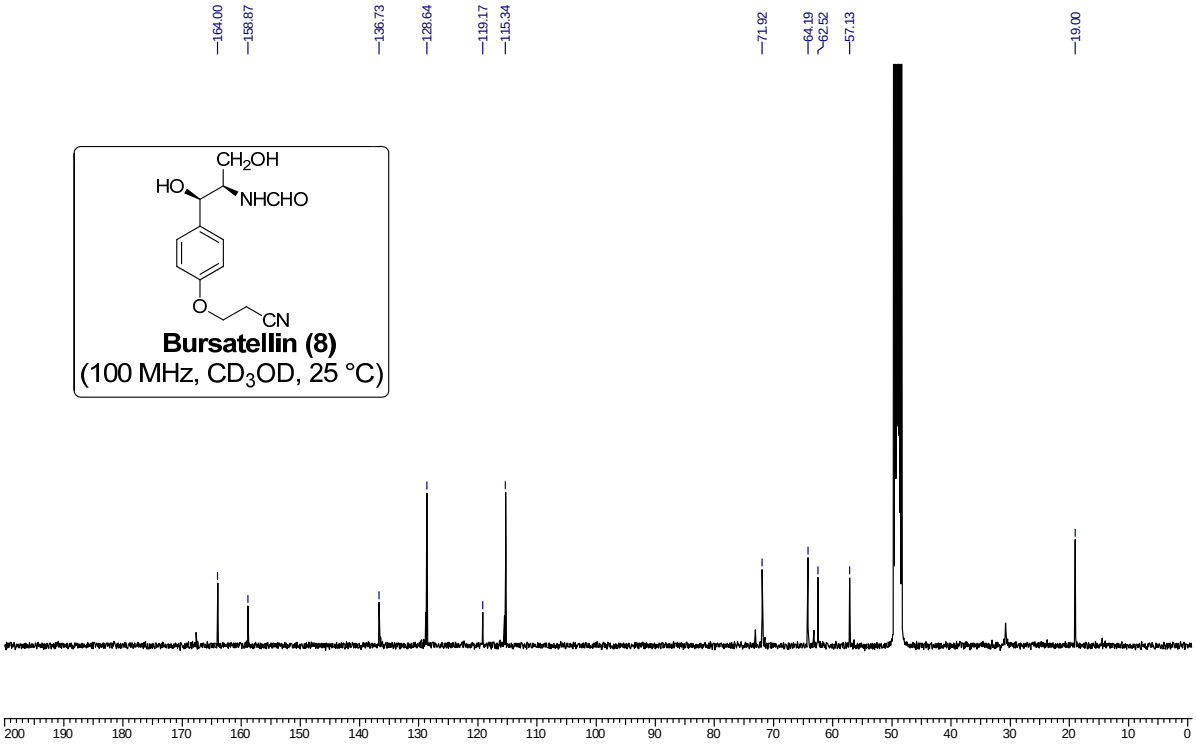
Acquisition Time (sec)	3.9846	*Comment*	Alok	*Date*	07/02/2011 09:30:44	*Frequency (MHz)*	400.13
Nucleus	1H	*Original Points Count*	32768	*Points Count*	32768	*Sweep Width (Hz)*	8223.68
Temperature (grad C)	0.000						



(-)-Bursatellin

19 May 2011
Thu2av400#009
Alok

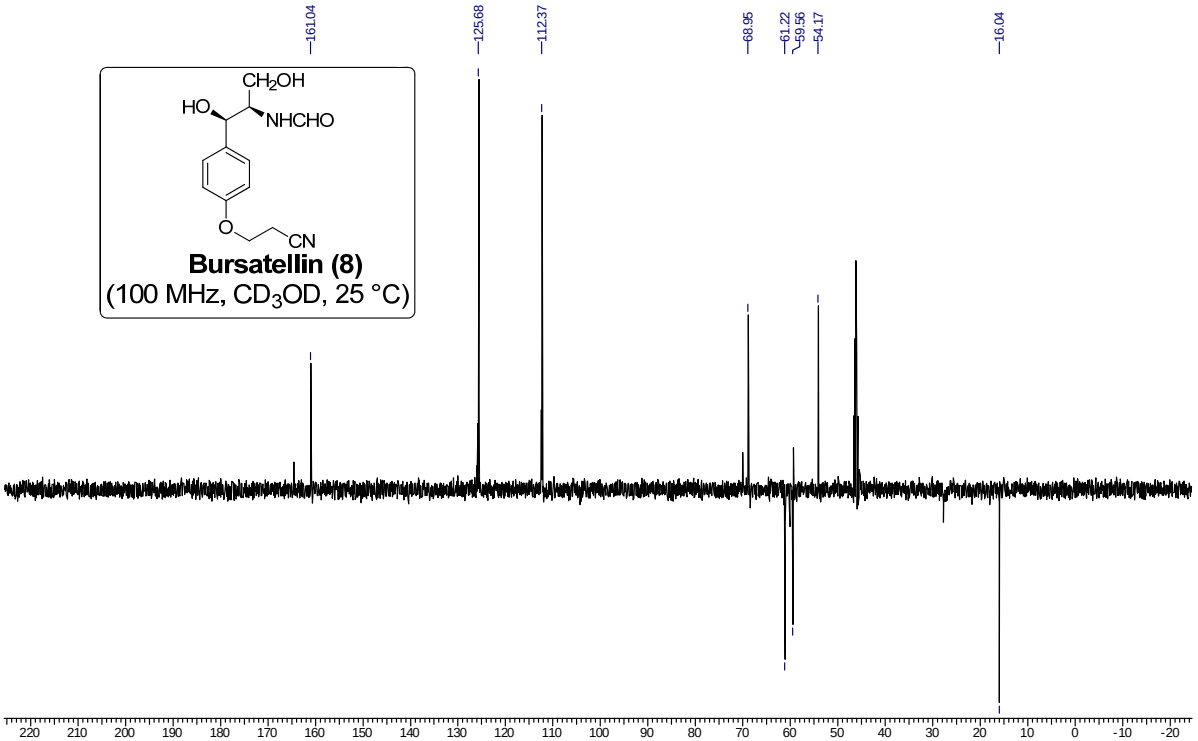
Acquisition Time (sec)	1.2976	*Comment*	Alok	*Date*	07/02/2011 09:31:46	*Frequency (MHz)*	100.61
Nucleus	13C	*Original Points Count*	32768	*Points Count*	32768	*Sweep Width (Hz)*	25252.53
Temperature (grad C)	0.000						



(-)-Bursatellin

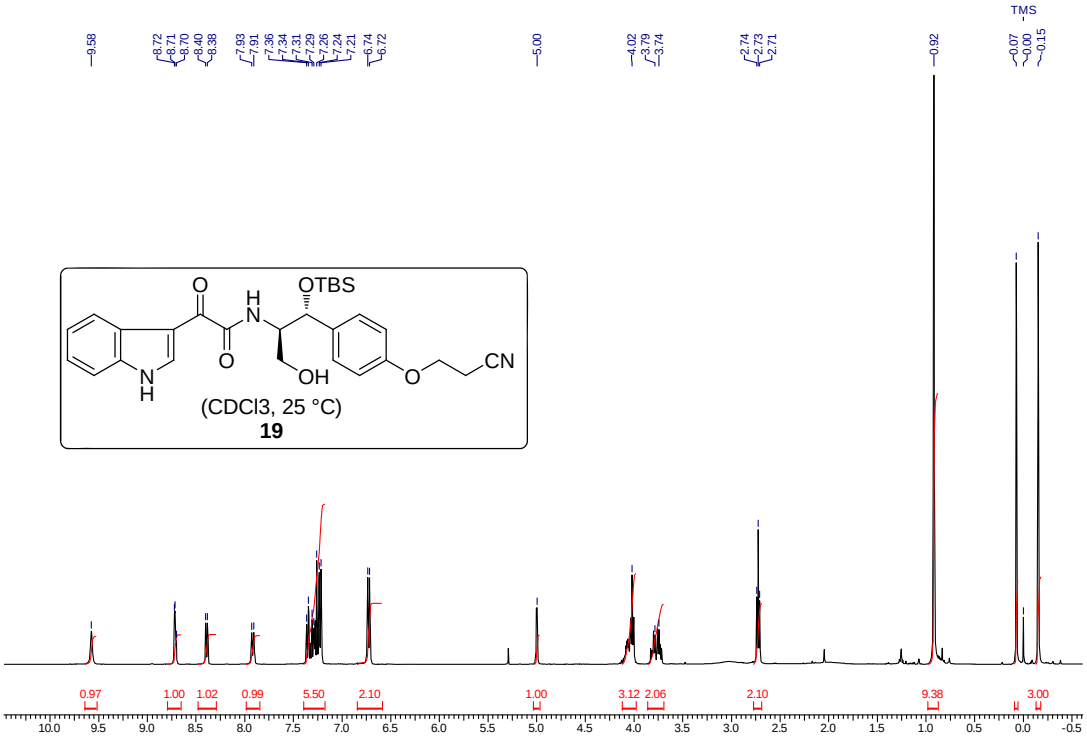
19 May 2011
Thu2av400#009
Alok

Acquisition Time (sec)	1.2976	*Comment*	Alok	*Date*	07/02/2011 09:30:54	*Frequency (MHz)*	100.61
Nucleus	13C	*Original Points Count*	32768	*Points Count*	32768	*Sweep Width (Hz)*	25252.53
Temperature (grad C)	0.000						



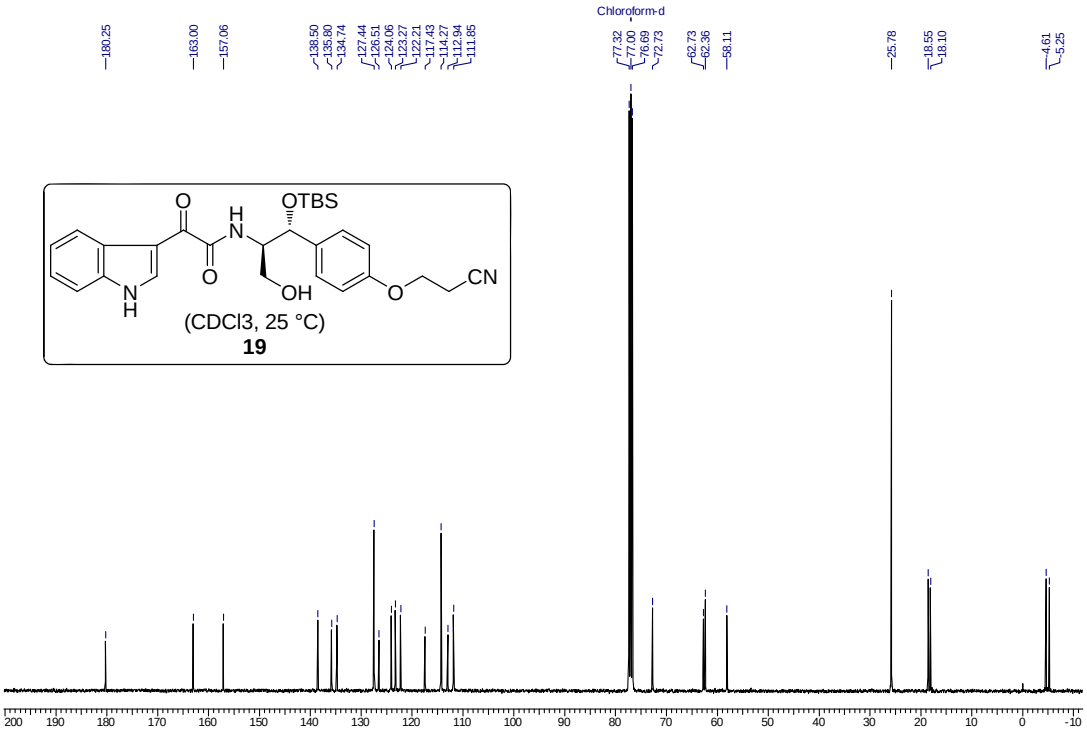
3 Jan 2011

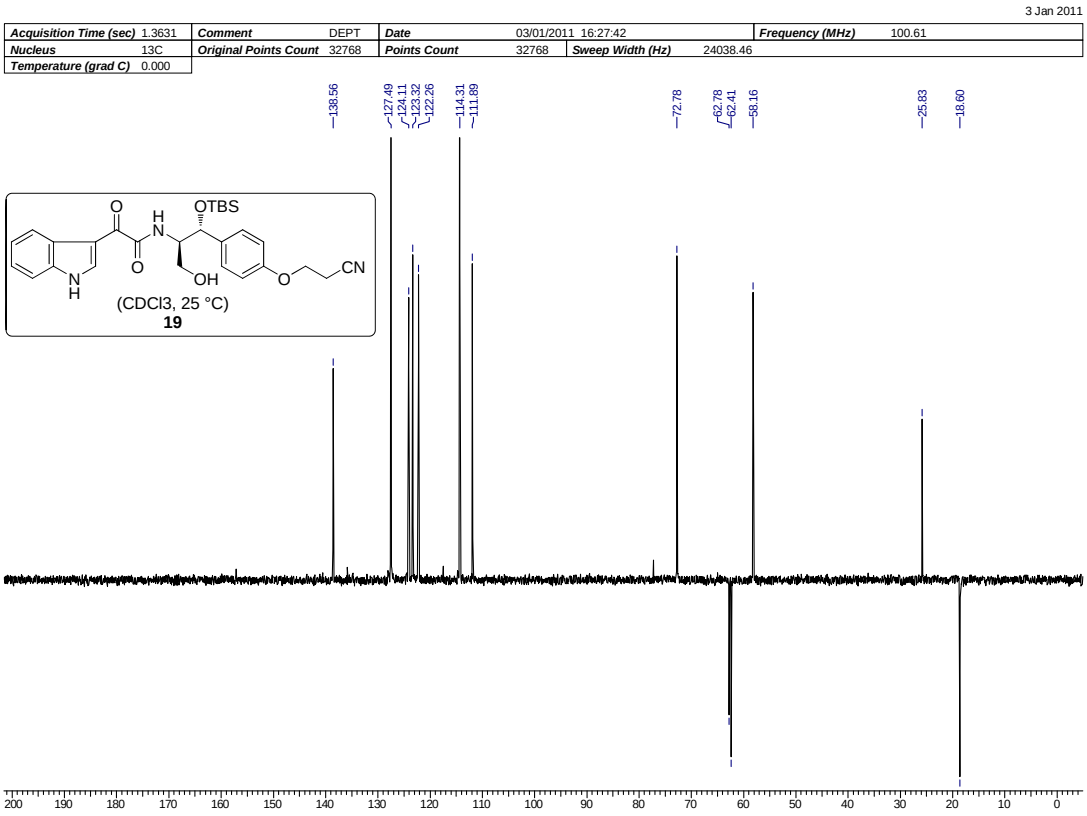
Acquisition Time (sec)	3.9846	*Comment*	Alok/10997		*Date*	03/01/2011 16:27:34	
Frequency (MHz)	400.13	*Nucleus*	1H	*Original Points Count* 32768	*Points Count*	32768	*Sweep Width (Hz)* 8223.68
Temperature (grad C)	0.000						

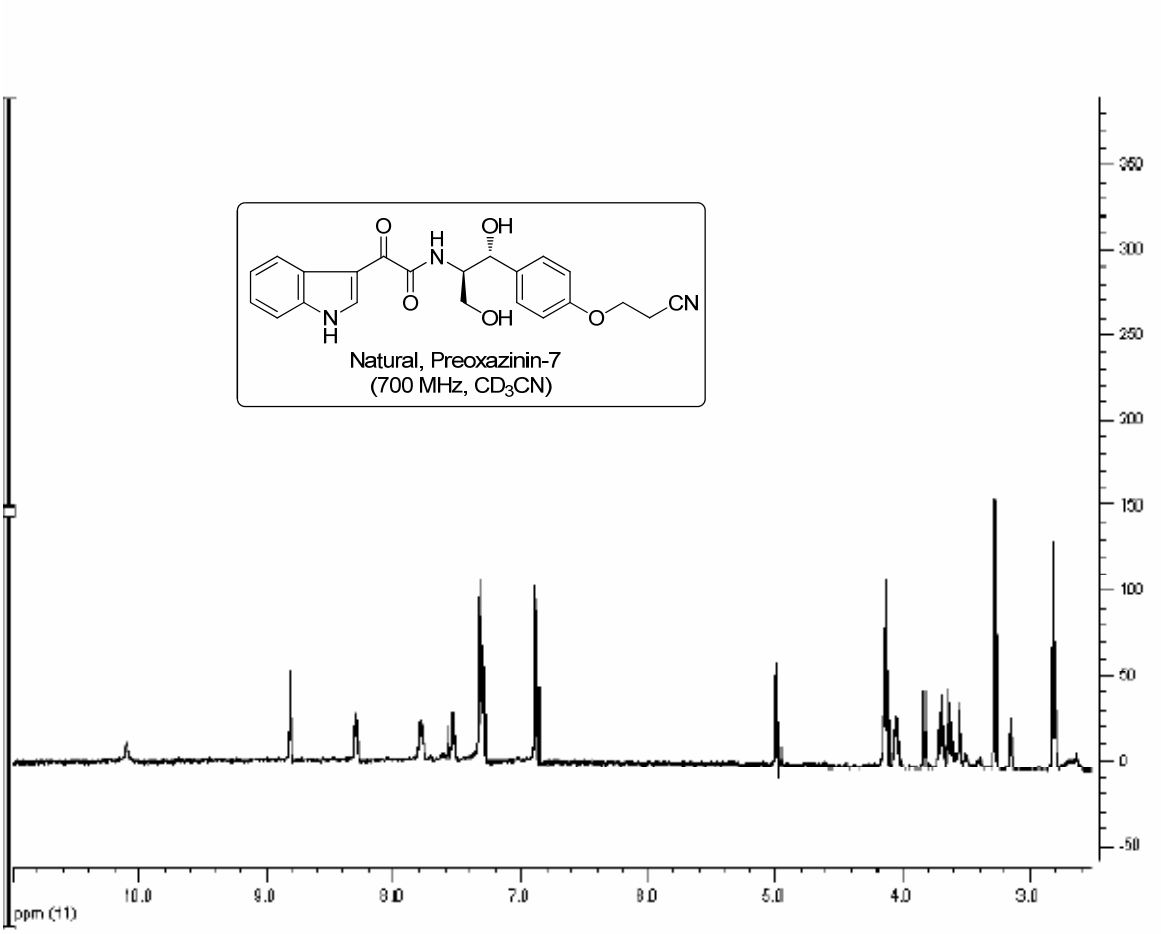


3 Jan 2011

Acquisition Time (sec)	1.3631	*Comment*	13C	*Date*	03/01/2011 16:27:50	*Frequency (MHz)*	100.61
Nucleus	13C	*Original Points Count*	32768	*Points Count*	32768	*Sweep Width (Hz)*	24038.46
Temperature (grad C)	0.000						



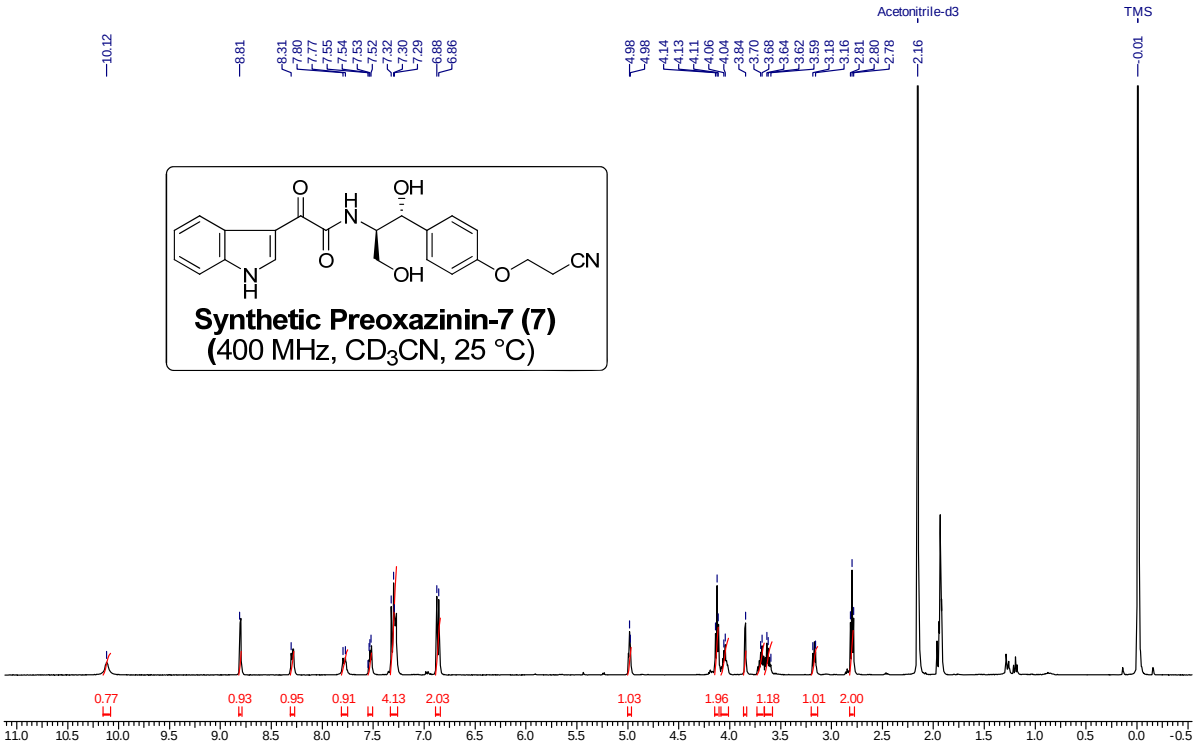


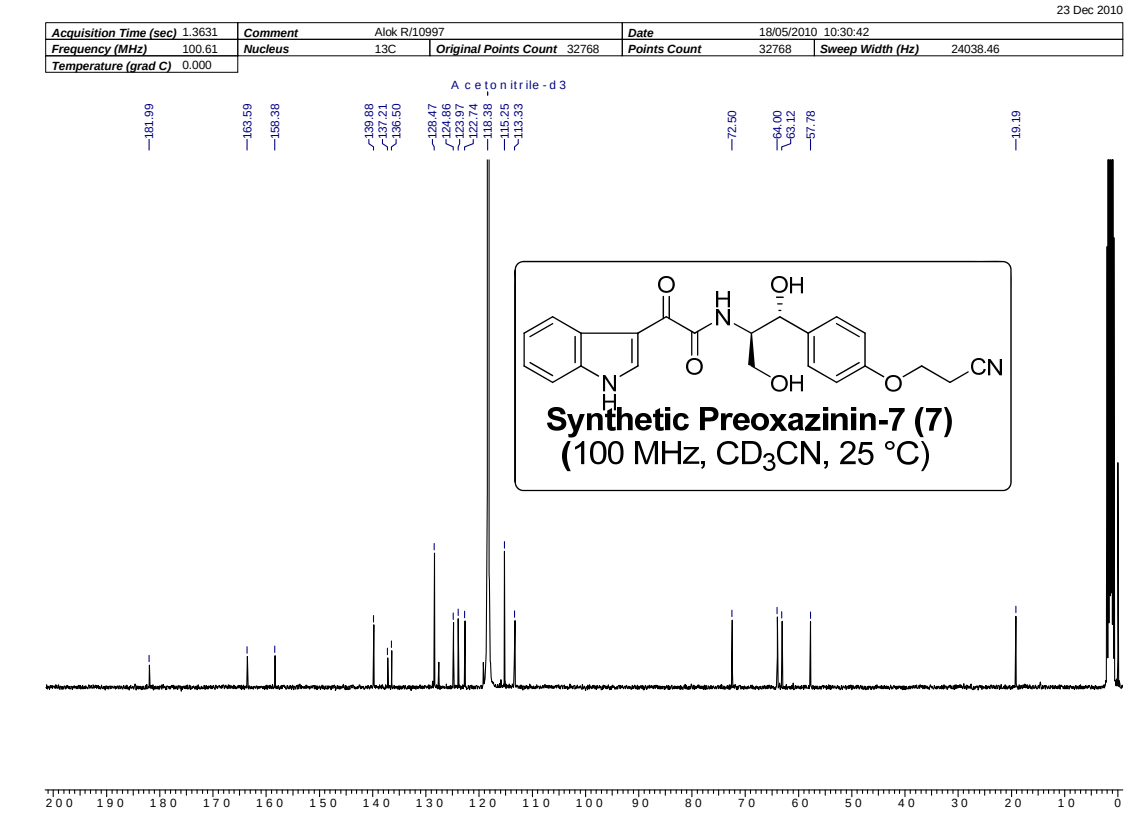


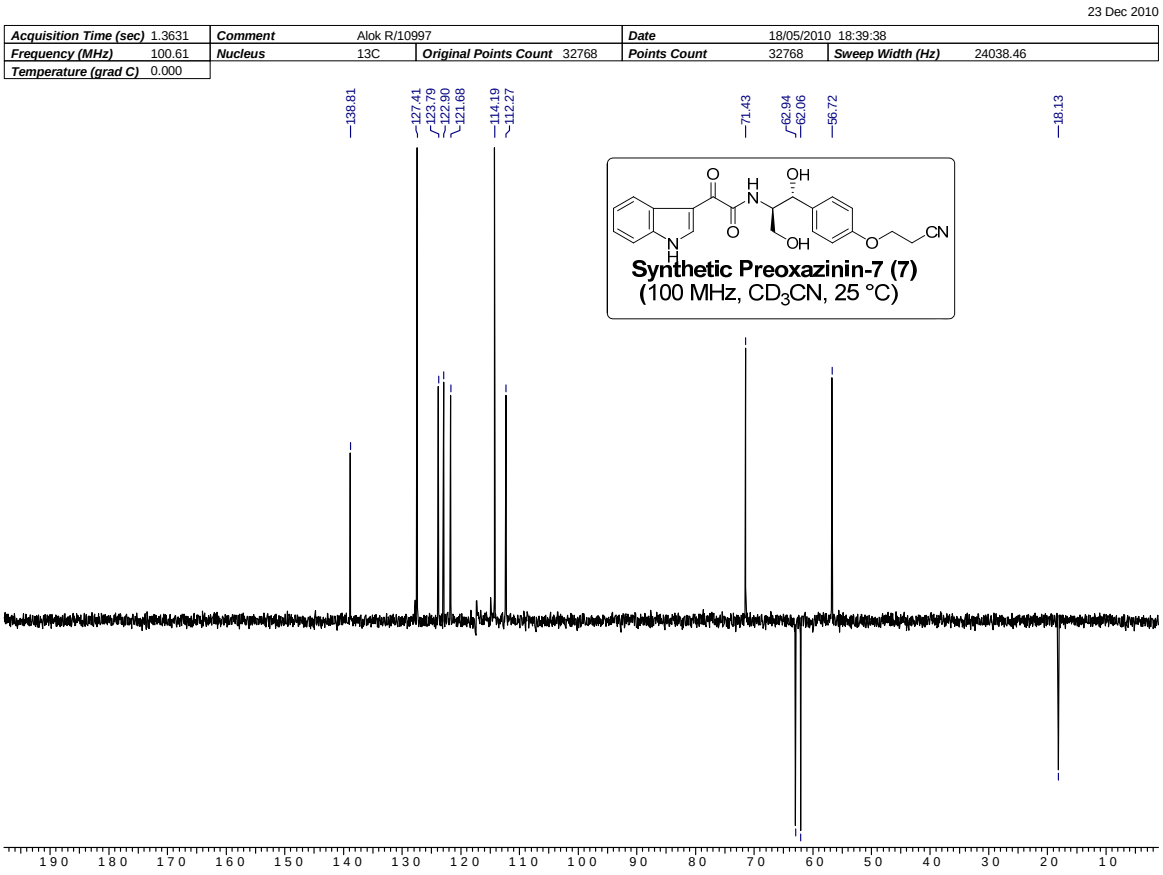
Preoxazinin

18 May 2011
Thu2av400#009
Alok R/10997

Acquisition Time (sec) 3.9846	***Comment***	Alok R/10997		***Date***	17/05/2010 21:04:00		
Frequency (MHz) 400.13	***Nucleus***	1H	***Original Points Count*** 32768	***Points Count***	32768	***Sweep Width (Hz)***	8223.68
Temperature (grad C) 0.000							



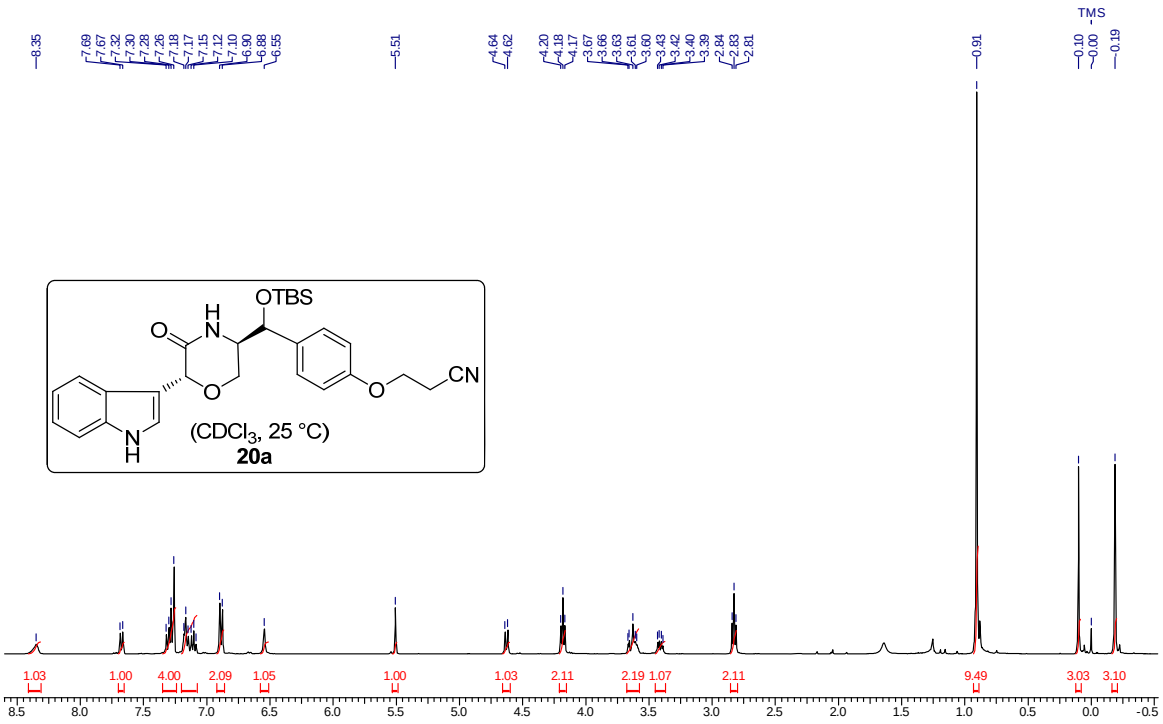

23 Dec 2010
Acquisition Time (sec) 1.3631
Comment Alok R/10997
Date 18/05/2010 10:30:42
Frequency (MHz) 100.61
Nucleus 13C
Original Points Count 32768
Points Count 32768
Sweep Width (Hz) 24038.46
Temperature (grad C) 0.000
Acetonitrile-d3
181.99
163.59
158.38
139.88
137.21
136.50
128.47
124.86
123.97
122.74
118.38
115.25
113.33
72.50
64.00
63.12
57.78
19.19
Synthetic Preoxazinin-7 (7)
(100 MHz, CD3CN, 25 °C)
200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0


23 Dec 2010
Acquisition Time (sec) 1.3631
Comment Alok R/10997
Date 18/05/2010 18:39:38
Frequency (MHz) 100.61
Nucleus 13C
Original Points Count 32768
Points Count 32768
Sweep Width (Hz) 24038.46
Temperature (grad C) 0.000
138.81
127.41
123.79
122.90
121.68
114.19
112.27
71.43
62.94
62.06
56.72
18.13
Synthetic Preoxazinin-7 (7)
(100 MHz, CD3CN, 25 °C)
190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10

TBS-protected oxazinin-5

28 Apr 2011
mon5av400#002
VHP

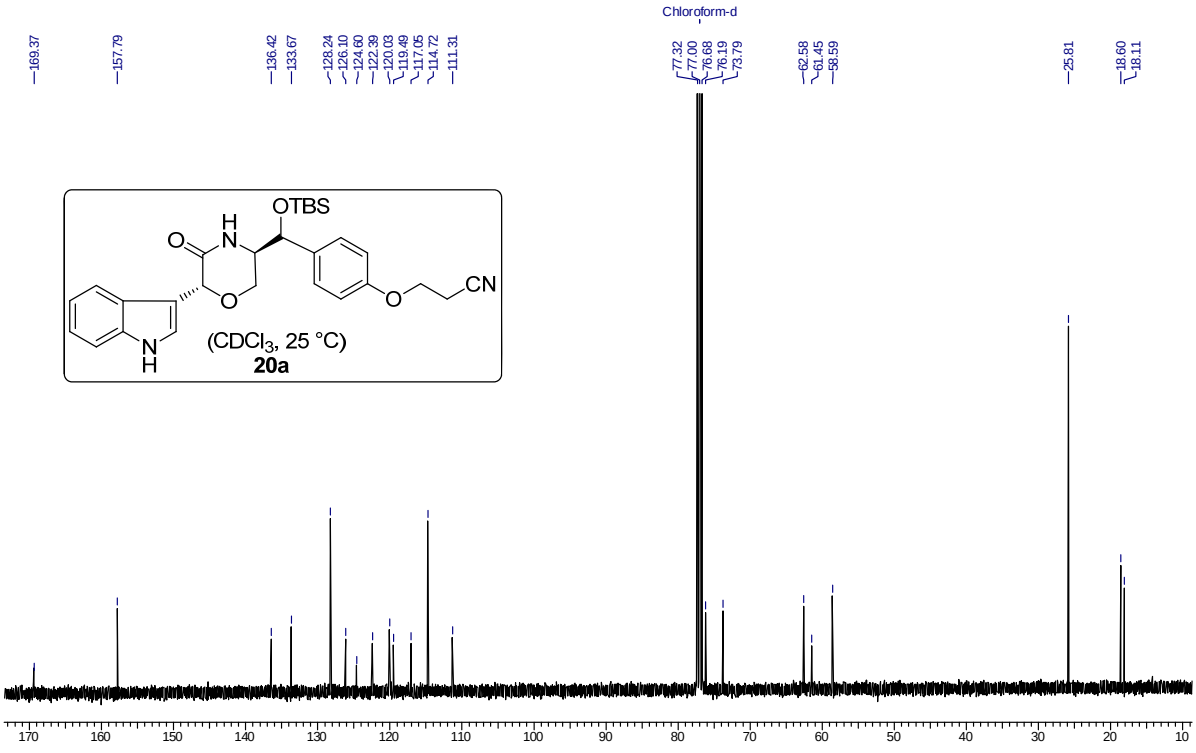
Acquisition Time (sec)	3.9846	***Comment***	Alok	***Date***	28/03/2011 15:45:38	***Frequency (MHz)***	400.13
Nucleus	1H	***Original Points Count***	32768	***Points Count***	32768	***Sweep Width (Hz)***	8223.68
Temperature (grad C)	0.000						



TBS-protected oxazinin-5

28 Apr 2011
mon5av400#002
13C

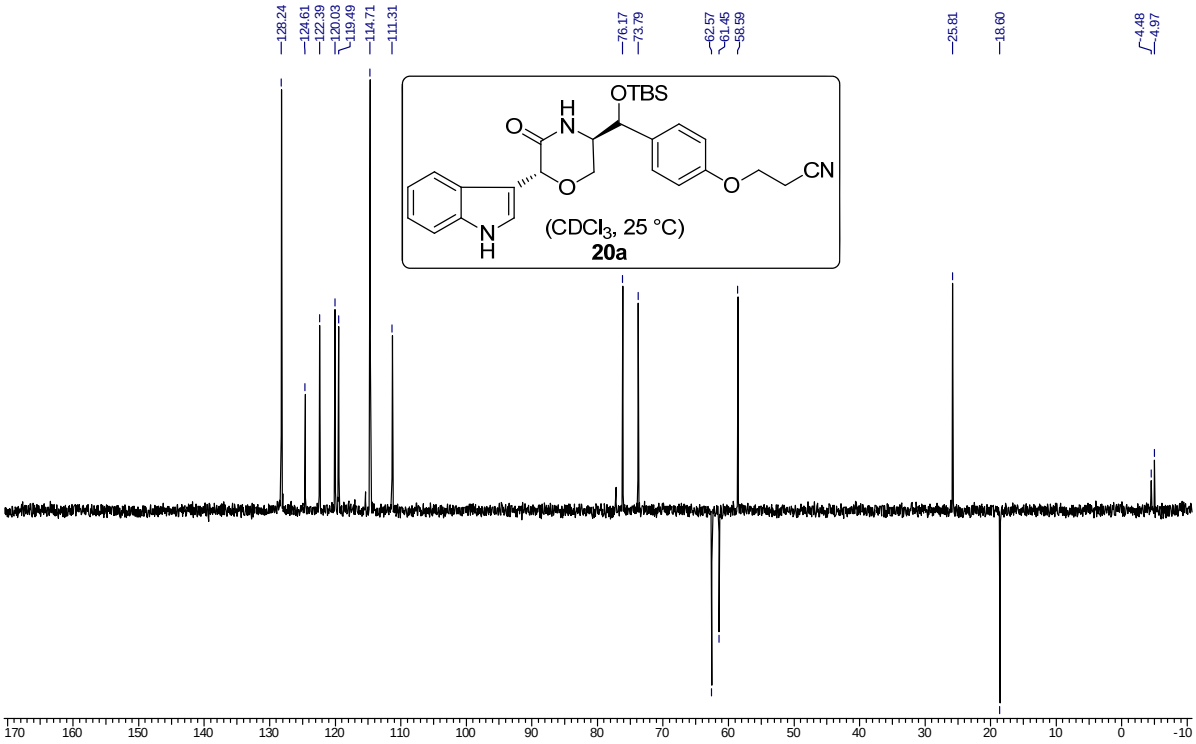
Acquisition Time (sec)	1.8350	***Comment***	13C	***Date***	28/03/2011 15:44:12	***Frequency (MHz)***	100.61
Nucleus	13C	***Original Points Count***	32768	***Points Count***	32768	***Sweep Width (Hz)***	17857.14
Temperature (grad C)	0.000						



TBS-protected oxazinin-5

28 Apr 2011
mon5av400#002
DEPT

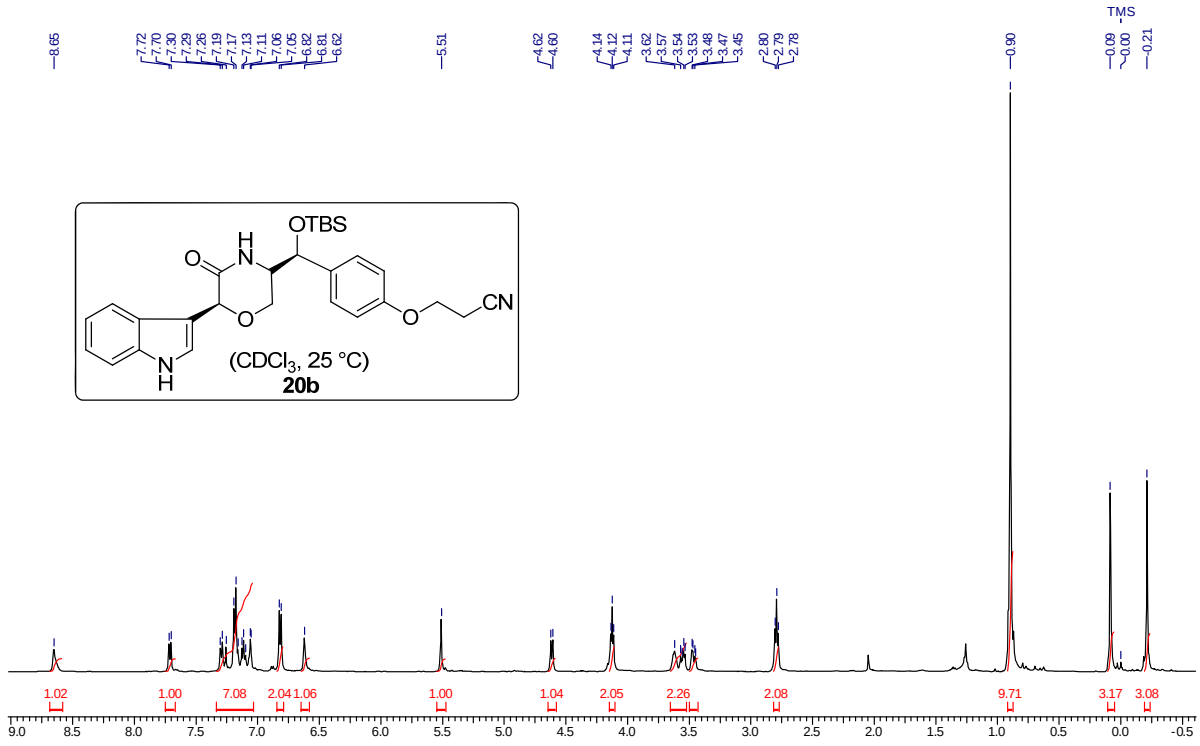
Acquisition Time (sec)	1.2976	*Comment*	DEPT	*Date*	28/03/2011 15:45:30	*Frequency (MHz)*	100.61
Nucleus	13C	*Original Points Count*	32768	*Points Count*	32768	*Sweep Width (Hz)*	25252.53
Temperature (grad C)	0.000						



TBS-protected oxazinin-6

28 Apr 2011
wed5av500#009
alok

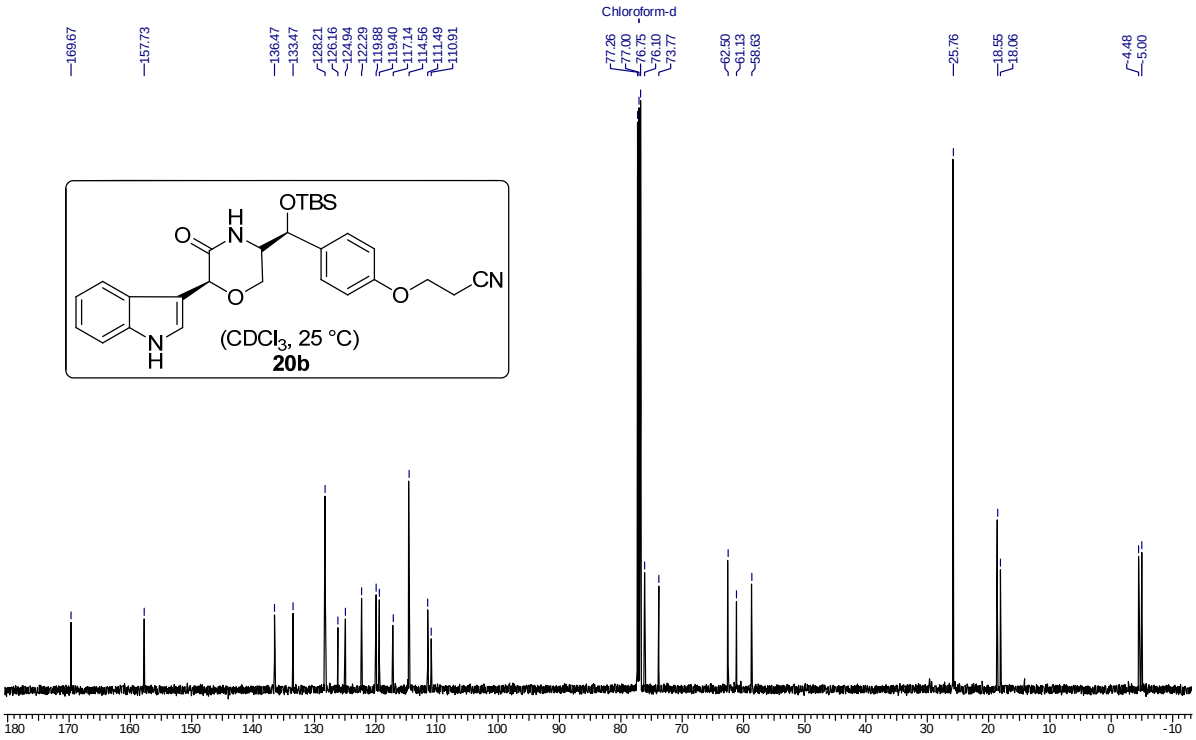
Acquisition Time (sec)	3.2768	*Comment*	alok	*Date*	23/03/2011 17:33:42	*Frequency (MHz)*	500.13
Nucleus	1H	*Original Points Count*	32768	*Points Count*	32768	*Sweep Width (Hz)*	10000.00
Temperature (grad C)	0.000						



TBS-protected oxazinin-6

28 Apr 2011
wed5av500#009
13C

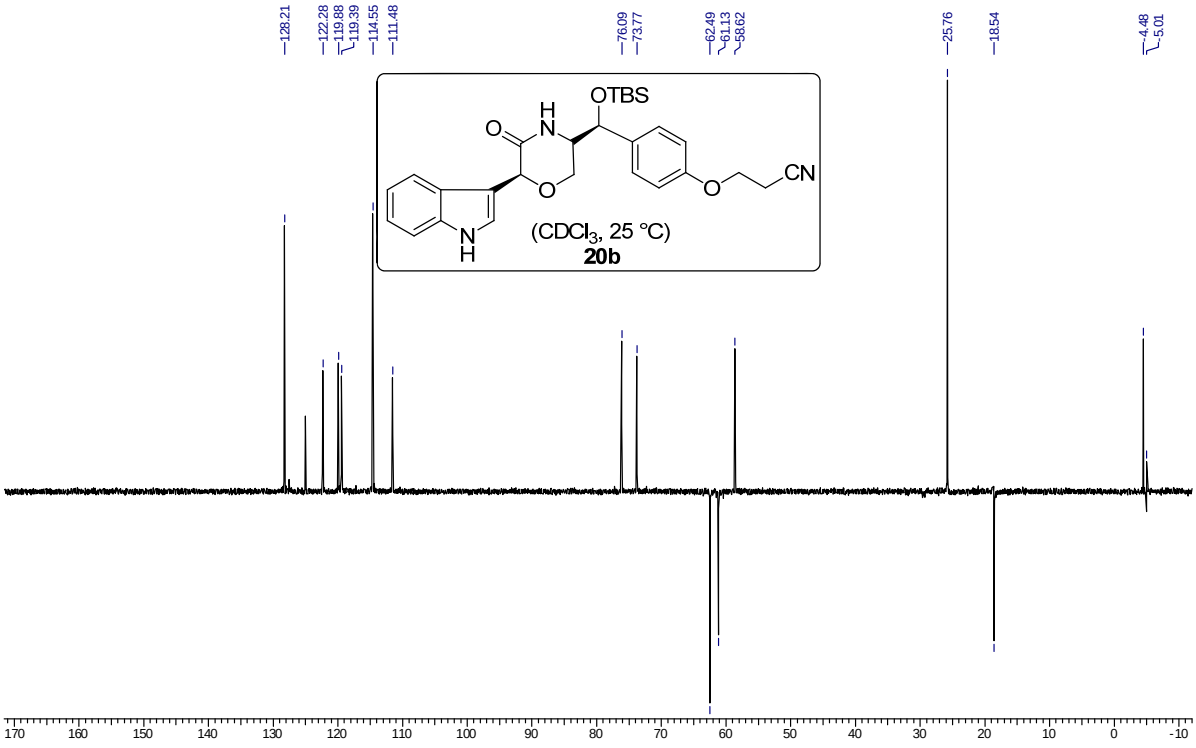
Acquisition Time (sec)	1.1010	*Comment*	13C	*Date*	23/03/2011 18:14:02	*Frequency (MHz)*	125.76
Nucleus	13C	*Original Points Count*	32768	*Points Count*	32768	*Sweep Width (Hz)*	29761.90
Temperature (grad C)	0.000						

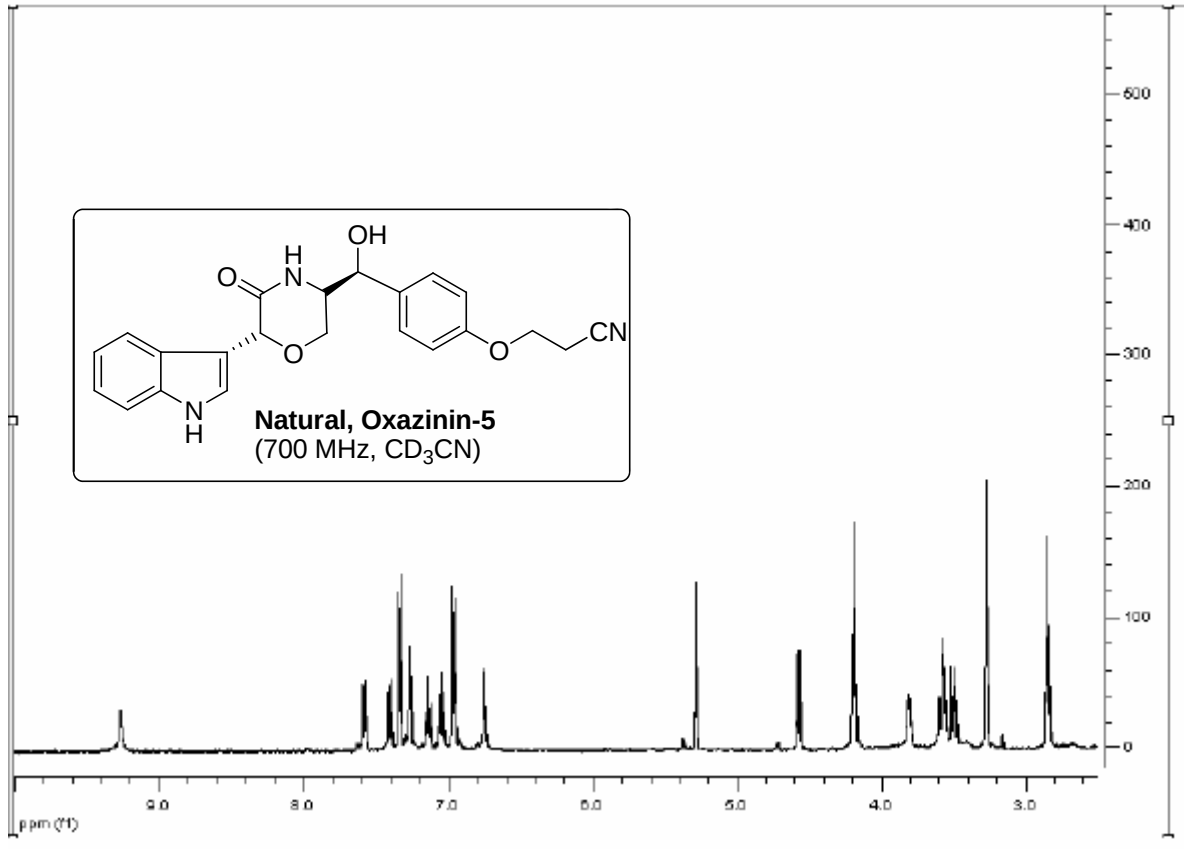


TBS-protected oxazinin-6

28 Apr 2011
wed5av500#009
DEPT135

Acquisition Time (sec)	1.1010	*Comment*	DEPT135			*Date*	23/03/2011 17:55:36
Frequency (MHz)	125.76	*Nucleus*	13C	*Original Points Count*	32768	*Points Count*	32768
Sweep Width (Hz)	29761.90	*Temperature (grad C)*	0.000				



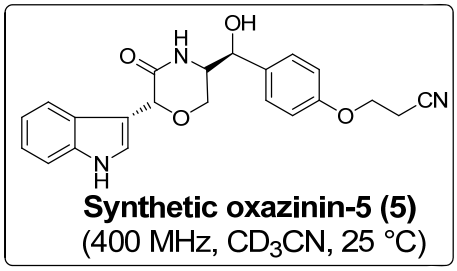


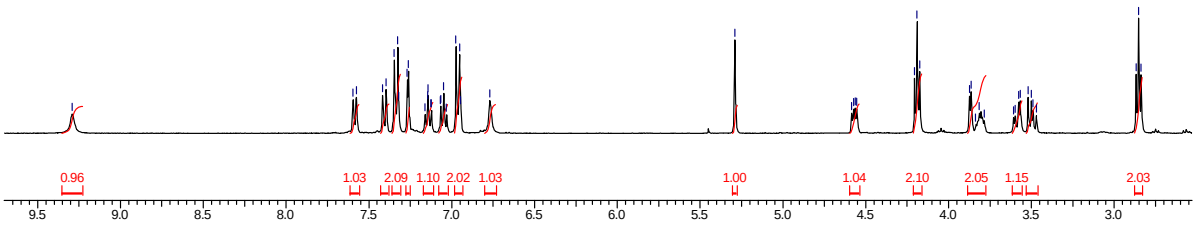
oxazinin-5

28 Apr 2011
wed3av400#012
VHP

Acquisition Time (sec) 4.0894	***Comment***	Alok Ranjan		***Date***	13/04/2011 22:44:38		
Frequency (MHz) 400.13	***Nucleus***	1H	***Original Points Count*** 32768	***Points Count***	32768	***Sweep Width (Hz)***	8012.82
Temperature (grad C) 0.000							

9.29 | 7.60 7.58 7.42 7.40 7.35 7.33 7.32 7.27 7.26 7.15 7.14 7.05 6.97 6.95 6.95 6.77 | 5.29 | 4.58 4.57 4.56 4.55 4.21 4.19 4.18 3.87 3.86 3.81 3.79 3.60 3.58 3.57 3.52 3.50 3.49 3.47 | 2.87 2.85 2.84

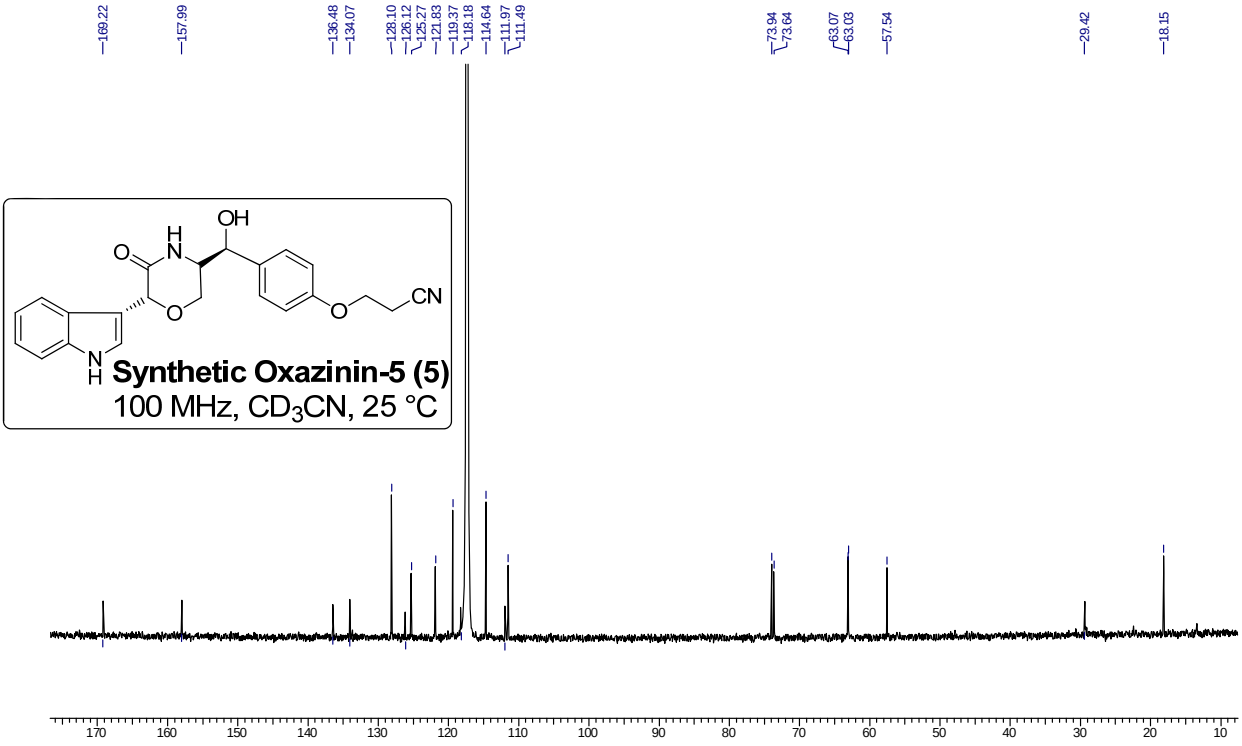




oxazinin-5

16 May 2011
wed3av400#012
13C

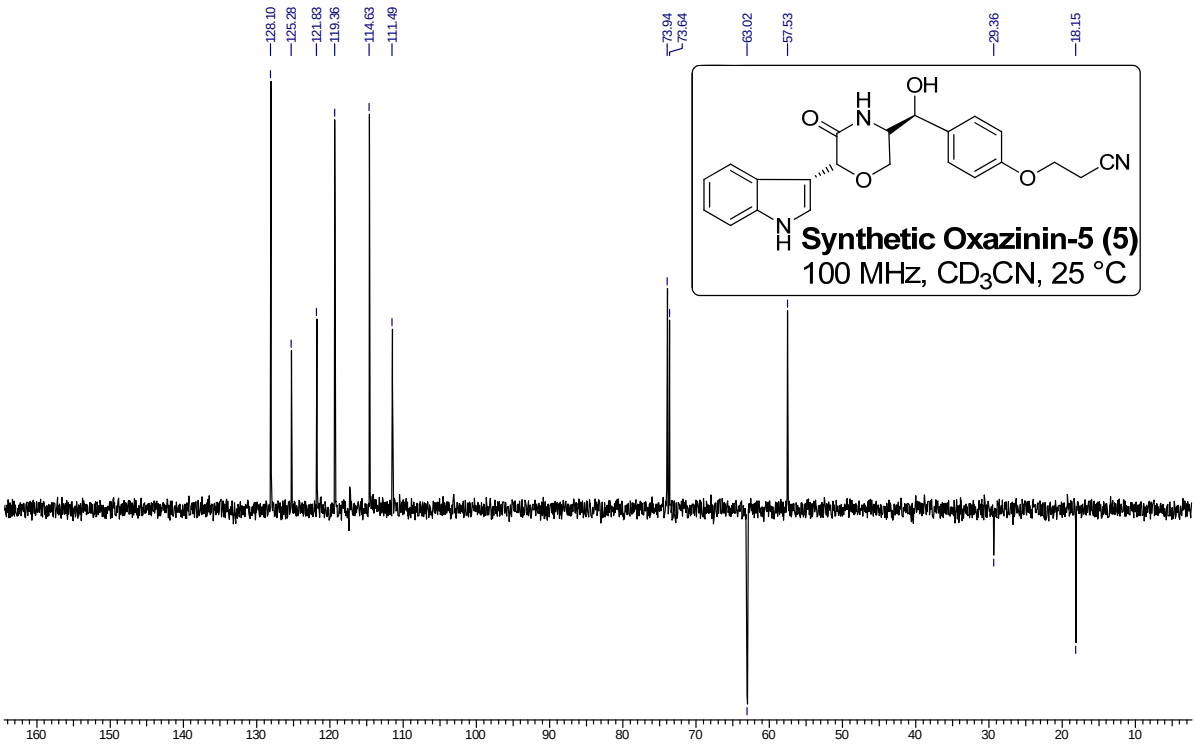
Acquisition Time (sec)	1.2976	*Comment*	13C	*Date*	14/04/2011 10:21:50	*Frequency (MHz)*	100.61
Nucleus	13C	*Original Points Count*	32768	*Points Count*	32768	*Sweep Width (Hz)*	25252.53
Temperature (grad C)	0.000						



oxazinin-5

16 May 2011
wed3av400#012
DEPT

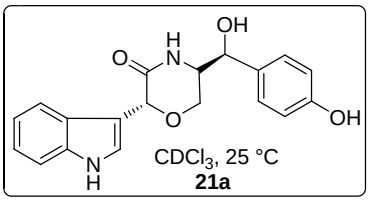
Acquisition Time (sec)	1.2976	*Comment*	DEPT	*Date*	14/04/2011 10:22:24	*Frequency (MHz)*	100.61
Nucleus	13C	*Original Points Count*	32768	*Points Count*	32768	*Sweep Width (Hz)*	25252.53
Temperature (grad C)	0.000						

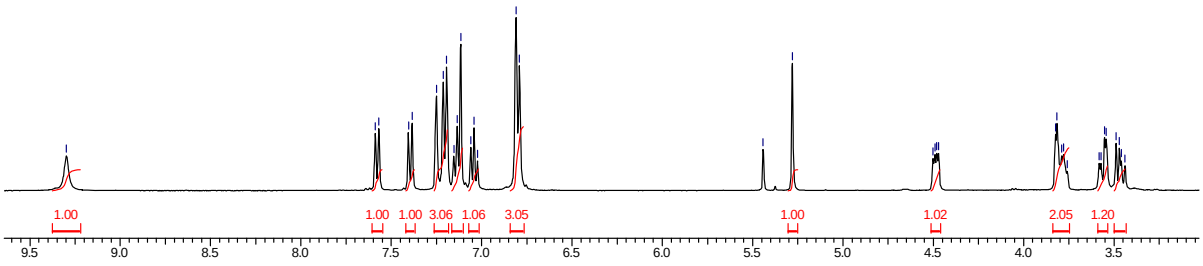


17 May 2011
Mon1av400#005
Vijendra

Acquisition Time (sec)	4.0894	***Comment***	Vijendra	***Date***	03/05/2011 10:05:10	***Frequency (MHz)***	400.13
Nucleus	1H	***Original Points Count***	32768	***Points Count***	32768	***Sweep Width (Hz)***	8012.82	***Temperature (grad C)***	0.000

9.30 | 7.59 7.57 7.40 7.38 7.25 7.21 7.19 7.15 7.13 7.12 7.06 7.04 7.02 6.81 6.79 | 5.44 5.28 | 4.50 4.49 4.48 4.47 | 3.82 3.82 3.79 3.78 3.76 3.57 3.55 3.54 3.49 3.47 3.46

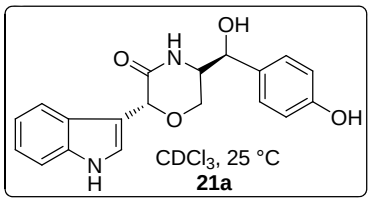




17 May 2011
Mon1av400#005
Vijendra

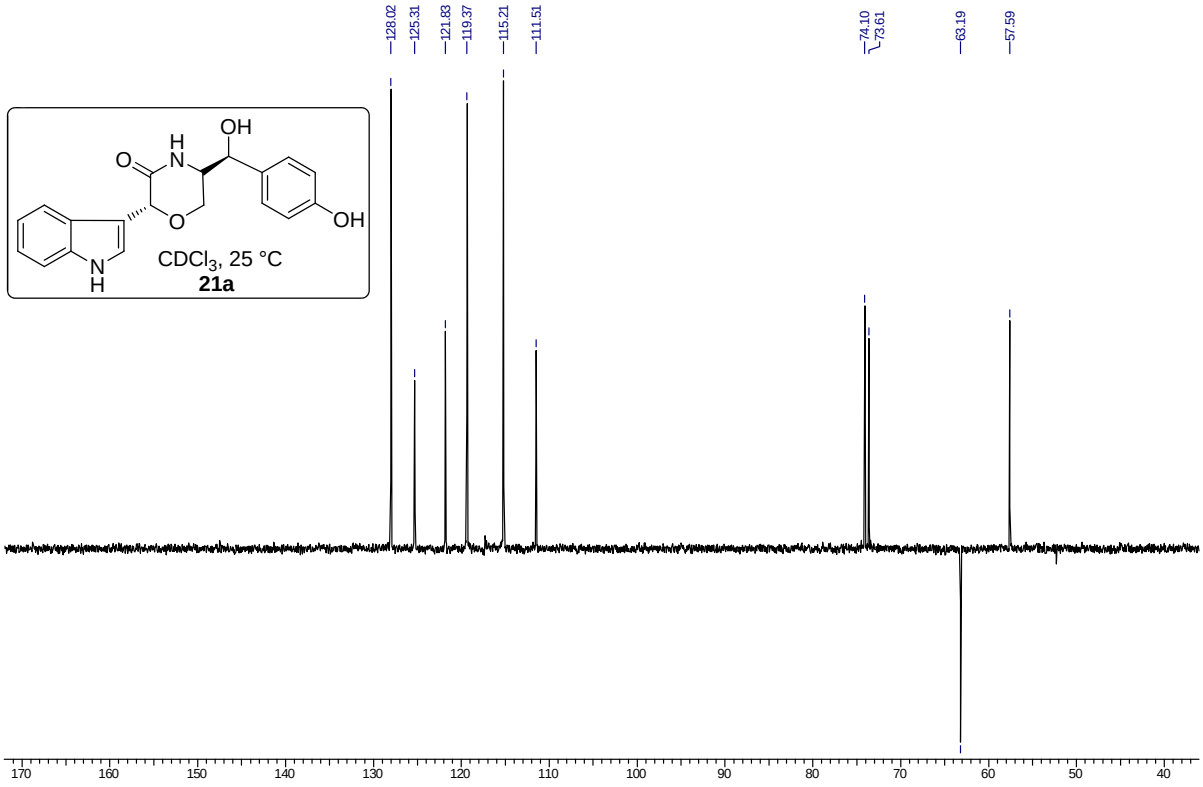
Acquisition Time (sec)	1.3631	***Comment***	Vijendra	***Date***	03/05/2011 10:06:22	***Frequency (MHz)***	100.61
Nucleus	13C	***Original Points Count***	32768	***Points Count***	32768	***Sweep Width (Hz)***	24038.46
Temperature (grad C)	0.000						

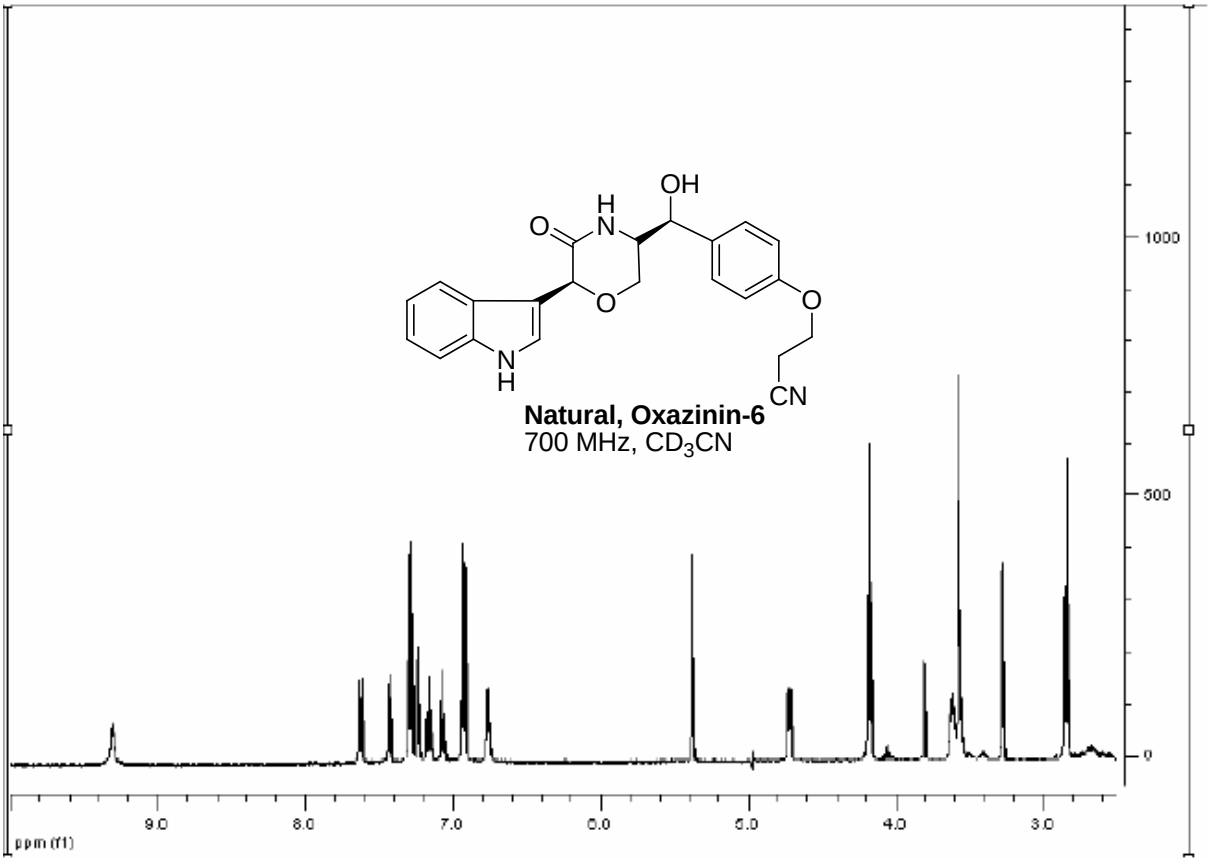
169.30 | 156.89 | 136.44 | 132.17 | 128.01 126.15 125.30 | 121.83 | 119.36 | 117.35 | 115.21 | 111.90 111.50 | 74.10 73.62 | 63.19 | 57.59



17 May 2011
Mon1av400#005
DEPT

Acquisition Time (sec)	1.3631	***Comment***	Vijendra	***Date***	03/05/2011 10:06:00	***Frequency (MHz)***	100.61
Nucleus	13C	***Original Points Count***	32768	***Points Count***	32768	***Sweep Width (Hz)***	24038.46
Temperature (grad C)	0.000						



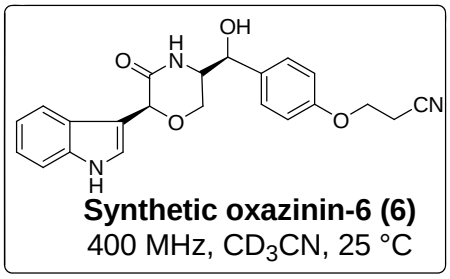


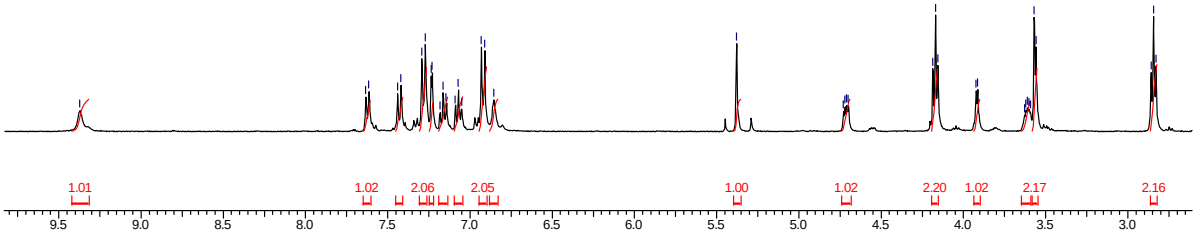
oxazinin-6

17 May 2011
sat5av400#009
1H

Acquisition Time (sec)	4.0894	***Comment***	Vijendra	***Date***	30/04/2011 17:36:36	***Frequency (MHz)***	400.13
Nucleus	1H	***Original Points Count***	32768	***Points Count***	32768	***Sweep Width (Hz)***	8012.82	***Temperature (grad C)***	0.000

9.37 | 7.63 7.61 7.44 7.42 7.29 7.27 7.24 7.23 7.16 7.15 7.09 7.07 7.05 6.93 6.91 6.86 | 5.38 | 4.73 4.72 4.71 4.70 | 4.19 4.17 4.16 3.92 3.91 3.63 3.62 3.61 3.60 3.59 3.57 3.56 | 2.86 2.84 2.83

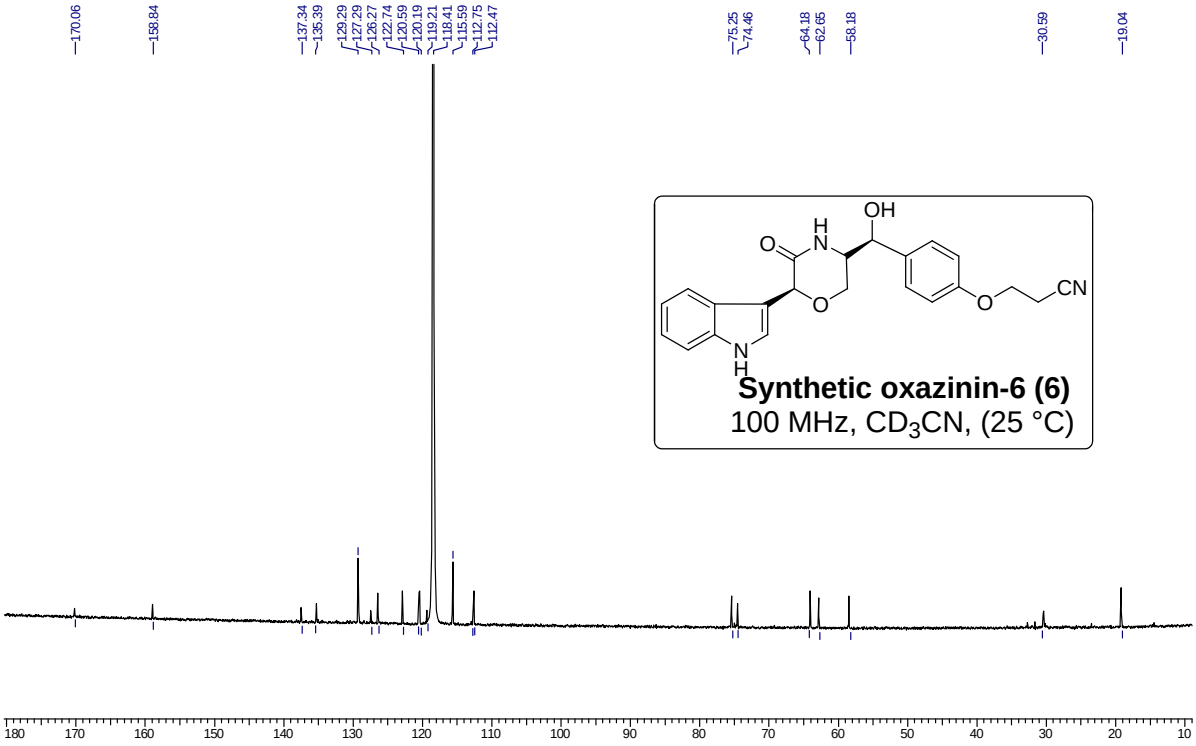




oxazinin-6

17 May 2011
sat5av400#009
13c

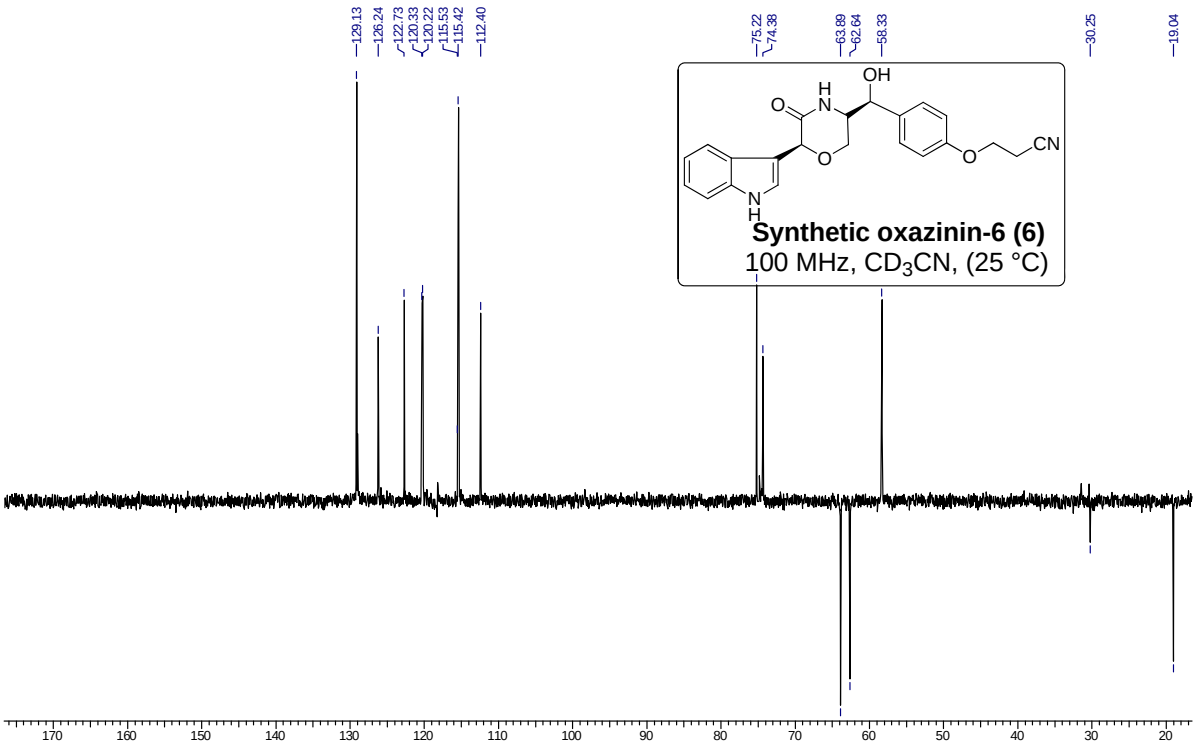
Acquisition Time (sec)	1.3631	***Comment***	13c	***Date***	01/05/2011 09:36:18	***Frequency (MHz)***	100.61
Nucleus	13C	***Original Points Count***	32768	***Points Count***	32768	***Sweep Width (Hz)***	24038.46
Temperature (grad C)	0.000						



oxazinin-6

17 May 2011
sat5av400#009
Vijendra

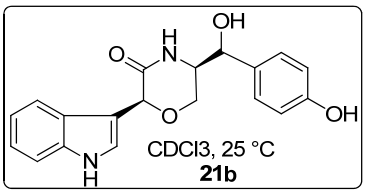
Acquisition Time (sec)	1.3631	***Comment***	Vijendra	***Date***	01/05/2011 09:36:58	***Frequency (MHz)***	100.61
Nucleus	13C	***Original Points Count***	32768	***Points Count***	32768	***Sweep Width (Hz)***	24038.46
Temperature (grad C)	0.000						

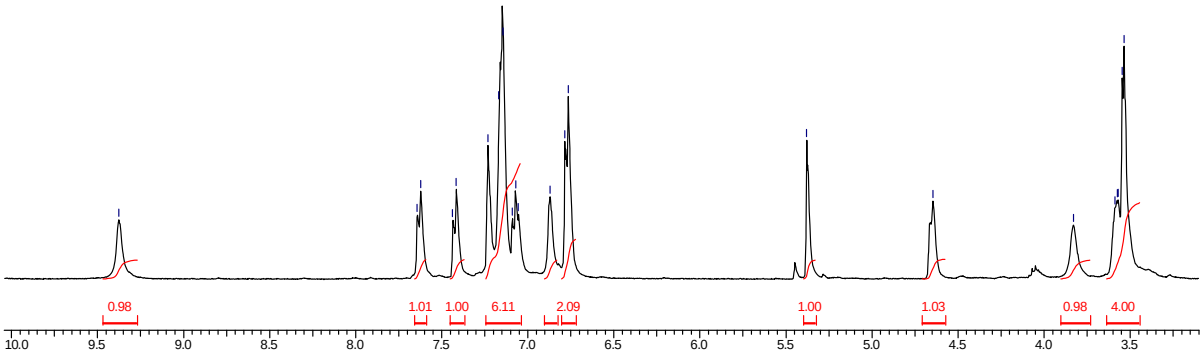


17 May 2011
Thu2av400#009
1H side product

Acquisition Time (sec)	4.0894	***Comment***	Vijendra	***Date***	13/05/2011 08:57:00	***Frequency (MHz)***	400.13
Nucleus	1H	***Original Points Count***	32768	***Points Count***	32768	***Sweep Width (Hz)***	8012.82	***Temperature (grad C)***	0.000

9.38 | 7.64 7.62 7.44 7.42 7.23 7.17 7.14 7.09 7.07 7.06 6.87 6.79 6.76 | 5.38 | 4.65 | 3.83 3.59 3.58 3.57 3.55 3.54

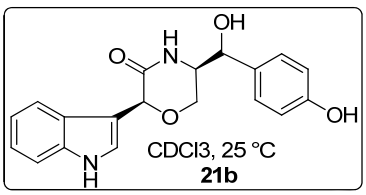


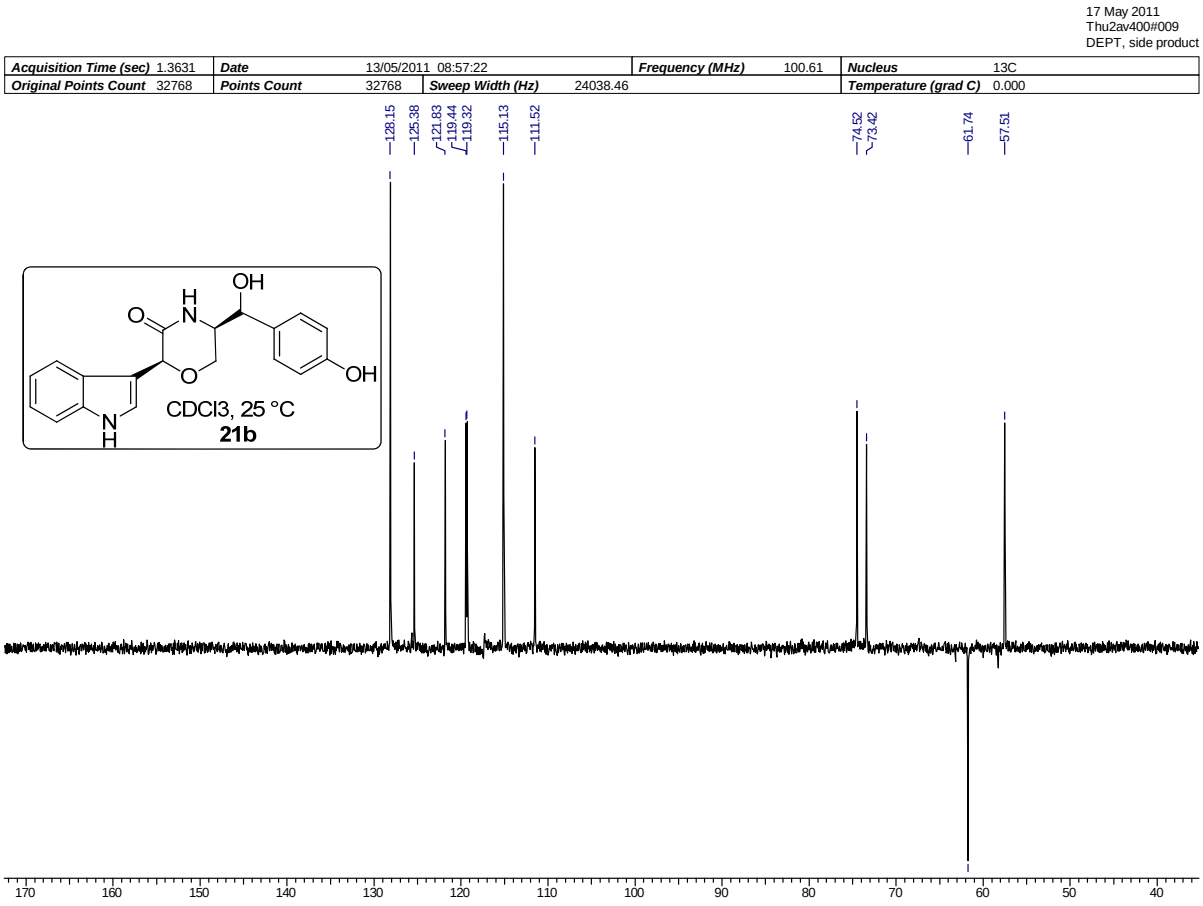


17 May 2011
Thu2av400#009
13C side product

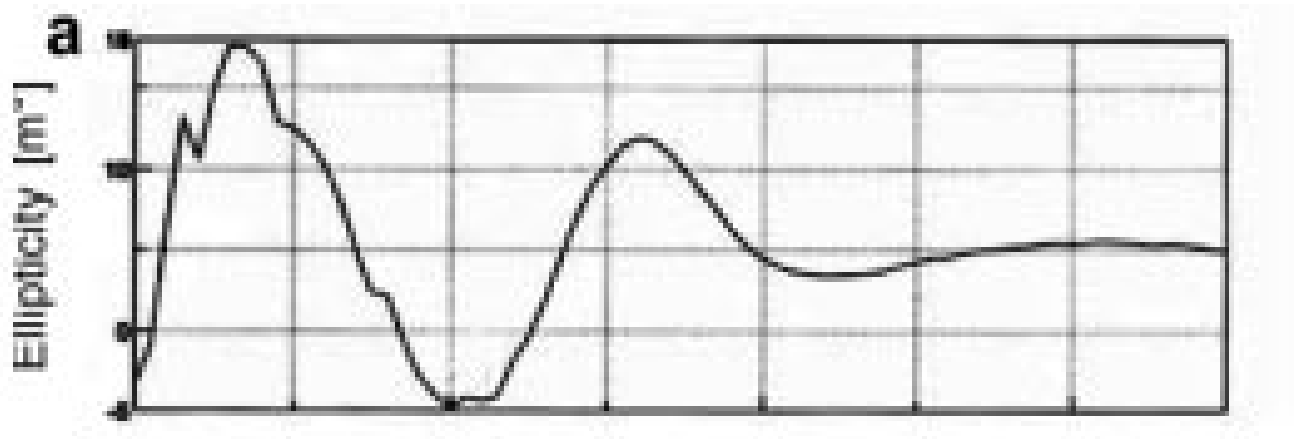
Acquisition Time (sec)	1.3631	***Comment***	13C	***Date***	13/05/2011 08:59:50	***Frequency (MHz)***	100.61
Nucleus	13C	***Original Points Count***	32768	***Points Count***	32768	***Sweep Width (Hz)***	24038.46
Temperature (grad C)	0.000						

170.20 | 157.84 | 137.49 | 133.44 | 129.18 | 127.47 | 126.42 | 122.88 | 120.48 | 120.37 | 118.40 | 116.17 | 112.67 | 112.56 | 75.56 | 74.46 | 62.78 | 58.56

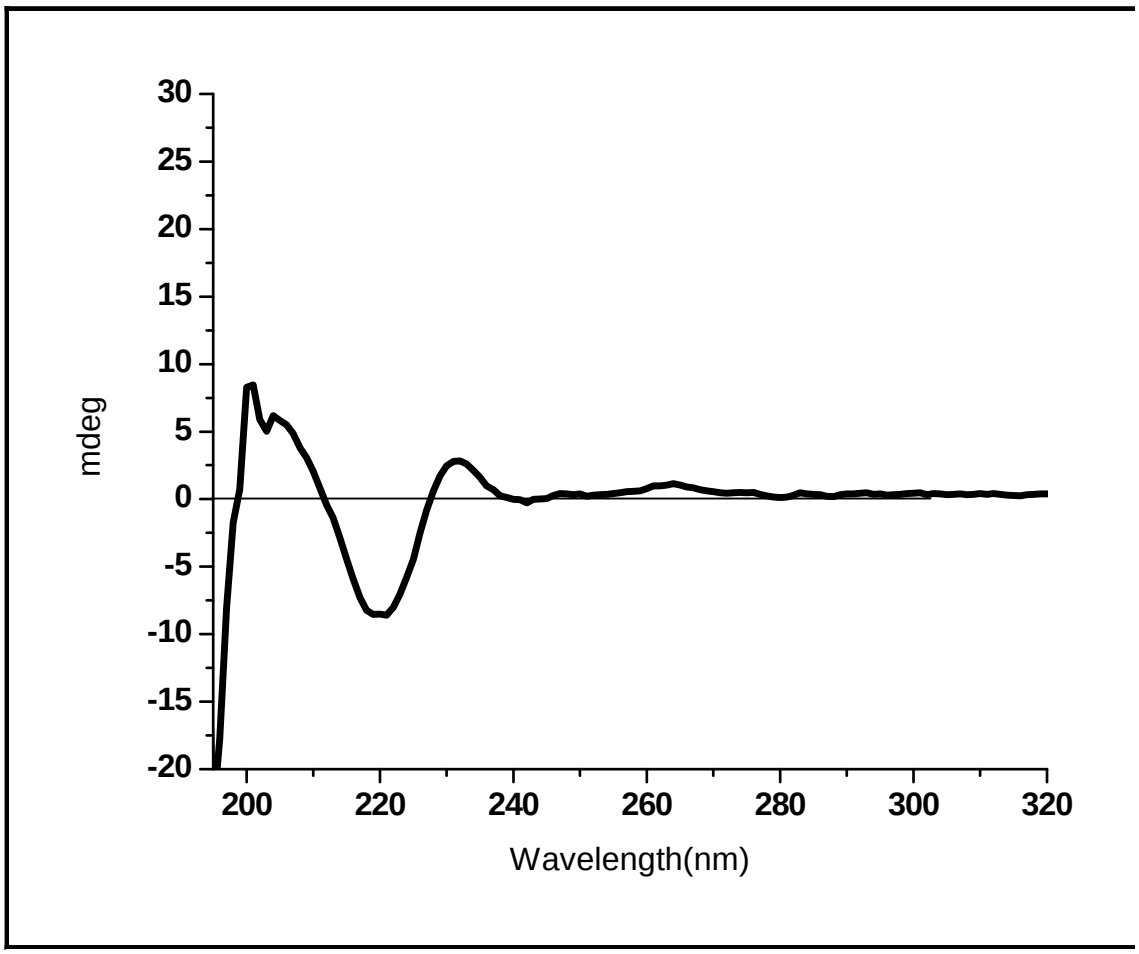



17 May 2011
Thu2av400#009
DEPT, side product
Acquisition Time (sec) 1.3631
Date 13/05/2011 08:57:22
Frequency (MHz) 100.61
Nucleus 13C
Original Points Count 32768
Points Count 32768
Sweep Width (Hz) 24038.46
Temperature (grad C) 0.000
128.15
125.38
121.83
119.44
119.32
115.13
111.52
74.52
73.42
61.74
57.51
OH
H
N
O
O
OH
N
H
CDCl3, 25 °C
21b
170
160
150
140
130
120
110
100
90
80
70
60
50
40

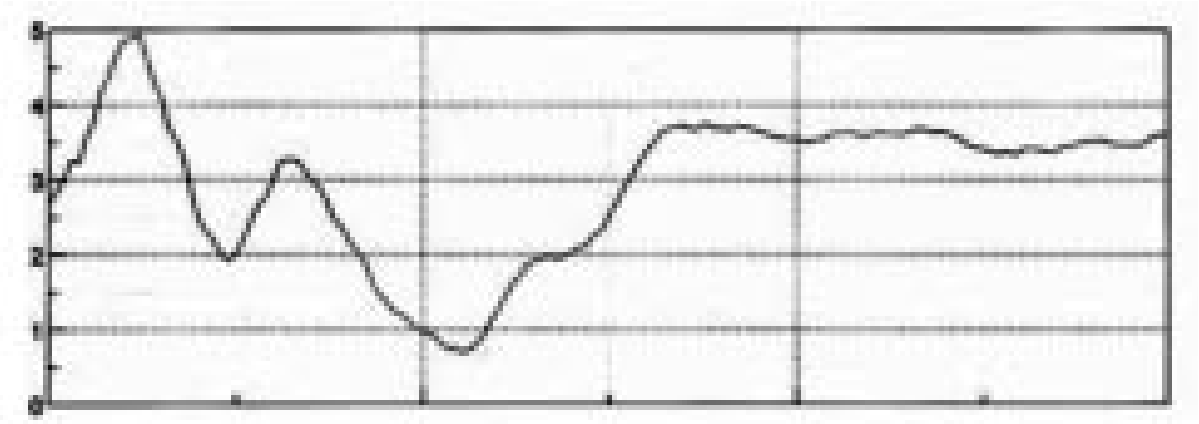
Reported CD Spectra of Natural Oxazinin-5



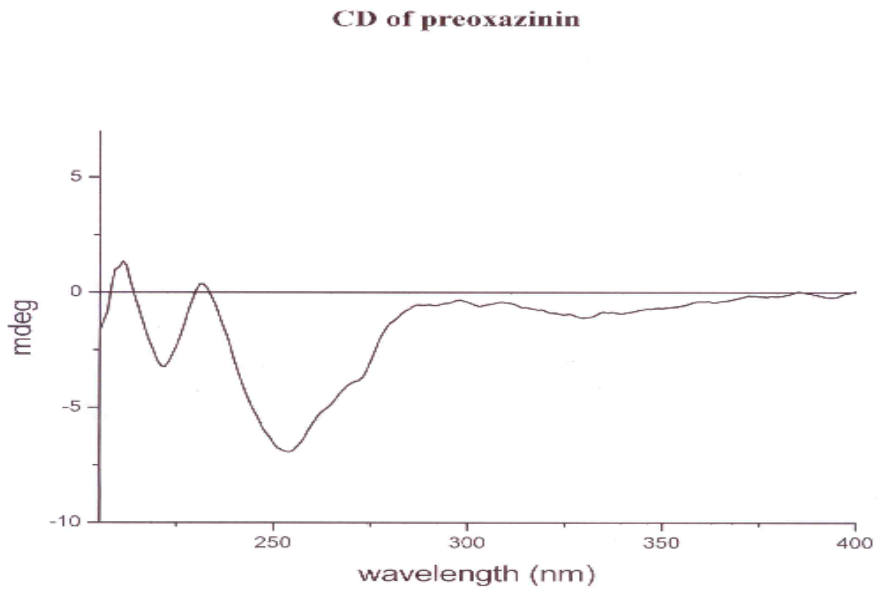
CD Spectra of Synthetic Oxazinin-5



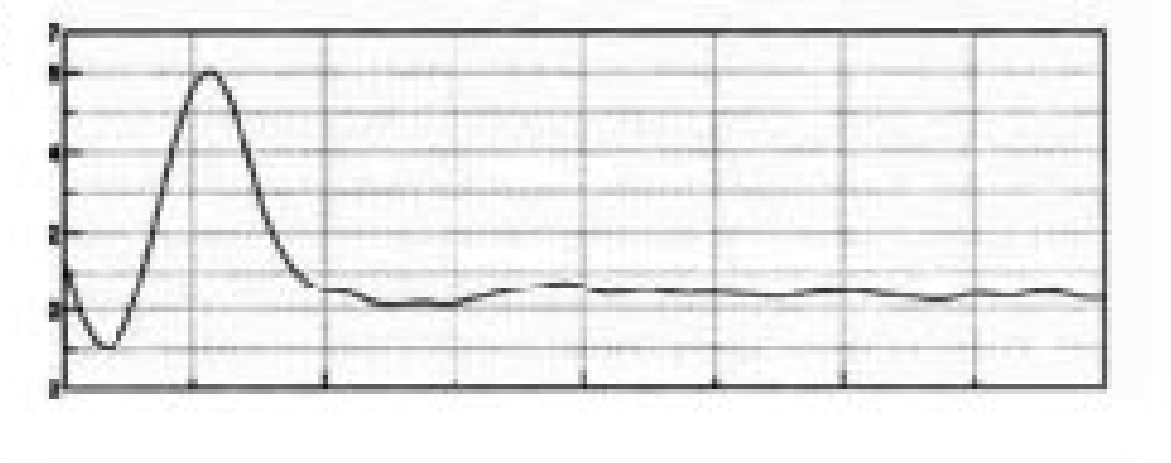
Reported CD spectra of Natural Preoxazinin-7:



CD spectra of Synthetic Preoxazinin -7:



Reported CD spectra of Natural Oxazinin-6:



CD Spectra of Synthetic oxazinin-6: